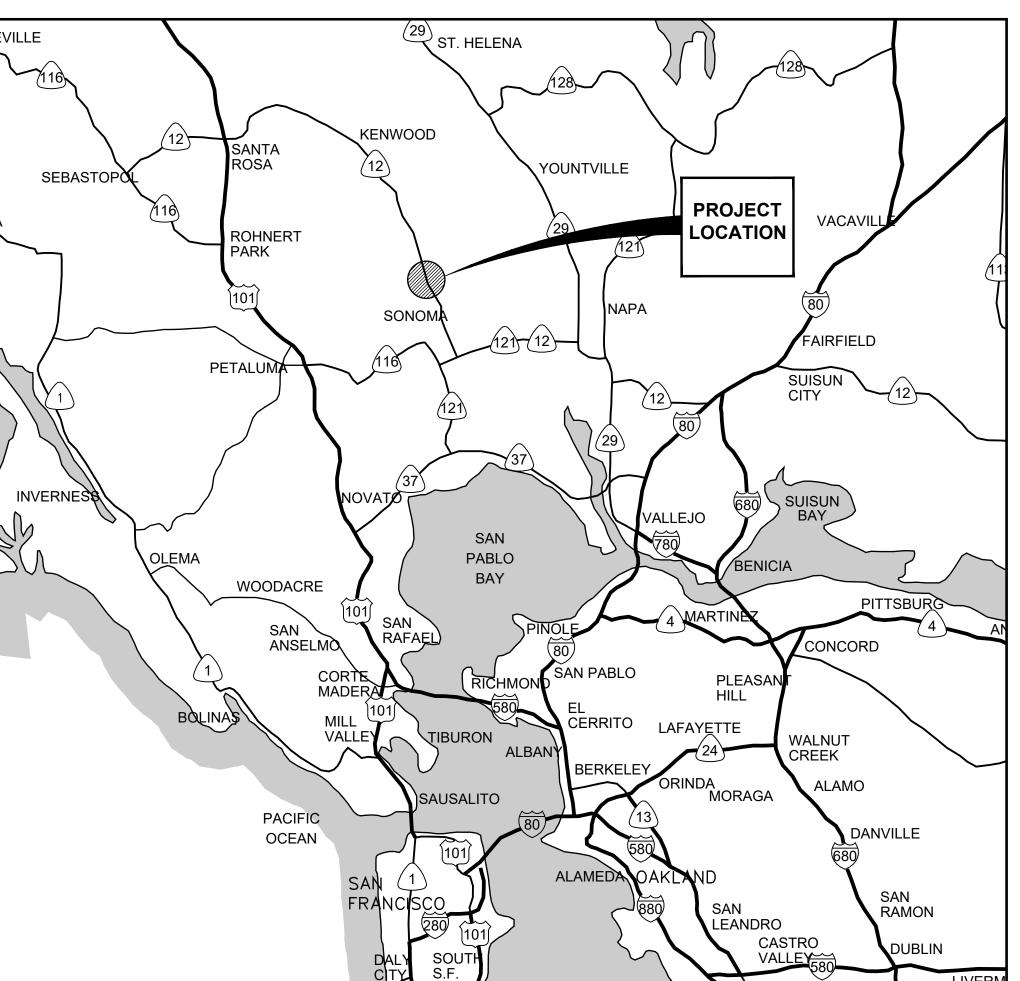
AQUIFER STORAGE AND RECOVERY PROJECT, EQUIPPING PHASE

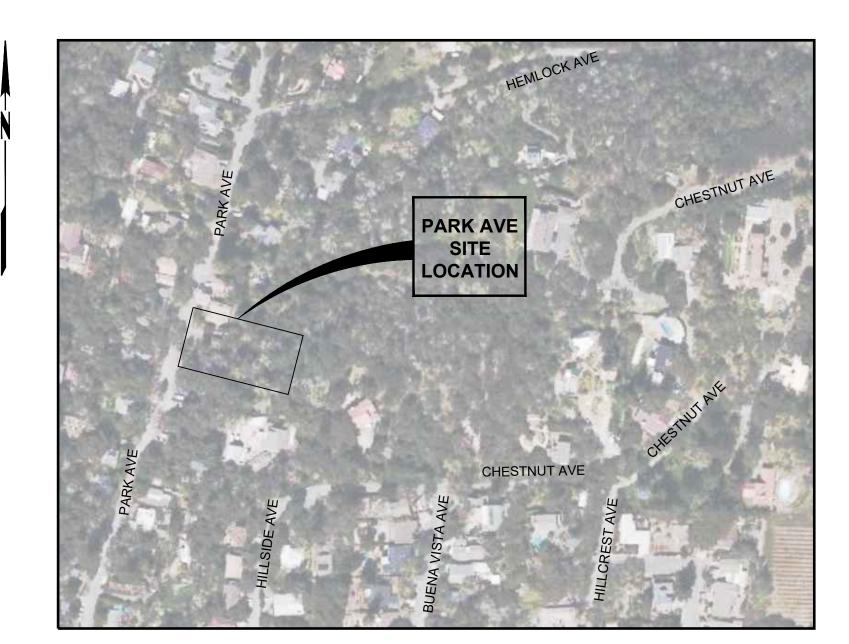
VALLEY OF THE MOON WATER DISTRICT SONOMA, CA

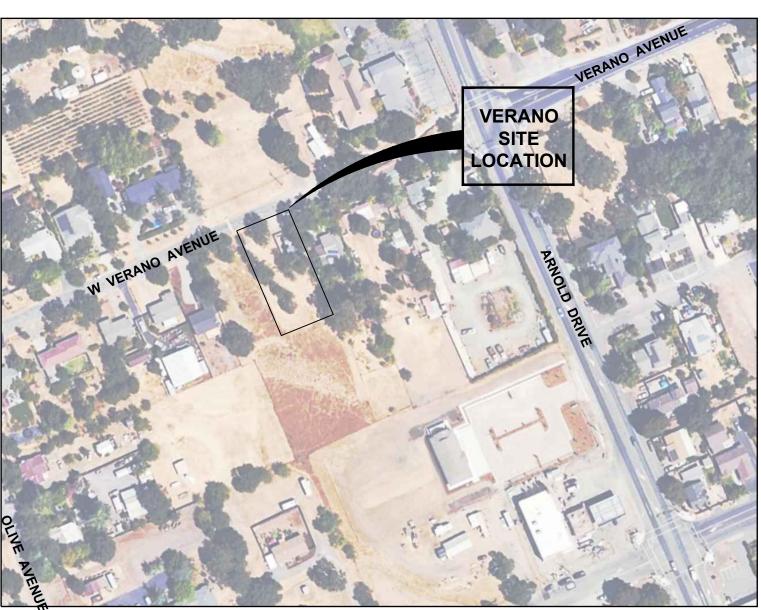
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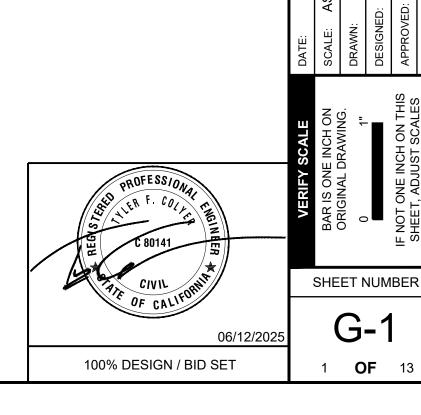
LIST OF DRAWINGS

CLIEFT NILIMBED	CLIEET	CULET TITLE
SHEET NUMBER	SHEET	SHEET TITLE
1	G-1	TITLE SHEET, PROJECT LOCATION, AND VICINITY MAP
2	G-2	GENERAL NOTES
3	G-3	LEGEND, ABBREVIATIONS, AND REFERENCE SYMBOLS
4	C-1	PARK AVENUE WELL - EXISTING SITE & DEMOLITION P
5	C-2	PARK AVENUE WELL - PROPOSED SITE & PIPING PLAN
6	C-3	VERANO WELL - EXISTING SITE & DEMOLITION PLAN
7	C-4	VERANO WELL - PROPOSED SITE PLAN & PIPING PLAN
8	C-5	CIVIL DETAILS
9	M-1	VERANO WELL - PIPING PLAN AND SECTION
10	M-2	PARK AVENUE WELL - PIPING PLAN AND SECTION
11	M-3	PARK AVENUE WELL - PIPING SECTION
12	NA A	DADK AVENUE WELL DIDING SECTION 2





VICINITY MAPS



LOCATION MAP NO SCALE

- 2. THE CONTRACTOR SHALL COMPLY WITH THE PROVISIONS OF THE SONOMA COUNTY MUNICIPAL REGIONAL PERMIT (MRP) NATIONAL POLLUTION DISCHARGE ELIMINATION SYSTEM (NPDES) PERMIT CA0025054 AND SHALL FOLLOW STORM WATER BEST MANAGEMENT PRACTICES.
- 3. THE CONTRACTOR SHALL AT ALL TIMES MAINTAIN ADEQUATE DRAINAGE PATTERNS AT THE SITE. WATER SHALL NOT BE ALLOWED TO POND OR STAND DUE TO CONTRACTOR ACTIVITY.
- 4. FOR LANE CLOSURES, THE CONTRACTOR SHALL PROVIDE A TRAFFIC CONTROL PLAN AND OBTAIN APPROVAL FROM THE ENGINEER BEFORE COMMENCING WORK. THE CONTRACTOR SHALL PROVIDE FLAGMEN, CONES, AND/OR BARRICADES, AS NECESSARY TO CONTROL TRAFFIC AND PREVENT HAZARDOUS CONDITIONS, PER THE CALIFORNIA DEPARTMENT OF TRANSPORATION STANDARD PLANS, SPECIFICATIONS AND MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES, LATEST EDITIONS.
- 5. THE CONTRACTOR SHALL CONTROL DUST AT ALL TIMES, IN ACCORDANCE WITH CALTRANS STANDARD PLANS, OR AS DIRECTED BY THE ENGINEER.
- 6. ANY PAVEMENT MARKING AND STRIPING DAMAGED DURING CONSTRUCTION SHALL BE REPLACED BY THE CONTRACTOR, IN ACCORDANCE WITH CALTRANS STANDARD PLANS, OR AS DIRECTED BY THE ENGINEER.
- 7. NO TRENCHES OR HOLES IN THE PUBLIC RIGHT OF WAY SHALL BE LEFT OPEN OVERNIGHT; USE STEEL PLATING OR HOT-MIX ASPHALT AS REQUIRED TO PROTECT EXCAVATIONS OVERNIGHT.
- 8. SURVEY MONUMENTS TO BE PROTECTED DURING CONSTRUCTION.
- 9. THE LOCATIONS OF EXISTING UNDERGROUND UTILITIES SHOWN ON THE DRAWINGS ARE APPROXIMATE AND ARE BASED ON RECORD INFORMATION PROVIDED BY UTILITY OWNERS. THE EXISTING ELEVATIONS AND LOCATIONS MAY VARY FROM THOSE SHOWN. IT IS THE RESPONSIBILITY OF THE CONTRACTOR TO CONTACT ALL UTILITIY COMPANIES SO THAT THOSE COMPANIES MARK THE LOCATIONS OF THEIR UTILITIES PRIOR TO CONTRACTOR EXCAVATIONS. CONTACT UNDERGROUND SERVICE ALERT (USA) (800) 642-2444 TO MARK UTILITIES, AT LEAST 48 HOURS PRIOR TO EXCAVATING. ALL UNDERGROUND FACILITIES, PIPING AND UTILITIES ELEVATIONS AND LOCATIONS WHICH WILL AFFECT THE WORK SHALL BE VERIFIED BY THE CONTRACTOR BY POTHOLING.
- 10. PROTECT ALL EXISTING UTILITIES DURING CONSTRUCTION. DAMAGE TO EXISTING UTILITIES RESULTING FROM THE CONTRACTOR'S CONSTRUCTION ACTIVITIES SHALL BE REPAIRED BY THE CONTRACTOR, AT THE CONTRACTOR'S EXPENSE
- 11. CONTRACTOR TO FIELD VERIFY ALL EXISTING SITE CONDITIONS IN THE AREA OF THE WORK PRIOR TO CONSTRUCTION. IF A SIGNIFICANT CONFLICT EXISTS BETWEEN THE CONTRACT DOCUMENTS AND ACTUAL CONDITIONS, CONTRACTOR SHALL NOTIFY ENGINEER IMMEDIATELY.
- 12. THE CONTRACTOR SHALL PROVIDE ALL MATERIALS, LABOR, EQUIPMENT, APPURTENANCES, AND APPARATUS NOT SPECIFICALLY MENTIONED ON THE PLANS OR SPECIFICATIONS, BUT WHICH ARE NECESSARY TO COMPLETE THE CONTRACTED WORK AND PROVIDE A FULLY-FUNCTIONING INSTALLATION READY FOR FULL-TIME OPERATION WITHOUT ADDITIONAL COST TO THE DISTRICT.
- 13. THE CONTRACTOR SHALL SUPPLY AND MAINTAIN SANITARY FACILITIES FOR WORKERS AND VISITORS AT THE CONSTRUCTION SITE. SERVICE AT LEAST TWICE WEEKLY.
- 14. ALL EXCESS EXCAVATED MATERIAL SHALL BECOME THE PROPERTY OF THE CONTRACTOR AND SHALL BE HANDLED, TRANSPORTED, AND DISPOSED FROM THE SITE IN ACCORDANCE WITH LAWS AND REGULATIONS AT THE CONTRACTOR'S EXPENSE. CONTRACTOR MAY ASSUME, FOR BIDDING PURPOSES ONLY, THAT EXCAVATED SOIL IS NON-HAZARDOUS. HOWEVER, SUCH ASSUMPTION DOES NOT RELIEVE CONTRACTOR'S FULL AND COMPLETE RESPONSIBILITY FOR COMPLYING WITH LAWS AND REGULATIONS, INCLUDING CHARACTERIZATION OF EXCESS MATERIAL FOR MANAGEMENT AND DISPOSAL. CONTRACTOR SHALL PROMPTLY NOTIFY AND CONFER WITH ENGINEER IF ANY EVIDENCE OF SOIL CONTAMINATION IS OBSERVED.
- 15. UNLESS OTHERWISE NOTED, ALL PAVEMENT, GUTTERS, WALKS, FENCES AND OTHER SURFACE IMPROVEMENTS THAT ARE DISTURBED OR DAMAGED BY CONSTRUCTION SHALL BE RESTORED TO ORIGINAL CONDITIONS BY CONTRACTOR WITHOUT ADDITIONAL COST TO THE DISTRICT.
- 16. PIPES ABANDONED IN PLACE SHALL HAVE ALL ENDS CAPPED. ABANDONED PIPE OPENINGS AT STRUCTURES SHALL BE PLUGGED WITH CONCRETE. PLUG SHALL BE A MINIMUM THREE PIPE DIAMETERS LONG AND SHALL BE FINISHED FLUSH WITH CONCRETE WALL SURFACE.
- 17. AT CONNECTIONS TO EXISTING BURIED PIPE, CONTRACTOR SHALL EXPOSE THE EXISTING PIPE AND VERIFY LOCATIONS, INVERT, MATERIALS, AND DIMENSIONS. THE CONTRACTOR SHALL FURNISH ALLNECESSARY COUPLINGS, FITTINGS, APPURTENANCES, TOOLS, AND LABOR TO COMPLETE THE CONNECTIONS WHETHER SPECIFICALLY INDICATED ON THE DRAWINGS OR NOT, AT NO ADDITIONAL COST TO THE OWNER.
- 18. THE CONTRACTOR SHALL SELECT, INSTALL AND MAINTAIN SHORING, SHEETING, BRACING, AND SLOPING AS NECESSARY TO MAINTAIN SAFE EXCAVATIONS.
- 19. ALL PIPING UNDER THE CONE OF INFLUENCE OF STRUCTURES OR CONCRETE SLABS SHALL BE CONCRETE ENCASED. UNLESS NOTED OTHERWISE, THE CONE OF INFLUENCE IS DEFINED WITH A 1:1 SLOPE FROM THE EXTERIOR LOWER CORNER OF THE STRUCTURAL FOOTING TO THE PIPE CENTERLINE.
- 20. CONTRACTOR AGREES THAT IN ACCORDANCE WITH GENERALLY ACCEPTED CONSTRUCTION PRACTICES, CONTRACTOR SHALL ASSUME SOLE AND COMPLETE RESPONSIBILITY FOR JOB SITE CONDITIONS DURING THE COURSE OF THE PROJECT, INCLUDING SAFETY OF ALL PERSONS AND PROPERTY: THAT THIS REQUIREMENT SHALL BE MADE TO APPLY CONTINUOUSLY AND NOT BE LIMITED TO NORMAL WORKING HOURS.
- 21. CONTRACTOR SHALL MAINTAIN TEMPORARY FENCING DURING THE CONSTRUCTION PERIOD
- 22. DIMENSIONS AND TOP ELEVATIONS OF ALL CONCRETE EQUIPMENT PADS SHOWN SHALL BE COMPARED WITH THE DIMENSIONS AND ANCHORAGE NEEDS FOR THE FAVORABLY REVIEWED EQUIPMENT PRIOR TO FORMING AND REBAR FABRICATION. CONTRACTOR SHALL INCREASE OR DECREASE EQUIPMENT PAD DIMENSIONS AS REQUIRED TO FIT EQUIPMENT PROVIDED AT NO ADDITIONAL COST TO THE DISTRICT. CONFIRM LAYOUT CHANGES WITH THE ENGINEER FOR DIMENSION CHANGES GREATER THAN 6 INCHES IN ANY DIRECTION.
- 23. NOT ALL THE REQUIRED FITTINGS ARE SHOWN ON THE DRAWINGS. THE CONTRACTOR SHALL PROVIDE ALL THE FITTINGS SHOWN ON THE DRAWINGS AND ADDITIONAL FITTINGS AS REQUIRED FOR PIPING ARRANGEMENTS SHOWN ON THE DRAWINGS AND PER EQUIPMENT FURNISHED.
- 24. COUPLINGS SHALL BE RESTRAINED UNLESS SPECIFICALLY NOTED OTHERWISE.
- 25. ALL STRUCTURAL DESIGN IS THE RESPONSIBILITY OF THE CONTRACTOR. FOR ALL STRUCTURAL ELEMENTS OF THE PROJECT INCLUDING BUT NOT LIMITED TO: CONCRETE PADS; PIPE SUPPORTS; AND STANCHION MOUNTED PANELS. CONTRACTOR SHALL PROVIDE DEFERRED SUBMITTAL SHOP DRAWINGS FOR ALL STRUCTURE DESIGN FOR FAVORABLE REVIEW BY THE ENGINEER. STRUCTURAL DESIGN SHALL BE STAMPED BY A CALIFORNIA LICENSED STRUCTURAL ENGINEER AND BE IN CONFORMANCE WITH CBC 2022 AND ASCE 7-16, RISK CATEGORY IV AND IMPORTANCE FACTOR Ie of 1.50, FASTEST MILE WIND SPEED (3 SECOND GUST) 115 MILES PER HOUR, WIND EXPOSURE CATEGORY "C", AND IMPORTANCE FACTOR IW =1.15.
- 26. ALL ELECTRICAL WORK IS THE RESPONSIBILITY OF THE CONTRACTOR. FOR ALL ELECTRICAL ELEMENTS OF THE PROJECT INCLUDING BUT NOT LIMITED TO: RELOCATING EXISTING ELECTRICAL LINES, ELECTRICAL WORK ASSOCIATED WITH THE PARK AVENUE WELL OPERATION (PUMP POWER, VARIABLE-FREQUENCY DRIVE (VFD), FLOW CONTROL VALVE, LEVEL TRANSDUCER, ELECTRICALLY CONTROLLED BALL VALVE, AND FLOW METERS), AND VERANO AVENUE WELL (FLOW CONTROL VALVE, ELECTRICALLY CONTROLLED BALL VALVE, AND FLOW METER). CONTRACTOR SHALL PROVIDE SUBMITTAL SHOP DRAWINGS PRIOR TO INSTALLATION FOR ALL ELECTRICAL ELEMENTS FOR FAVORABLE REVIEW BY THE ENGINEER.

PARK AVE INJECTION WELL DESIGN CRITERIA

UNITS ITEM VALUE **GROUNDWATER WELL PUMP** WELL SUBMERSIBLE NUMBER OF UNITS CAPACITY, EACH GPM 150 MOTOR

VARIABLE FREQUENCY DRIVE

PARK WELL SURVEY NOTES:

- 1. SURVEY CONDUCTED FEBRUARY 4TH, 2022 BY MERIDIAN SURVEYING ENGINEERING. INC.
- 2. BASIS OF COORDINATE SYSTEM:

SPEED CONTROL

- A. HORIZONTAL: NAD83 ZONE 2
- B. VERTICAL: NAVD88

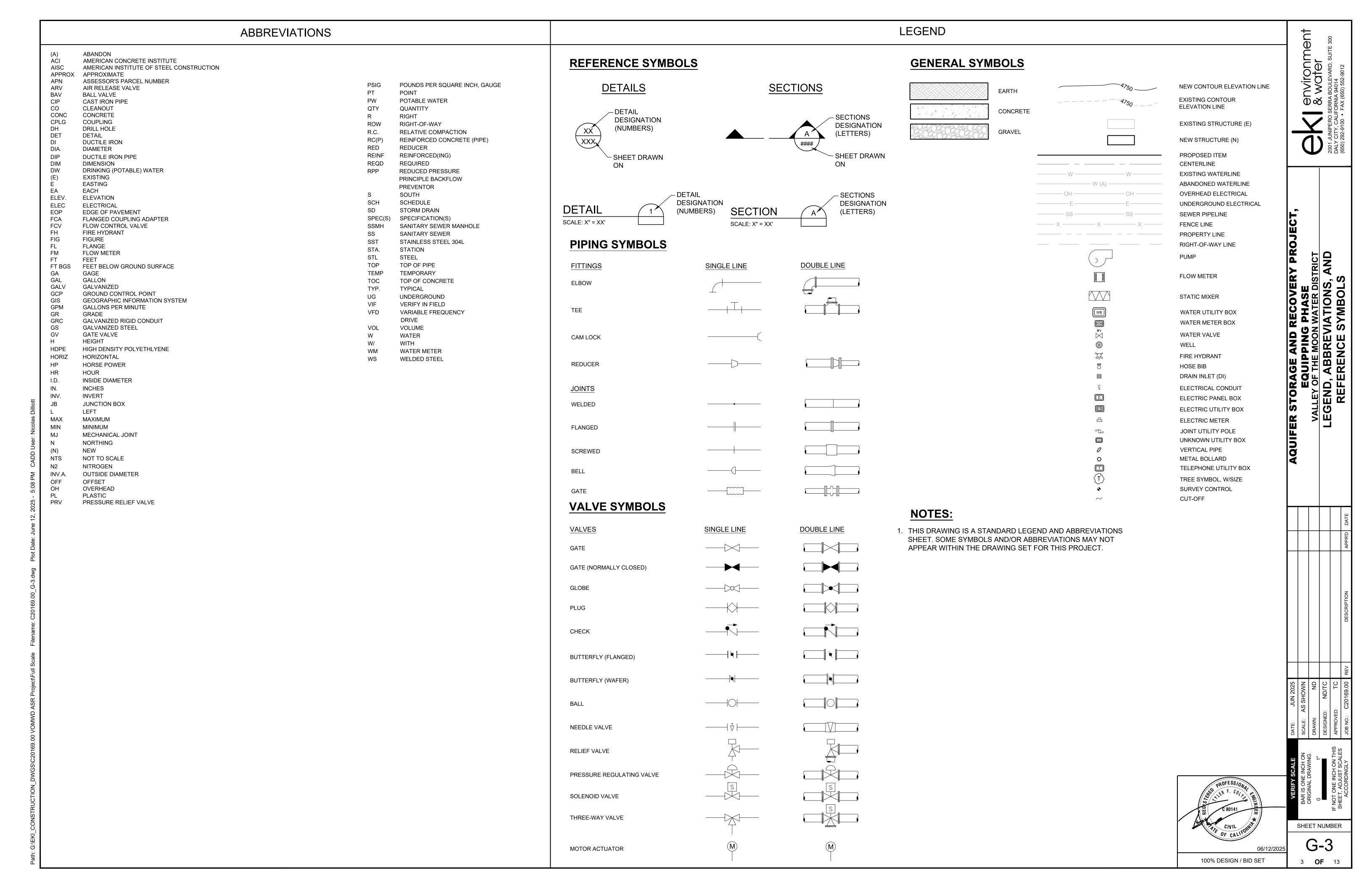
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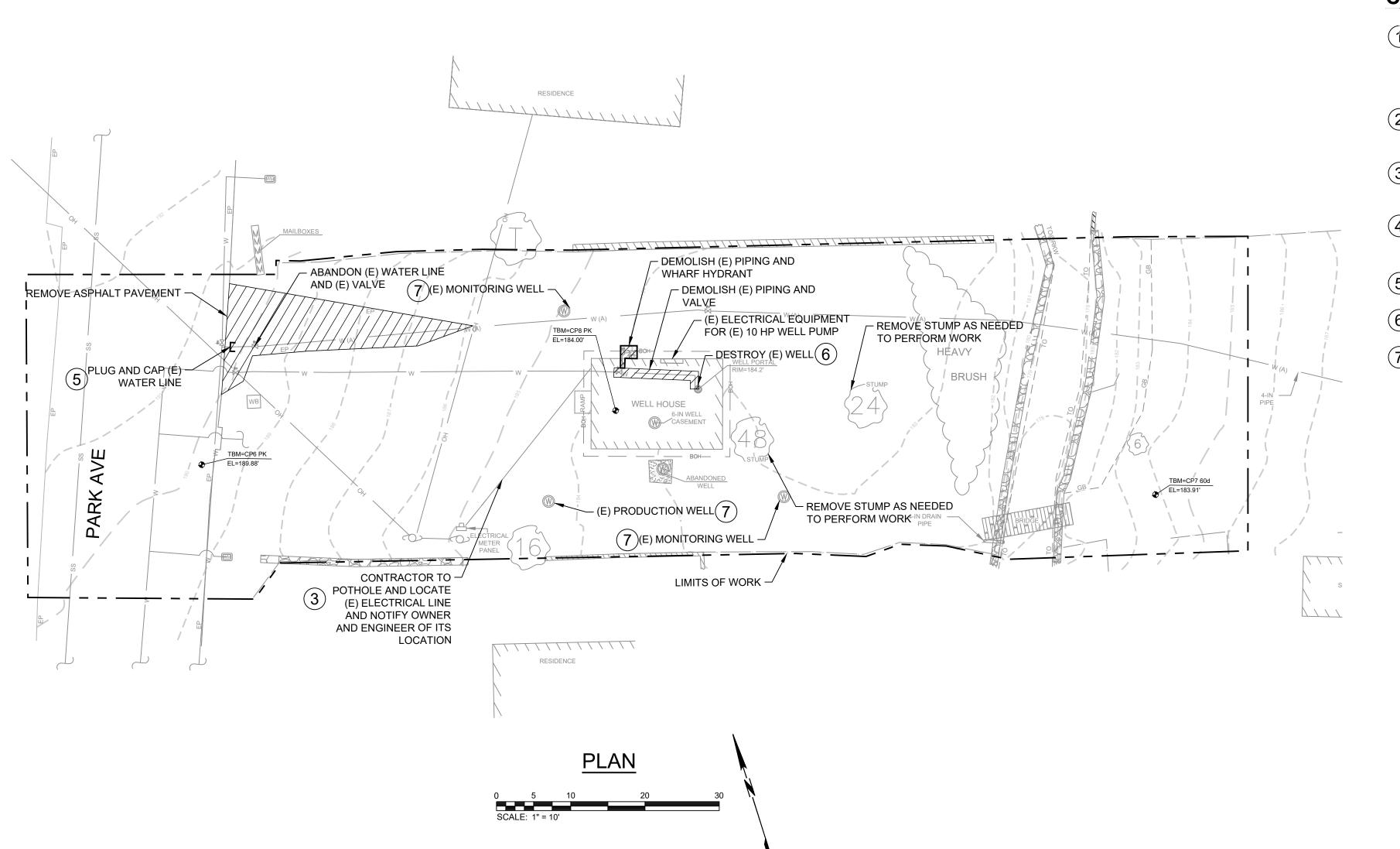
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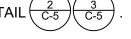
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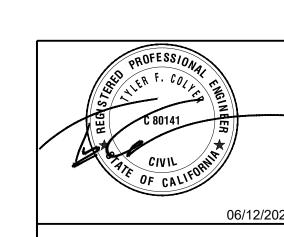


CONSTRUCTION NOTES:

- 1 EXISTING SITE CONDITIONS ARE BASED ON AS-BUILTS AND SITE SURVEY. THE OWNER, ENGINEER, AND DESIGN ENGINEER ARE NOT RESPONSIBLE FOR THE COMPLETENESS, LOCATIONS, OR SIZES SHOWN. CONTRACTOR SHALL POTHOLE TO IDENTIFY AND CONFIRM LOCATIONS OF UTILITIES.
- 2 CONTRACTOR SHALL COORDINATE WITH OWNER ON ACCESS TO PARKING AND LAYDOWN AREA.
- 3 SCHEDULE SHUTDOWN OF UTILITIES, INCLUDING DE-ENERGIZING ELECTRICAL, WITH OWNER PRIOR TO PROCEEDING WITH DEMOLITION.
- REMOVE AND PROPERLY DISPOSE OF DEMOLITION DEBRIS, TRASH, RUBBISH, AND ANY MISCELLANEOUS MATERIALS IN ACCORDANCE WITH THE SPECIFICATIONS.
- (5) CAP AND PLUG INACTIVE WATER PIPES PER DETAIL (2) (3) (2-5)



- 6 ABANDON (E) WELL PER SONOMA COUNTY MUNICIPAL CODE CHAPTER 25B ARTICLE III SEC. 25B-7 AND STATE OF CALIFORNIA REQUIREMENTS.
- 7 PROTECT IN PLACE (E) WELL.



SHEET NUMBER C-1 100% DESIGN / BID SET

PLAN

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AVENUE

AQUIFER STORAGE AND RECOVERY PROJECTION OF THE MOON WATER DISTRICT

CONSTRUCTION NOTES:

- ALL LOCATIONS AND DEPTHS OF (E) UTILITIES ARE APPROXIMATE. THE CONTRACTOR SHALL BE RESPONSIBLE FOR POTHOLING AND VERIFYING SIZES, DEPTHS, AND LOCATIONS OF ALL UTILITIES. ANY CHANGES TO THESE PLANS AND SPECIFICATIONS SHALL BE APPROVED BY THE ENGINEER OR OWNER REPRESENTATIVE.
- 2 CONTRACTOR SHALL PROTECT ALL EXISTING FEATURES LOCATED OUTSIDE OF LIMITS OF WORK.
- CONTRACTOR SHALL INSTALL TEMPORARY FENCING AS NEEDED TO CONTINUOUSLY MAINTAIN SITE SECURITY DURING THE PROJECT. TEMPORARY FENCING SHALL BE 6 FEET HIGH.
- CONTRACTOR SHALL INSTALL PERMANENT 6' TALL REDWOOD SECURITY FENCING AS SHOWN IN THE DRAWING PER SPECIFICATION 02800.
- ALL DUCTILE IRON, PUSH ON OR MECHANICAL JOINT, PIPE SHALL BE CONSTRUCTED WITH A RESTRAINED JOINT (MJ OR PO) WITHIN 3 FEET OF ALL STRUCTURES, BUILDINGS, OR CONCRETE ENCASEMENTS AND AN ACTUAL RESTRAINED JOINT WITHIN 8 FEET.
- 6 AT CONNECTIONS TO EXISTING PIPE, CONTRACTOR SHALL EXPOSE THE EXISTING PIPE (IF BURIED) AND VERIFY LOCATION, INVERT, MATERIAL, AND DIMENSIONS. THE CONTRACTOR SHALL FURNISH ALL NECESSARY COUPLINGS, FITTINGS, APPURTENANCES, TOOLS, AND LABOR TO COMPLETE THE CONNECTIONS WHETHER SPECIFICALLY INDICATED ON THE DRAWINGS OR NOT, AT NO ADDITIONAL COST TO THE OWNER.
- 7 INSTALL NEW VALVE BOX PER DETAIL B2
- (8) INSTALLATION PER SHEETS M-2, M-3, AND M-4.
- (9) CONTROL PANEL AND NITROGEN CANNISTERS TO BE FIELD LOCATED PER DETAIL
- (10) INSTALL FLOW CONTROL VALVE AND CHECK VALVE PER SHEET M-2.
- CONTRACTOR TO INSTALL ASPHALT PAVING IF AUTHORIZED BY OWNER, BETWEEN (11) PARK AVENUE AND FENCE LINES AS SHOWN IN THE DRAWING AND IN ACCORDANCE WITH SONOMA COUNTY SPECIFICATIONS. WHERE POSSIBLE, CONTRACTOR SHALL MATCH (E) GRADES. CONTRACTOR SHALL REMOVE UNSUITABLE (E) MATERIAL TO ENSURE A PROPER PLACEMENT OF THE STRUCTURAL SECTION. CONTRACTOR SHALL INSTALL 3-IN OF ASPHALT CONCRETE OVER 6-IN OF AGGREGATE BASE.
- CONTRACTOR IS RESPONSIBLE FOR ELECTRICAL WORK, INCLUDING, BUT NOT LIMITED TO: UPSIZING OF WIRING AND EQUIPMENT TO ACCOMMODATE A 15 HP PUMP (EXISTING WELL PUMP IS 10 HP), ELECTRICAL WORK REQUIRED FOR INJECTION WELL OPERATION, REQUIRED ELECTRICAL CONDUIT AND WIRING, CONNECTION OF NEW FLOW METERS, PRESSURE TRANSMITTERS, PUMP MOTOR VFD, AND ELECTRICALLY ACTUATED BALL VALVE. CONTRACTOR SHALL PROVIDE ELECTRICAL SHOP DRAWINGS FOR ENGINEER'S FAVORABLE REVIEW. SEE NOTE 26 ON DRAWING G-2.
- CONTRACTOR IS RESPONSIBLE FOR STRUCTURAL DESIGN OF CONCRETE PAD. (13) CONTRACTOR SHALL PROVIDE STRUCTURAL DESIGN SUBMITTALS FOR ENGINEER'S FAVORABLE REVIEW. SEE GENERAL NOTE 25 ON DRAWING G-2. FOR BIDDING PURPOSES, CONTRACTOR TO ASSUME CONCRETE PAD IS 6" THICK OF 5 SACK CEMENT REINFORCED WITH #4 @ 12"OC EACH WAY LOCATED 2" CLEAR FROM TOP OVER 6" CALTRANS CLASS II AGGREGATE BASE COMPACTED TO MINIMUM OF 95 PERCENT AT MAXIMUM DRY DENSITY ON UNDISTURBED SUBGRADE.

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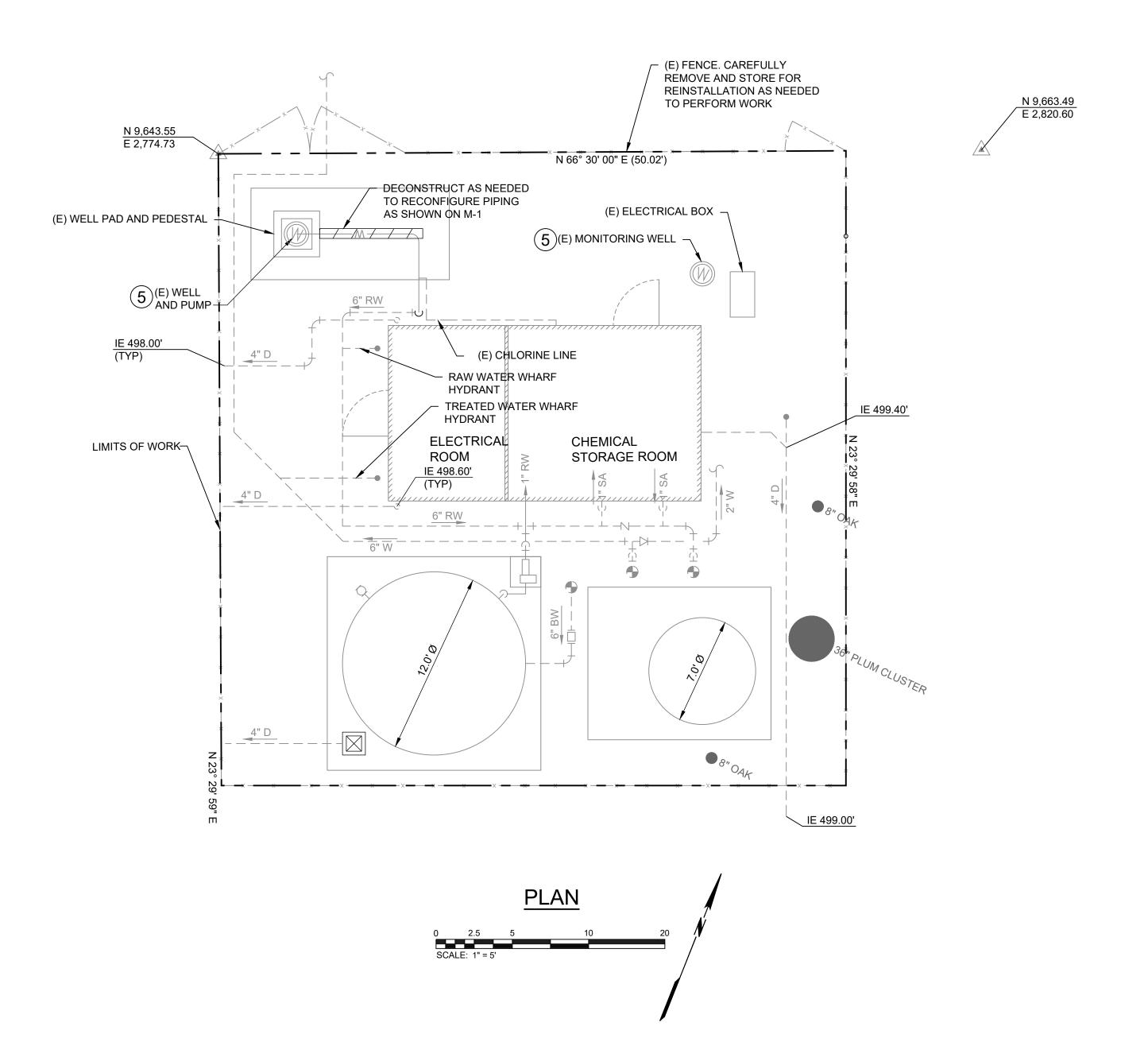
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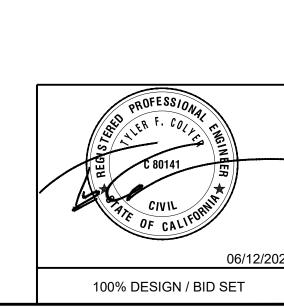
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VERANO AVE



CONSTRUCTION NOTES:

- EXISTING SITE CONDITIONS ARE BASED ON AS-BUILTS. THE OWNER, ENGINEER, AND DESIGN ENGINEER ARE NOT RESPONSIBLE FOR THE COMPLETENESS, LOCATIONS, OR SIZES SHOWN. CONTRACTOR SHALL POTHOLE TO IDENTIFY AND CONFIRM LOCATIONS OF UTILITIES.
- 2 CONTRACTOR SHALL COORDINATE WITH OWNER ON ACCESS TO PARKING AND LAYDOWN AREA.
- 3 SCHEDULE SHUTDOWN OF UTILITIES, INCLUDING DE-ENERGIZING ELECTRICAL, WITH OWNER PRIOR TO PROCEEDING WITH DEMOLITION.
- REMOVE AND PROPERLY DISPOSE OF DEMOLITION DEBRIS, TRASH, RUBBISH, AND ANY MISCELLANEOUS MATERIALS IN ACCORDANCE WITH THE SPECIFICATIONS.
- 5 PROTECT IN PLACE (E) WELL.



AQUIFER STORAGE AND RECOVERY PROJECTEQUIPPING PHASE

VALLEY OF THE MOON WATER DISTRICT

VERANO WELL - EXISTING SITE & DEMOLITION F

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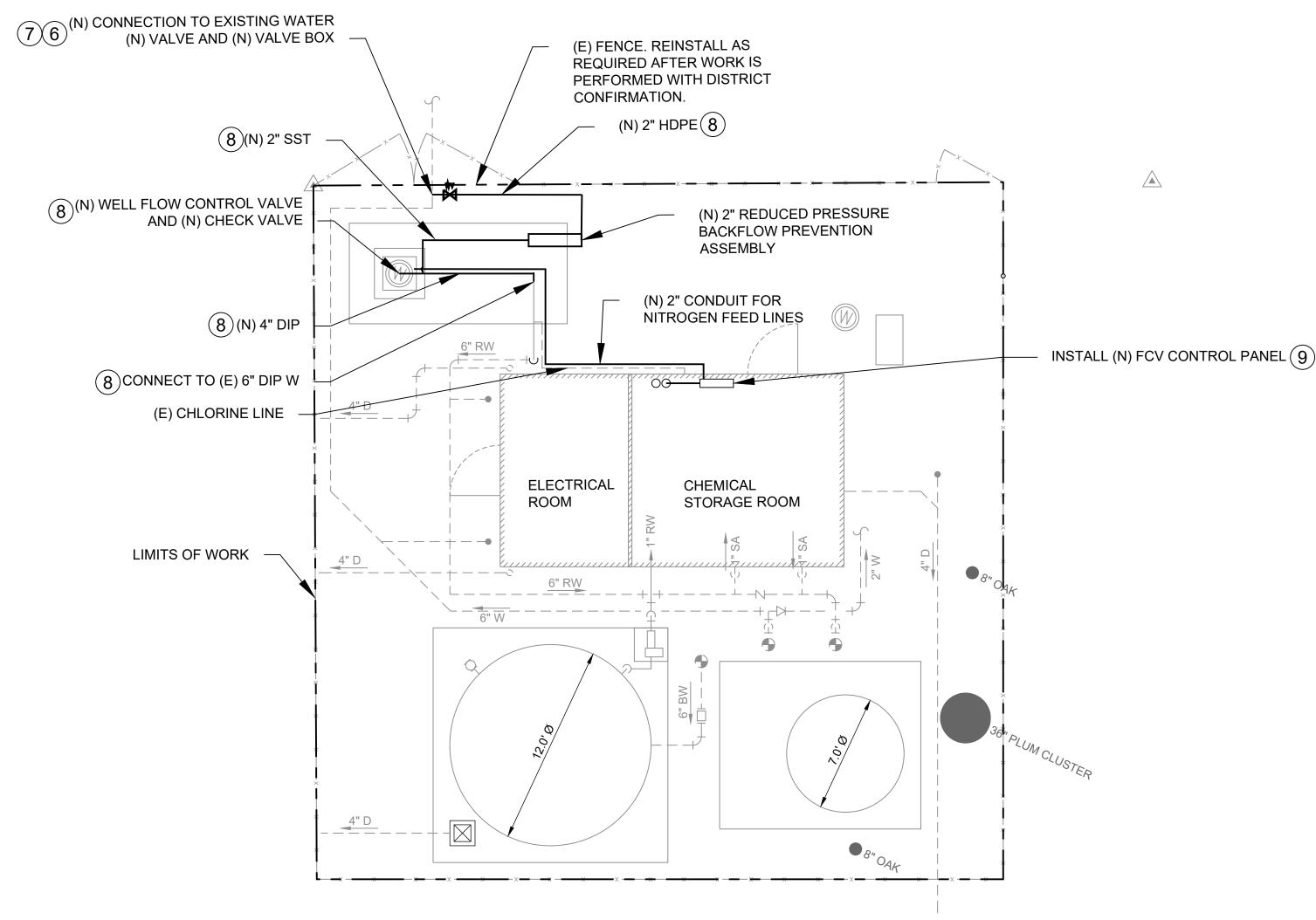
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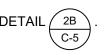
VERANO AVE



CONSTRUCTION NOTES:

- ALL LOCATIONS AND DEPTHS OF (E) UTILITIES ARE APPROXIMATE. THE CONTRACTOR SHALL BE RESPONSIBLE FOR POTHOLING AND VERIFYING SIZES, DEPTHS, AND LOCATIONS OF ALL UTILITIES. ANY CHANGES TO THESE PLANS AND SPECIFICATIONS SHALL BE APPROVED BY THE ENGINEER OR OWNER REPRESENTATIVE.
- 2 CONTRACTOR SHALL PROTECT ALL EXISTING FEATURES LOCATED OUTSIDE OF LIMITS OF WORK.
- CONTRACTOR SHALL INSTALL TEMPORARY FENCING AS NEEDED TO CONTINUOUSLY MAINTAIN SITE SECURITY DURING THE PROJECT. TEMPORARY FENCING SHALL BE 6 FEET HIGH.
- CONTRACTOR SHALL INSTALL PERMANENT CHAIN-LINK SECURITY FENCING AS SHOWN IN THE DRAWING.
- ALL DUCTILE IRON, PUSH ON OR MECHANICAL JOINT, PIPE SHALL BE CONSTRUCTED WITH A RESTRAINED JOINT (MJ OR PO) WITHIN 3 FEET OF ALL STRUCTURES, BUILDINGS, OR CONCRETE ENCASEMENTS AND AN ACTUAL RESTRAINED JOINT WITHIN 8 FEET.
- AT CONNECTIONS TO EXISTING PIPE, CONTRACTOR SHALL EXPOSE THE EXISTING PIPE (IF BURIED) AND VERIFY LOCATION, INVERT, MATERIAL, AND DIMENSIONS. THE CONTRACTOR SHALL FURNISH ALL NECESSARY COUPLINGS, FITTINGS, APPURTENANCES, TOOLS, AND LABOR TO COMPLETE THE CONNECTIONS WHETHER SPECIFICALLY INDICATED ON THE DRAWINGS OR NOT, AT NO ADDITIONAL COST TO THE OWNER.

(7) INSTALL NEW CONNECTION PER DETAIL (2B)



(8) INSTALLATION PER SHEETS M-1.

- 9 CONTROL PANEL AND NITROGEN CANNISTERS TO BE FIELD LOCATED IN COORDINATION WITH OWNER PER DETAIL 1.
- (10) INSTALL FLOW CONTROL VALVE AND CHECK VALVE PER SHEET M-1.
- CONTRACTOR IS RESPONSIBLE FOR ELECTRICAL WORK, INCLUDING, BUT NOT LIMITED TO: ELECTRICAL WORK REQUIRED FOR INJECTION WELL OPERATION, REQUIRED CONDUIT AND WIRING, CONNECTION OF NEW FLOW METERS, ELECTRICALLY CONTROLLED BALL VALVE, AND PRESSURE TRANSDUCERS. CONTRACTOR SHALL PROVIDE ELECTRICAL SHOP DRAWING SUBMITTALS FOR ENGINEER'S FAVORABLE REVIEW. SEE NOTE 26 ON DRAWING G-2.

C-4

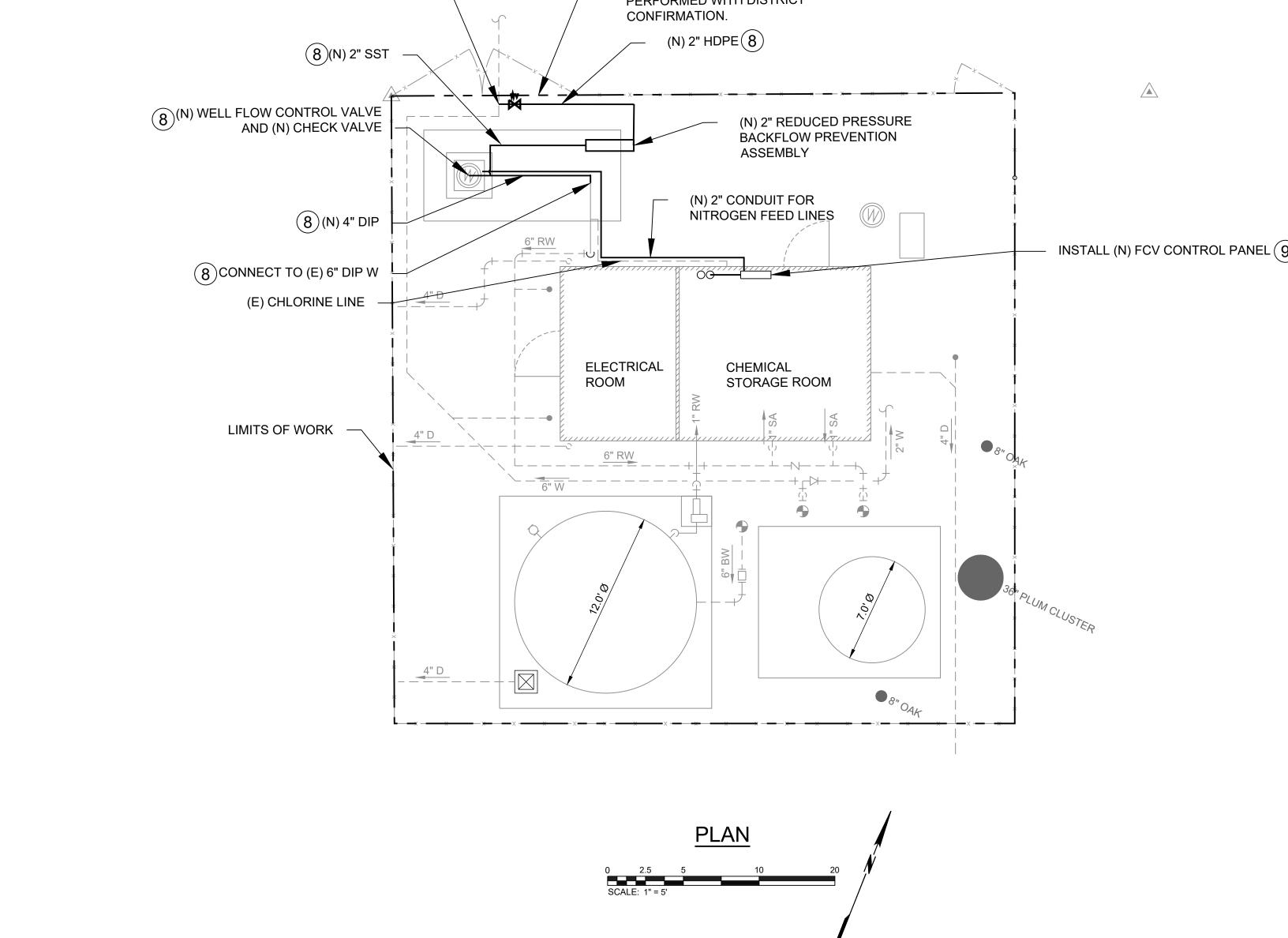
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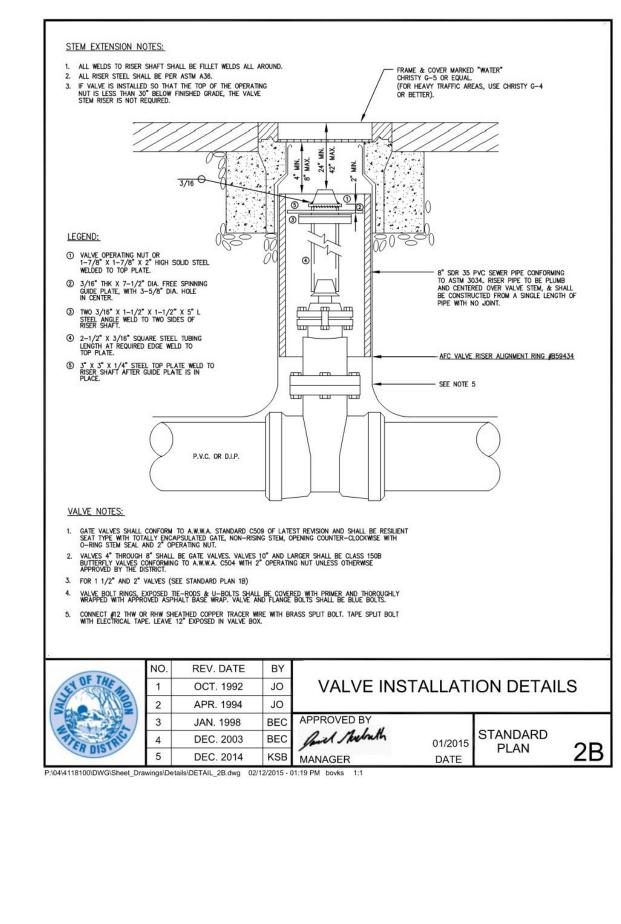
PIPING

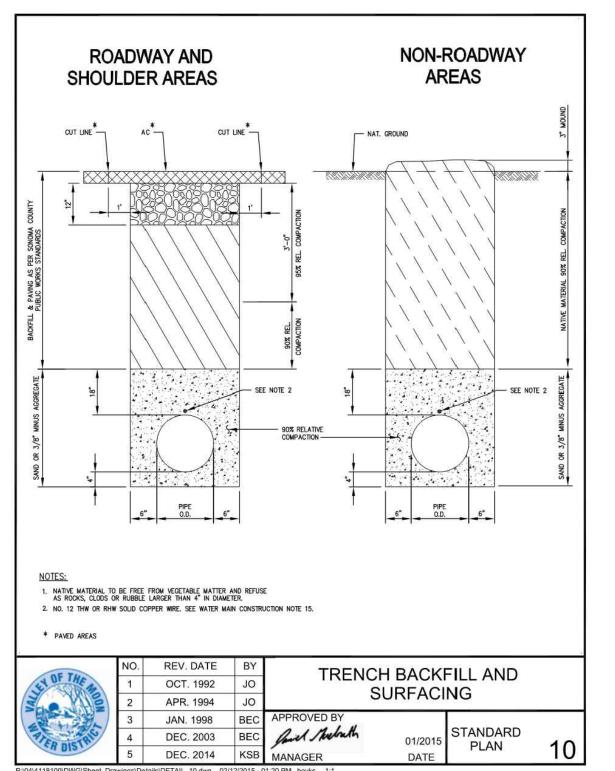
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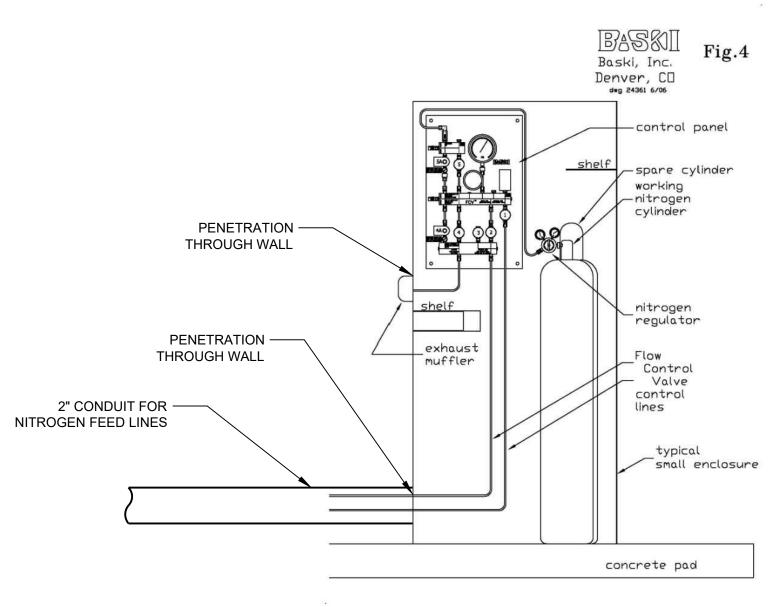
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VALLEY OF THE MOON WATER DISTRICT

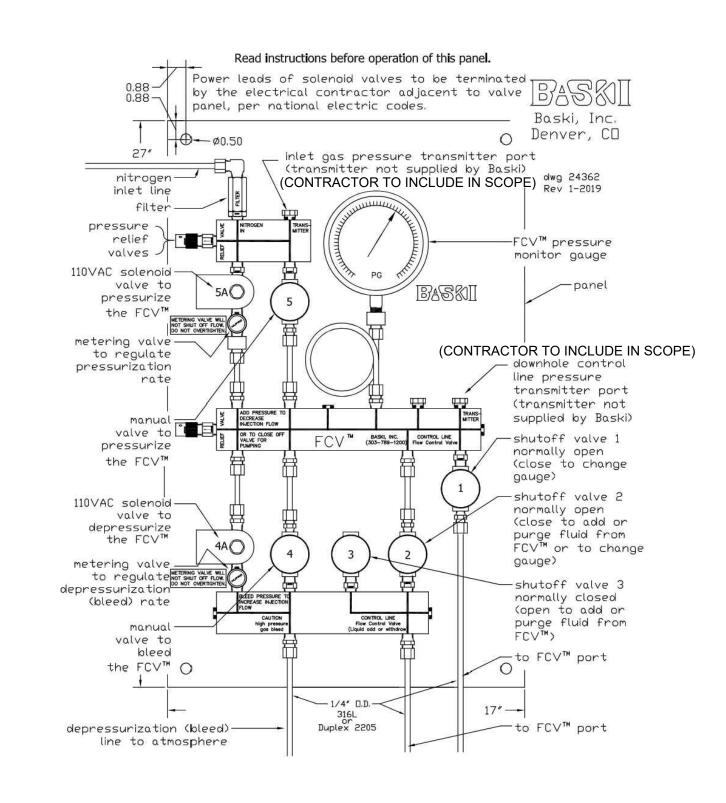
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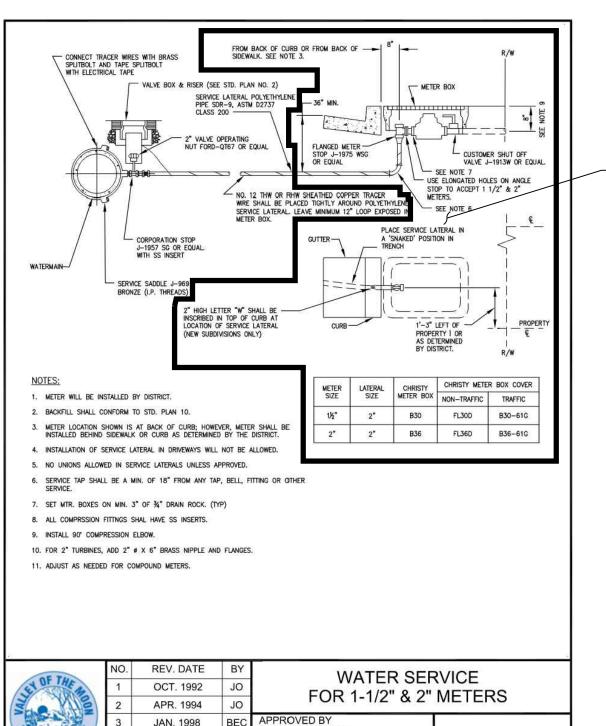


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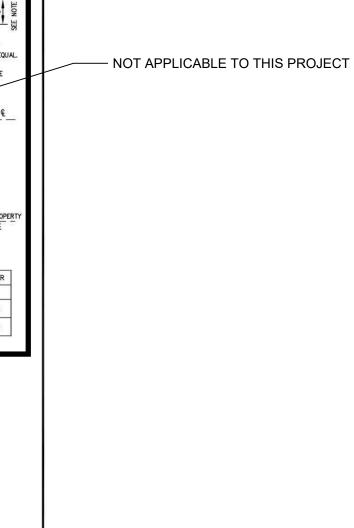


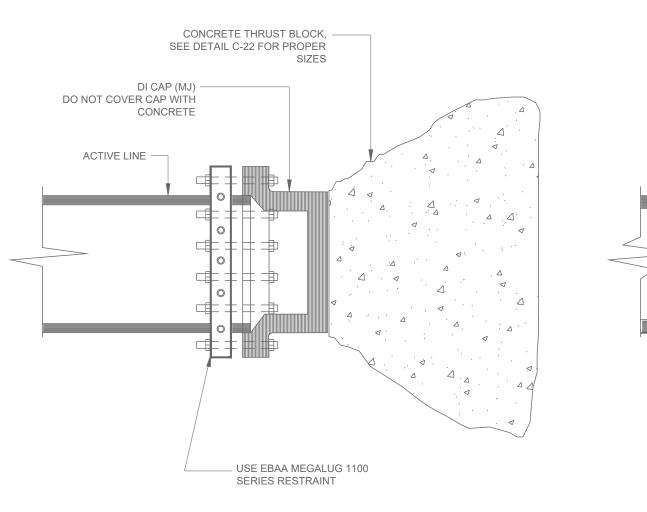
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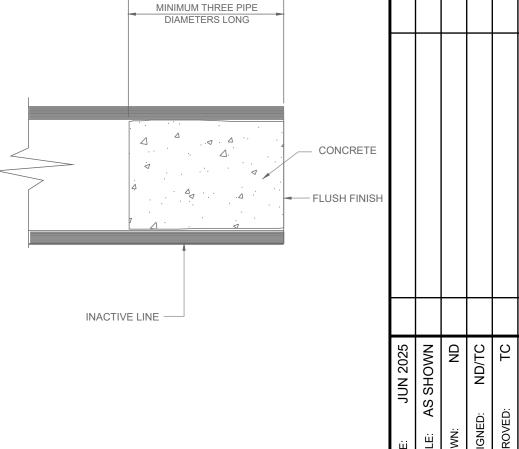
STANDARD

PLAN

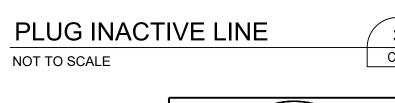
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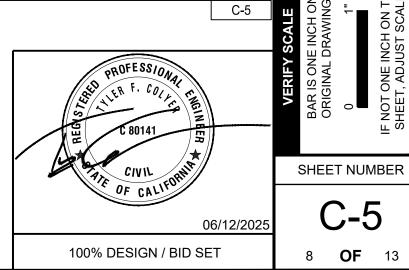


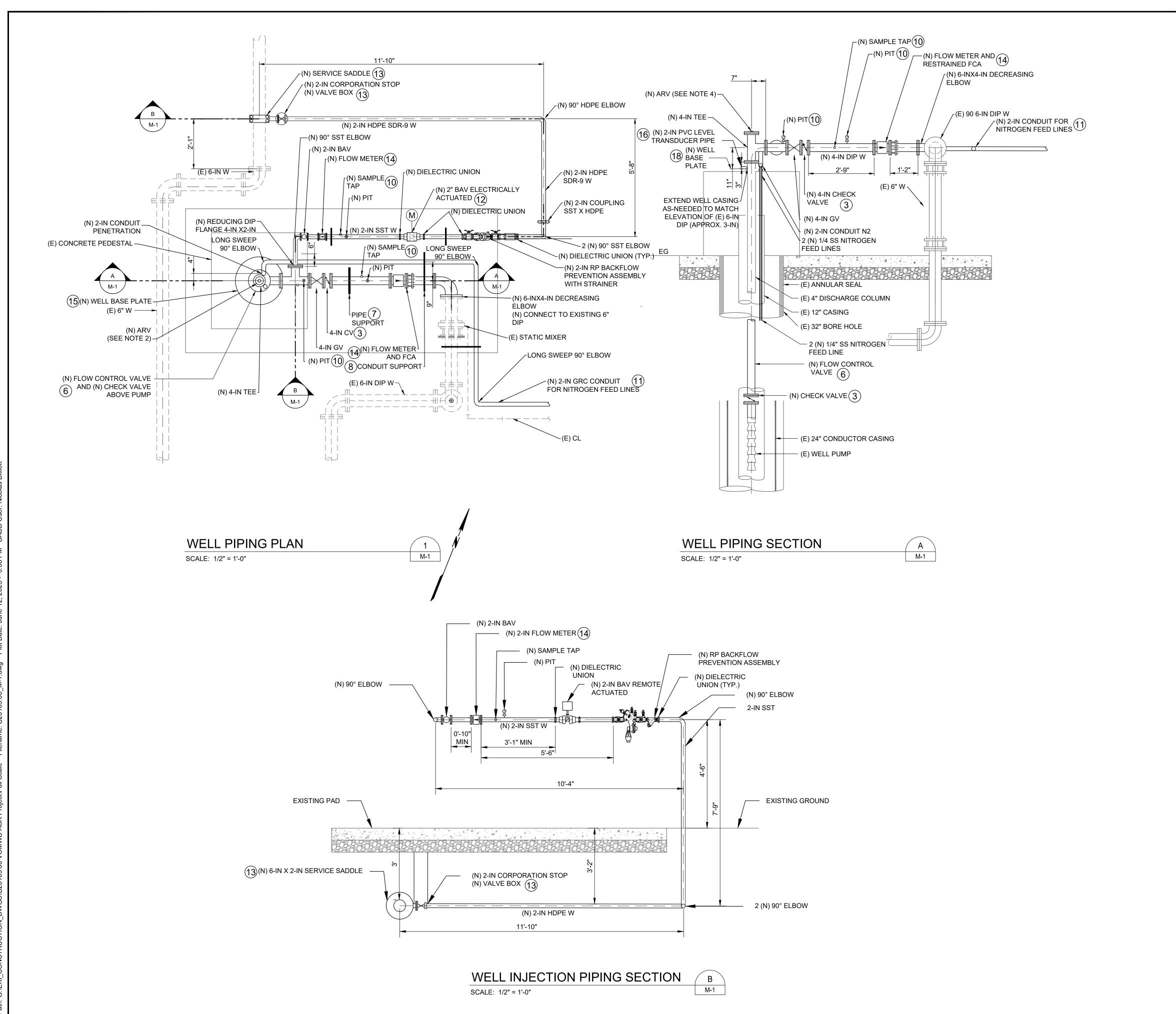












CONSTRUCTION NOTES

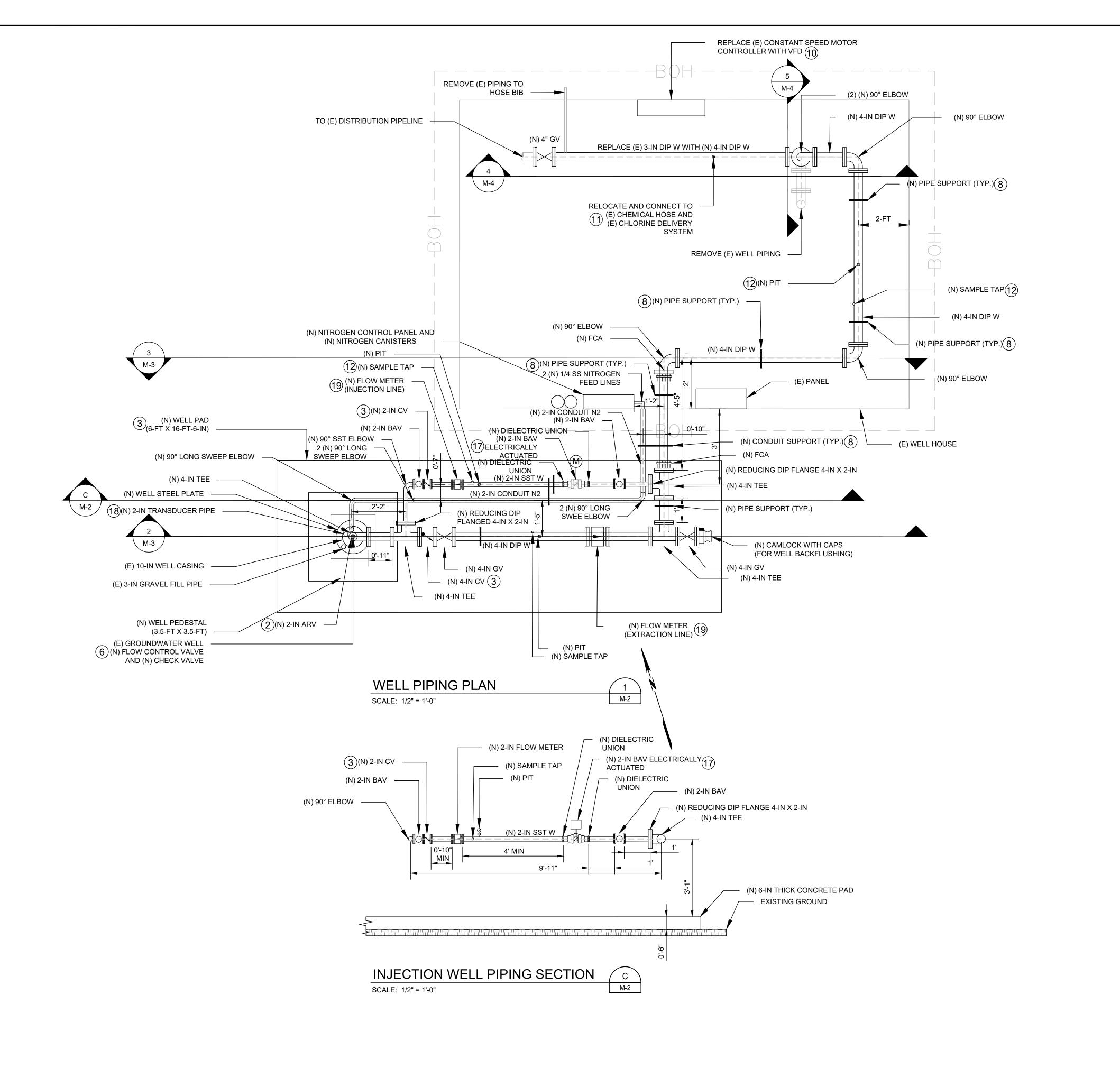
- CONTRACTOR SHALL DESIGN, LOCATE, AND INSTALL ALL PIPE SUPPORTS IN ACCORDANCE WITH STRUCTURAL SPECIFICATIONS AND DRAWINGS.
- INSTALL AIR RELEASE VALVES AS INDICATED. ALL AIR RELEASE VALVES SHALL BE 3/4-INCH UNLESS OTHERWISE NOTED. FOR AIR RELEASE VALVES, SEE DETAIL 4. PROVIDE BOSS FOR PIPE TAPS IN ACCORDANCE WITH AWWA C151. M-5
- CHECK VALVE SHALL BE APCO SERIES 300, 600 OR APPROVED EQUAL.
- FOR PIPE TAPS, PROVIDE 1-INCH TAPS USING BRONZE DOUBLE STRAP SADDLE, IP OUTLET WITH CORP STOP, IPXIP. PROVIDE INSULATING BUSHING AT SADDLE. IF SPECIFIED AS A SAMPLE TAP, PROVIDE 1/2-INCH STAINLESS STEEL THREADED SAMPLING COCK.
- CONTRACTOR SHALL FIELD VERIFY DIMENSIONS, PIPELINE ELEVATIONS, PIPELINE CONNECTIONS, AND INSTALLATION REQUIREMENTS.
- CONTRACTOR SHALL INSTALL FLOW CONTROL VALVE AND ASSOCIATED PIPING PER SPECIFICATION 15160.
- SEE PIPE SUPPORT DETAIL $\begin{pmatrix} 1 \\ M-5 \end{pmatrix}$, DETAIL $\begin{pmatrix} 2 \\ M-5 \end{pmatrix}$, AND CONDUIT SUPPORT DETAIL $\begin{pmatrix} 5 \\ 5 \end{pmatrix}$.
- ALL ABOVE GRADE VALVES SHALL BE EQUIPPED WITH HAND-TURN WHEELS. GATE VALVES SHALL HAVE RISING STEMS.
- CONFIRM SAMPLE TAP AND PIT LOCATIONS WITH DISTRICT PRIOR TO CONSTRUCTION.
- INSTALL NITROGEN CONTROL PANEL, NITROGEN CANISTERS, AND NITROGEN FEED LINES AS SHOWN ON DETAIL 1. ALL CONDUIT SHALL BE
 - LONG SWEEP TO ALLOW PULLING OF NITROGEN FEED LINES.
- ELECTRONIC ACTUATOR SHALL BE HAYWARD SERIES EAU1 OR APPROVED EQUAL AND BE ATTACHED TO BALL VALVE WITH ISO5211 MOUNTING INTERFACE. CONTRACTOR SHALL FIELD ROUTE REQUIRED ELECTRICAL AND WIRING TO ACTUATOR FROM EXISTING BUILDING. CONFIRM FIELD ROUTING WITH DISTRICT PRIOR TO INSTALLATION.
- INSTALL SERVICE SADDLE, CORPORATION STOP, VALVE BOX AND COPPER TRACER WIRE AS SHOWN ON DETAIL 1B
- FLOW METER SHALL BE BADGER MOD-MAG 2M-M2000 OR APPROVED EQUAL.
- (N) WELL PLATE SHALL HAVE PENETRATIONS FOR PUMP POWER, NITROGEN FEED LINES, WATER LEVEL TRANSDUCER PIPE/WELL VENT, AND A SPARE 1-IN DIAMETER OPENING. INSTALL TRANSDUCER PIPE AND WELL VENT AS SHOWN ON DETAIL 6
- ELECTRICAL CONDUIT IS NOT SHOWN AND SHALL BE FIELD ROUTED. CONFIRM FIELD ROUTING WITH DISTRCT PRIOR TO INSTALLATION. ELECTRICAL CONDUIT SHALL BE 2" UNLESS APPROVED BY THE DISTRICT OR ENGINEER OF RECORD.

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SHEET NUMBER M-1



CONSTRUCTION NOTES

- CONTRACTOR SHALL DESIGN, LOCATE, AND INSTALL ALL PIPE SUPPORTS IN ACCORDANCE WITH CONTRACTOR PREPARED STRUCTURAL SPECIFICATIONS AND DRAWINGS.
- INSTALL AIR RELEASE VALVES AS INDICATED. ALL AIR RELEASE VALVES SHALL BE 3/4-INCH UNLESS OTHERWISE NOTED. FOR AIR RELEASE VALVES, SEE DETAIL 4. PROVIDE BOSS FOR PIPE TAPS IN ACCORDANCE WITH AWWA C151. M-5
- CHECK VALVE SHALL BE APCO SERIES 300, 600 OR APPROVED EQUAL.
- FOR PIPE TAPS, PROVIDE 1-INCH TAPS USING BRONZE DOUBLE STRAP SADDLE, IP OUTLET WITH CORP STOP, IPXIP. PROVIDE INSULATING BUSHING AT SADDLE. IF SPECIFIED AS A SAMPLE TAP, PROVIDE 1/2-INCH STAINLESS STEEL THREADED SAMPLING COCK.
- CONTRACTOR SHALL FIELD VERIFY DIMENSIONS, PIPELINE ELEVATIONS, PIPELINE CONNECTIONS, AND INSTALLATION REQUIREMENTS.
- CONTRACTOR SHALL INSTALL FLOW CONTROL VALVE PER SPECIFICATION
- FOR ALL PIPES BELOW AT GRADE SLABS, PROVIDE PIPE CONCRETE **ENCASEMENT**
- SEE PIPE SUPPORT DETAIL $\begin{pmatrix} 1 \\ M-5 \end{pmatrix}$, DETAIL $\begin{pmatrix} 2 \\ M-5 \end{pmatrix}$. NO TOP PIPE STRAP
- ALL ABOVE GRADE VALVES SHALL BE EQUIPPED WITH HAND-TURN WHEELS. GATE VALVES SHALL HAVE RISING STEMS.
- CONTRACTOR SHALL INSTALL A YASKAWA IQPUMP1000 AC DRIVE VFD IN A NEMA ENCLOSURE. CONTRACTOR SHALL VERIFY THE ADEQUACY OF EXISTING ELECTRICAL EQUIPMENT FOR THE PROPOSED VFD AND PERFORM ALL NECESSARY UPGRADES. CONFIRM LOCATION WITH THE DISTRICT.
- RELOCATE AND RECONNECT (E) CHEMICAL HOSE AND (E) CHLORINE DELIVERY SYSTEM. CONFIRM LOCATION WITH THE DISTRICT.
- CONFIRM SAMPLE TAP AND PIT LOCATIONS WITH DISTRICT PRIOR TO
- INSTALL NITROGEN CONTROL PANEL, NITROGEN CANISTERS, AND NITROGEN FEED LINES AS SHOWN ON DETAIL 1. ALL CONDUIT SHALL BE

LONG SWEEP TO ALLOW PULLING OF NITROGEN FEED LINES.

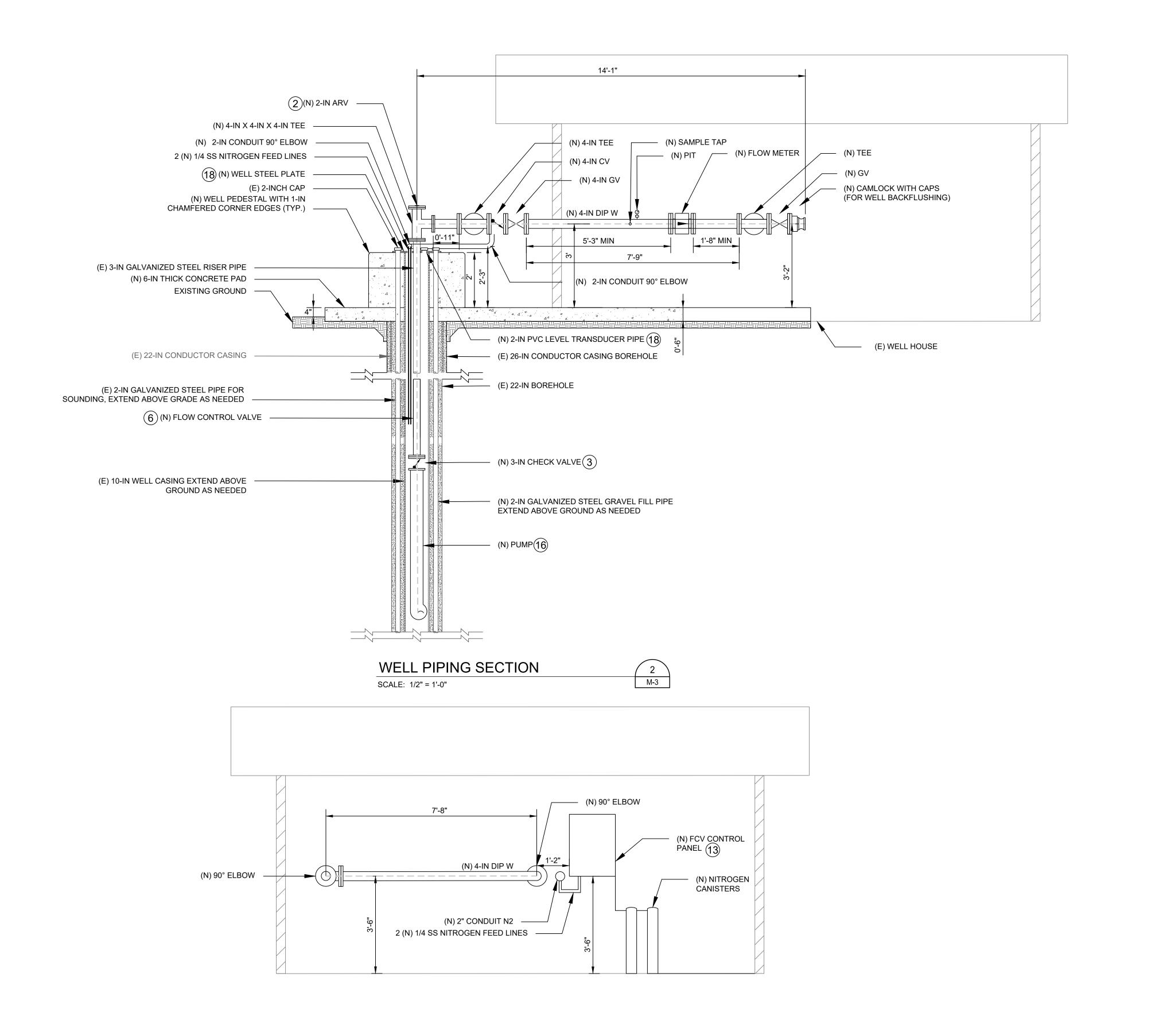
- CONTRACTOR SHALL PROVIDE STRUCTURAL DESIGN SUBMITTAL, FOR FAVORABLE REVIEW BY ENGINEER, FOR THE WELL PEDESTAL AND WELL PAD. SEE DWG G-3, GENERAL NOTE 25.
- REMOVE (E) 90 DEGREE ELBOW AND INSTALL WITH (N) 90 DEGREE ELBOW.
- INSTALL NEW PUMP PER SPECIFICATION 11210.
- ELECTRONIC ACTUATOR SHALL BE HAYWARD SERIES EAU1 OR APPROVED EQUAL AND BE ATTACHED TO BALL VALVE WITH ISO5211 MOUNTING INTERFACE. CONTRACTOR SHALL FIELD ROUTE REQUIRED ELECTRICAL AND WIRING TO ACTUATOR FROM EXISTING BUILDING. CONFIRM FIELD ROUTING WITH DISTRICT PRIOR TO INSTALLATION.
- (N) WELL PLATE SHALL HAVE PENETRATIONS FOR PUMP POWER, NITROGEN FEED LINES, WATER LEVEL TRANSDUCER PIPE/WELL VENT, AND A SPARE 1-IN DIAMETER OPENING. INSTALL TRANSDUCER PIPE AND WELL VENT AS SHOWN ON DETAIL 6
- FLOW METER SHALL BE BADGER MOD-MAG 2M-M2000 OR APPROVED EQUAL.
- FLOW METER SHALL BE BADGER MOD-MAG 2M-M2000 OR APPROVED EQUAL
- ELECTRICAL CONDUIT IS NOT SHOWN AND SHALL BE FIELD ROUTED. CONFIRM FIELD ROUTING WITH DISTRCT PRIOR TO INSTALLATION. ELECTRICAL CONDUIT SHALL BE 2" UNLESS APPROVED BY THE DISTRICT OR ENGINEER OF RECORD.

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SHEET NUMBER M-2 100% DESIGN / BID SET

OF 13



M-3

WELL PIPING SECTION

SCALE: 1/2" = 1'-0"

CONSTRUCTION NOTES

- CONTRACTOR SHALL DESIGN, LOCATE, AND INSTALL ALL PIPE SUPPORTS IN ACCORDANCE WITH CONTRACTOR PREPARED STRUCTURAL SPECIFICATIONS AND DRAWINGS.
- INSTALL AIR RELEASE VALVES AS INDICATED. ALL AIR RELEASE VALVES SHALL BE 3/4-INCH UNLESS OTHERWISE NOTED. FOR AIR RELEASE VALVES, SEE DETAIL 4. PROVIDE BOSS FOR PIPE TAPS IN ACCORDANCE WITH AWWA C151. M-5
- CHECK VALVE SHALL BE APCO SERIES 300, 600 OR APPROVED EQUAL.
- FOR PIPE TAPS, PROVIDE 1-INCH TAPS USING BRONZE DOUBLE STRAP SADDLE, IP OUTLET WITH CORP STOP, IPXIP. PROVIDE INSULATING BUSHING AT SADDLE. IF SPECIFIED AS A SAMPLE TAP, PROVIDE 1/2-INCH STAINLESS STEEL THREADED SAMPLING COCK.
- CONTRACTOR SHALL FIELD VERIFY DIMENSIONS, PIPELINE ELEVATIONS, PIPELINE CONNECTIONS, AND INSTALLATION REQUIREMENTS.
- CONTRACTOR SHALL INSTALL FLOW CONTROL VALVE PER SPECIFICATION
- FOR ALL PIPES BELOW AT GRADE SLABS, PROVIDE PIPE CONCRETE **ENCASEMENT**
- SEE PIPE SUPPORT DETAIL $\begin{pmatrix} 1 \\ M-5 \end{pmatrix}$, DETAIL $\begin{pmatrix} 2 \\ M-5 \end{pmatrix}$. NO TOP PIPE STRAP DETAIL 2. DETAIL 2.
- ALL ABOVE GRADE VALVES SHALL BE EQUIPPED WITH HAND-TURN WHEELS. GATE VALVES SHALL HAVE RISING STEMS.
- CONTRACTOR SHALL INSTALL A YASKAWA IQPUMP1000 AC DRIVE VFD IN A NEMA ENCLOSURE. CONTRACTOR SHALL VERIFY THE ADEQUACY OF EXISTING ELECTRICAL EQUIPMENT FOR THE PROPOSED VFD AND PERFORM ALL NECESSARY UPGRADES. CONFIRM LOCATION WITH THE DISTRICT.
- RELOCATE AND RECONNECT (E) CHEMICAL HOSE AND (E) CHLORINE DELIVERY SYSTEM. CONFIRM LOCATION WITH THE DISTRICT.
- CONFIRM SAMPLE TAP AND PIT LOCATIONS WITH DISTRICT PRIOR TO
- INSTALL NITROGEN CONTROL PANEL, NITROGEN CANISTERS, AND NITROGEN FEED LINES AS SHOWN ON DETAIL 1. ALL CONDUIT SHALL BE

LONG SWEEP TO ALLOW PULLING OF NITROGEN FEED LINES.

- CONTRACTOR SHALL PROVIDE STRUCTURAL DESIGN SUBMITTAL, FOR FAVORABLE REVIEW BY ENGINEER, FOR THE WELL PEDESTAL AND WELL PAD. SEE DWG G-3, GENERAL NOTE 25.
- REMOVE (E) 90 DEGREE ELBOW AND INSTALL WITH (N) 90 DEGREE ELBOW.
- INSTALL NEW PUMP PER SPECIFICATION 11210.
- ELECTRONIC ACTUATOR SHALL BE HAYWARD SERIES EAU1 OR APPROVED EQUAL AND BE ATTACHED TO BALL VALVE WITH ISO5211 MOUNTING INTERFACE. CONTRACTOR SHALL FIELD ROUTE REQUIRED ELECTRICAL AND WIRING TO ACTUATOR FROM EXISTING BUILDING. CONFIRM FIELD ROUTING WITH DISTRICT PRIOR TO INSTALLATION.
- (N) WELL PLATE SHALL HAVE PENETRATIONS FOR PUMP POWER, NITROGEN FEED LINES, WATER LEVEL TRANSDUCER PIPE/WELL VENT, AND A SPARE 1-IN DIAMETER OPENING. INSTALL TRANSDUCER PIPE AND WELL VENT AS SHOWN ON DETAIL 6
- FLOW METER SHALL BE BADGER MOD-MAG 2M-M2000 OR APPROVED EQUAL.
- FLOW METER SHALL BE BADGER MOD-MAG 2M-M2000 OR APPROVED EQUAL.
- ELECTRICAL CONDUIT IS NOT SHOWN AND SHALL BE FIELD ROUTED. CONFIRM FIELD ROUTING WITH DISTRCT PRIOR TO INSTALLATION. ELECTRICAL CONDUIT SHALL BE 2" UNLESS APPROVED BY THE DISTRICT OR ENGINEER OF RECORD.

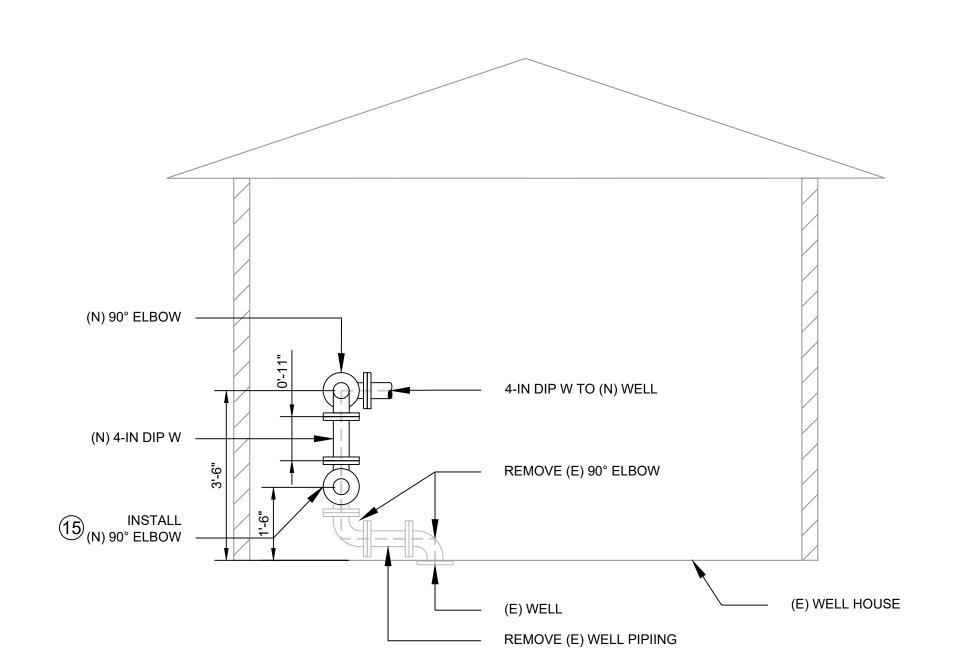
NOL AND F RA P

OF 13

100% DESIGN / BID SET

SHEET NUMBER M-3

WELL PIPING SECTION PLAN - NORTH WALL 4 M-4 SCALE: 1/2" = 1'-0"

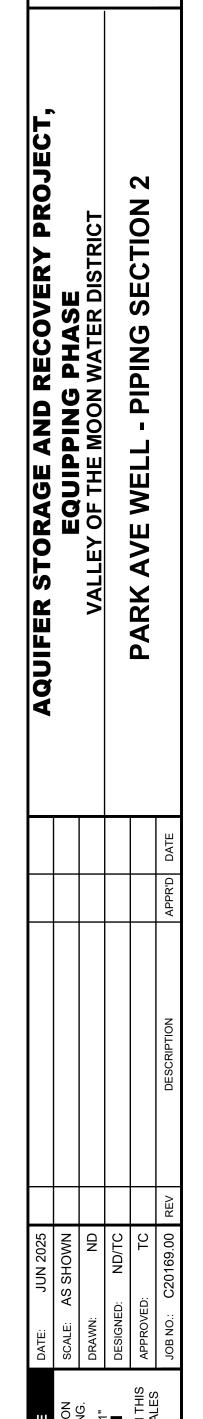


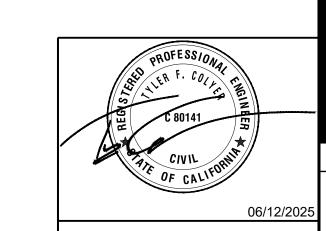
WELL PIPING SECTION PLAN - EAST WALL SCALE: 1/2" = 1'-0"



CONSTRUCTION NOTES

- CONTRACTOR SHALL DESIGN, LOCATE, AND INSTALL ALL PIPE SUPPORTS IN ACCORDANCE WITH CONTRACTOR PREPARED STRUCTURAL SPECIFICATIONS AND DRAWINGS.
- FOR ALL PIPES BELOW AT GRADE SLABS, PROVIDE PIPE CONCRETE ENCASEMENT
 - SEE PIPE SUPPORT DETAIL (1), DETAIL (2). NO TOP PIPE STRAP DETAIL 2. DETAIL 2.
- ALL ABOVE GRADE VALVES SHALL BE EQUIPPED WITH HAND-TURN WHEELS. GATE VALVES SHALL HAVE RISING STEMS.
- RELOCATE AND RECONNECT (E) CHEMICAL HOSE AND (E) CHLORINE DELIVERY SYSTEM. CONFIRM LOCATION WITH THE DISTRICT.
- REMOVE (E) 90 DEGREE ELBOW AND INSTALL WITH (N) 90 DEGREE ELBOW.

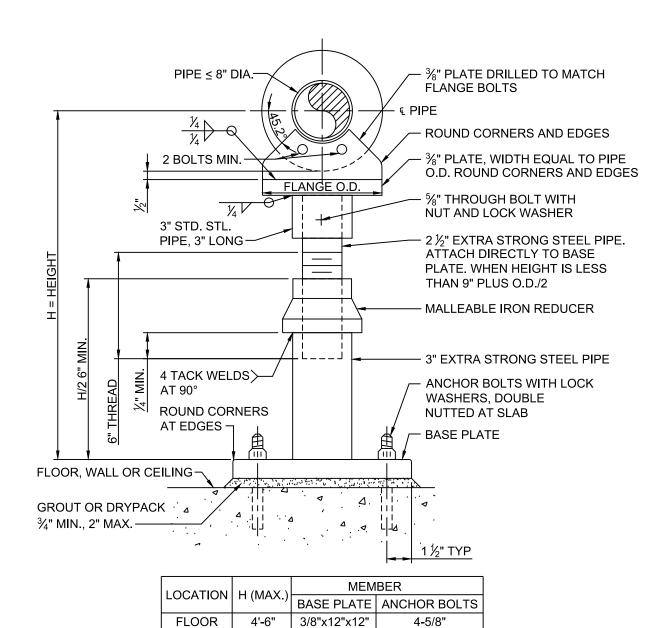




SHEET NUMBER

12 **OF** 13

100% DESIGN / BID SET



. AS AN ALTERNATE, IF ADJUSTMENT IS NOT NECESSARY, DELETE 2 ½" PIPE AND REDUCER AND WELD 3" STEEL PIPE DIRECTLY TO %" PLATE ATTACHED TO PIPE FLANGE.

2. DO NOT CUT OR WELD AFTER GALVANIZING. 3. PIPE SUPPORT MAY BE ORIENTED IN ANY DIRECTION.

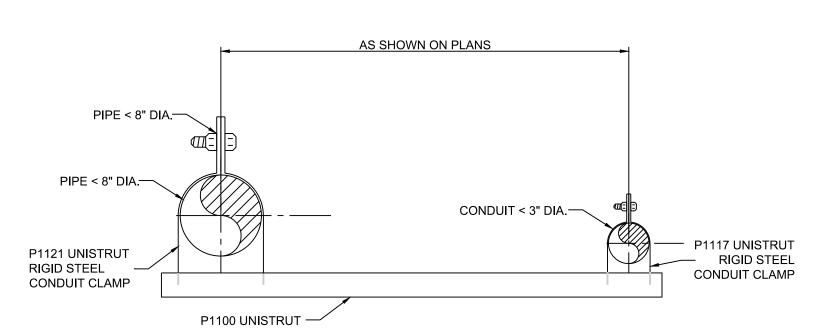
CEILING | 4'-0" | 5/8"x12"x12" |

WALL 1'-6" 5/8"x12"x12"



4-3/4"

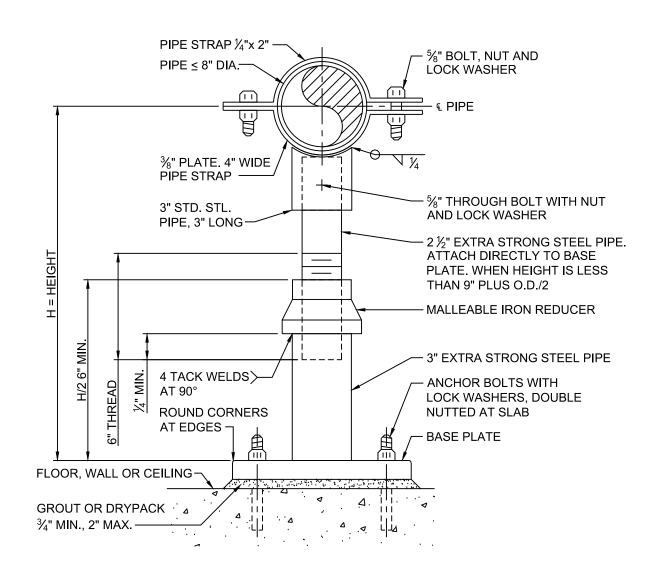
4-3/4"



. CONDUIT SUPPORT MAY BE ORIENTED IN ANY DIRECTION. 2. INSTALL UNISTRUT CONDUIT CLAMP AND UNISTRUT STRUT PER

MANUFACTURER'S SPECIFICATIONS.



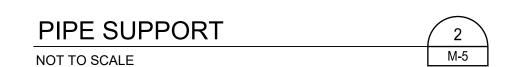


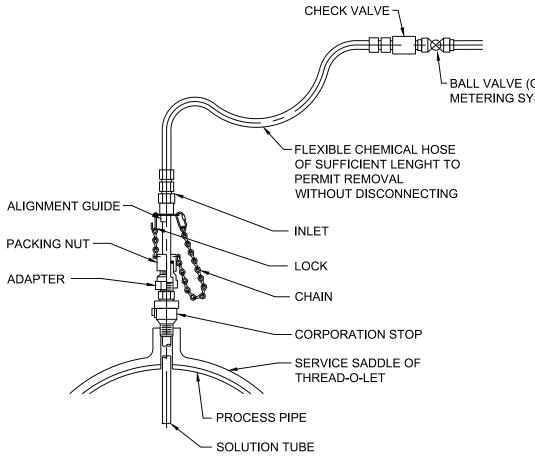
	LOCATION	H (MAX.)	MEMBER	
			BASE PLATE	ANCHOR BOLTS
	FLOOR	4'-6"	3/8"x12"x12"	4-5/8"
	CEILING	4'-0"	5/8"x12"x12"	4-3/4"
	WALL	1'-6"	5/8"x12"x12"	4-3/4"

1. AS AN ALTERNATE, IF ADJUSTMENT IS NOT NECESSARY, DELETE 2 $\frac{1}{2}$ " PIPE AND REDUCER AND WELD 3" STEEL PIPE DIRECTLY TO BOTTOM OF STRAP.

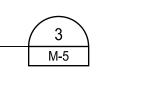
2. DO NOT CUT OR WELD AFTER GALVANIZING. 3. PIPE SUPPORT MAY BE ORIENTED IN ANY DIRECTION.

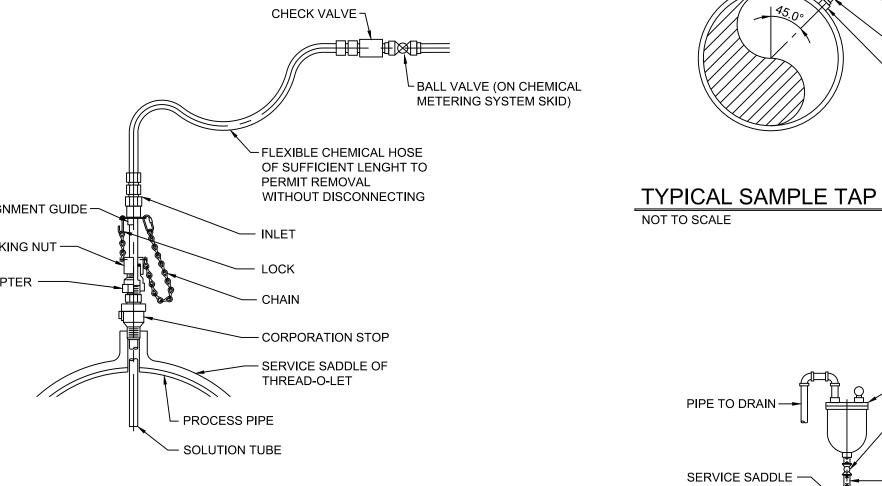
4. FOR USE IN CORROSIVE ENVIRONMENTS, SUPPORTS AND APPARATUSES SHALL BE TYPE 316 STAINLESS STEEL.

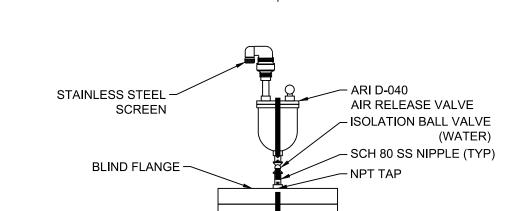












1/2" BALL VALVE —

STEEL PIPE -





M-5

— 1/4" SS SAMPLING

— 1/2" SS NIPPLE

-AIR RELEASE VALVE

- ISOLATION BALL VALVE (WATER) OR PLUG

VALVE (WASTEWATER)

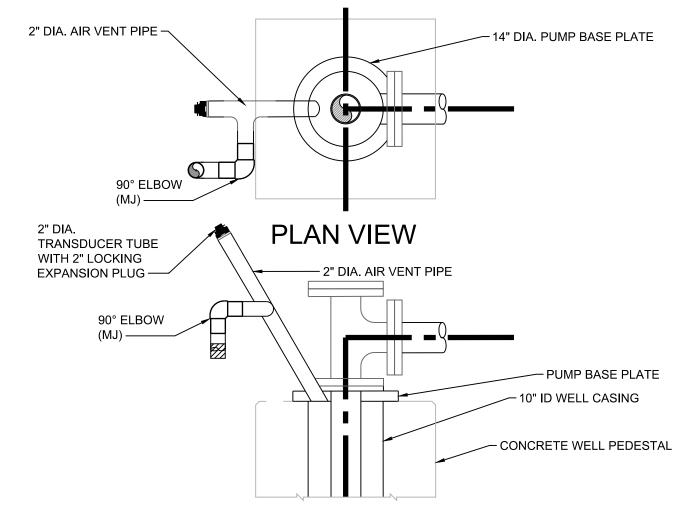
- SCH 80 GS NIPPLE (TYP)

1/2" X 1/4" SS ADAPTER

— 1/2" NPT THREAD-O-LET

∖ D-1

PORT

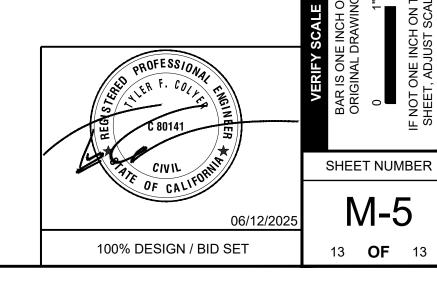


PROFILE VIEW

- 1. BUG SCREENS SHALL BE PLACED ON AIR VENT PIPE.
- 2. BASE PLATE, GRAVEL FEED FILL PIPE, AND DISCHARGE ASSEMBLY NOT SHOWN.
- 3. TRANSDUCER/WELL VENT ASSEMBLY SHALL BE WELDED TO THE BASE PLATE DESIGN SHALL BE IN CONFORMANCE WITH ALL APPLICABLE CODES AND REGULATIONS AS LISTED IN SPECIFICATIONS.







RECOVERY PROJECT S PHASE N WATER DISTRICT STORAGE AND R EQUIPPING I

DOCUMENT 00 0101

PROJECT MANUAL

ISSUED FOR BID

for

AQUIFER STORAGE AND RECOVERY EQUIPPING PHASE

VALLEY OF THE MOON WATER DISTRICT

Prepared For: Valley of the Moon Water District 19039 Bay Street Sonoma, CA 95476

Prepared By:



Date: **12 June 2025**

EKI Environment & Water, Inc. 2001 Junipero Serra Boulevard, Suite 300 Daly City, California 94014 (EKI C20169.00)

Advertisement Date: June 17th, 2025

Bid Date: July 24th, 2025

SECTION "A"

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SECTION "B"

NOTICE TO BIDDERS

AQUIFER STORAGE AND RECOVERY EQUIPPING PHASE APRIL 2025 VALLEY OF THE MOON WATER DISTRICT SONOMA COUNTY, CALIFORNIA

The Valley of the Moon Water District, El Verano, California will receive sealed Bids for furnishing all materials, equipment, plant and labor and constructing completely the improvements described below, at the District's office located at 19039 Bay Street, Sonoma, CA, 95476 on or before 2:00 p.m. on Thursday, July 24th, 2025. The physical address for parcel delivery is as shown above. Mailed bids shall be addressed to Valley of the Moon Water District, P.O. Box 280, El Verano, CA 95433-0280 and must be received at the District office on or before 2:00 p.m. on Thursday, July 24th, 2025. Bids will be publicly opened, examined and declared on said day and hour and referred to and considered by the Board of Directors, at its next meeting. Bids shall be endorsed on the outside of the sealed containers as follows:

AQUIFER STORAGE AND RECOVERY
EQUIPPING PHASE
APRIL 2025
VALLEY OF THE MOON WATER DISTRICT
SONOMA COUNTY, CALIFORNIA

Ву		
	Bidder	

Bids shall be submitted on the Bid Forms included in the Contract documents without removal therefrom.

An <u>optional</u> site tour will be held on Tuesday, July 8th, 2025 at 1:00 PM, beginning at the District office, if requested by any Contractors. Contractors who would like to attend the site tour shall RSVP by e-mailing <u>customerservice@vomwd.com</u> at least 24-hours in advance of the tour. No other site tours will be scheduled; bidders are not required to attend the tour. However, no allowance will be made for any unfavorable conditions or events which might have been foreseen from a thorough examination of the site by Contractor. Answers to significant questions received by Thursday, July 17th, 2025 by 4:00 PM will be distributed in an Addendum. These questions shall be submitted in writing to the following email address: <u>customerservice@vomwd.com</u> with your name, address, phone, fax, and email address.

Each bid shall conform and be responsive to this invitation and the specifications and all other documents comprising the pertinent contract documents. The bid documents may be reviewed at no cost through the District's website at https://www.vomwd.org/bids. If you wish to receive any

possible future addenda for this project, please email <u>customerservice@vomwd.com</u> with your name, address, phone, fax, and email address.

Each bid shall be accompanied by a certified or cashier's check payable to the Valley of the Moon Water District, or a satisfactory bid bond in favor of the Valley of the Moon Water District, executed by the bidder as principal, and a satisfactory surety company as surety, in an amount not less than 10% of the maximum amount of the bid. The check or bid bond shall be given as a guarantee that the bidder shall execute the contract, if awarded to contractor, in conformity with the contract documents and shall provide the statutory performance bond and labor and material bond for 100% of the contract price, conditioned upon the faithful performance of said contract, said bonds to be provided within ten (10) days after notification of the award of the contract to the bidder.

The work to be performed under this contract consists of furnishing all labor, materials and equipment for:

Park Well Site

- 1. Destroying one (1) existing production well
- 2. Installation of one (1) new submersible pump and flow control valve
- 3. Installation of new water injection and conveyance piping, and appurtenances
- 4. Installation of new electrical and controls equipment
- 5. Final design and installation of new concrete well pad
- 6. Installation of site fencing

Verano Well Site

- 1. Installation of one (1) new flow control valve
- 2. Installation of new water injection and conveyance piping, and appurtenances
- 3. Installation of new electrical and controls equipment

The work will include, but is not limited to site preparation, potholing, demolishing existing piping and valves, installing new piping and valves, disinfection, and/or other work as necessary to complete the project as described in the Plans and Specifications.

The following changes have been made to the work requirements: An electrical design stamped by an Engineer is no longer required (shop drawings and submittals are still required); Contractor shall have either a Class C57 license or Class A license to perform the work required; and well pad design for bidding purposes have been included in the attached plans (a structural engineer stamped design is still required).

A portion of this project is using funds from a source outside the District. The additional funding source is the Department of Water Resources Urban and Multi benefit Drought Relief Grant. Information regarding the funding source is detailed in Appendix A, including materials and forms related to the grant, and supplemental conditions and other contract language that are included as part of the contract. Note that the forms included in Appendix A.1 are required to be submitted with the Contractor's bid.

Pursuant to Section 1720 et seq. and 1770 et seq., of the Labor Code of the State of California, the successful bidder shall pay not less than the prevailing rate of per diem wages as determined by the Directors of the California Department of Industrial Relations. Copies of such prevailing rate of per diem wages are on file at the District's office located at 19039 Bay Street, Sonoma, CA, where copies will be made available during normal working hours to any interested party on request, or Bidders may obtain prefer to obtain the current prevailing rate of per diem wages via the Internet at www.dir.ca.gov/DLSR/ to which reference is hereby made for further particulars. Said prevailing rate of per diem wages shall be made available to any interested party on request. The successful bidder shall post a copy of such determinations at the job site.

Notice is further given that pursuant to Section 22300 of the California Public Contract Code, Contractor is permitted to substitute securities for any monies withheld by the District to ensure performance under a contract. At the request and expense of Contractor, securities in the fair market value equivalent to the amount withheld, and meeting the requirements of said Public Contract Code Section 22300, shall be deposited with the District, or with a State or Federally chartered bank as the escrow agent, who shall then pay such monies to Contractor. Contractor shall have the obligation of ensuring that such securities deposited are sufficient so as to maintain, in total fair market value, an amount equal to the cash amount of the sums to be withheld under the Contract. if, upon written notice from the District, or from the appropriate escrow agent, indicating that the fair market value of the securities has dropped below the dollar amount of moneys to be withheld by the District to ensure performance, Contractor shall, within five (5) days of the date of such notice, post additional securities as necessary to ensure that the total fair market value of all such securities held by the District, or in escrow, is equivalent to the amount of money to be withheld by the District under the Contract. Upon satisfactory completion of the contract, the securities shall be returned to Contractor. Securities eligible for investment shall include those listed in Section 16430 of the California Government Code or bank or savings and loan certificates of deposit. Contractor shall be the beneficial District of any securities substituted for monies withheld and shall receive any interest thereon. Any Contractor wishing to exercise its option to substitute securities shall give notice in writing to District, and shall thereafter execute an escrow agreement in a form to be provided by the District.

Said Board of Directors reserves the right to reject any or all bids and to determine which bid is the lowest responsive bid of a responsible bidder. The Board of Directors also reserves the right to waive any informalities not material to cost of performance in the said bids or bids. The low bid will be based on the total bid.

No bidder may withdraw their bid for a period of sixty (60) days after the date set for the opening of bids except as provided by law and described in INFORMATION FOR AND INSTRUCTIONS TO BIDDERS.

DATED: This	day of	, 2025
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Valley of the Moon Water District, a Public Corporation of the State of California

By	
•	GENERAL MANAGER

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SECTION "C"

INFORMATION FOR AND INSTRUCTIONS TO BIDDERS

AQUIFER STORAGE AND RECOVERY EQUIPPING PHASE APRIL 2025 VALLEY OF THE MOON WATER DISTRICT SONOMA COUNTY, CALIFORNIA

LOCATION AND EXTENT OF WORK

The project is located within the County of Sonoma at 17128 Park Ave, Sonoma, CA 95476, and at the Verano Avenue site at 1032 Verano Avenue, Sonoma, CA 95476.

The work to be performed under this contract includes:

Park Well Site

- 1. Destroying one (1) existing production well
- 2. Installation of one (1) new submersible pump and flow control valve
- 3. Installation of new water injection and conveyance piping, and appurtenances
- 4. Installation of new electrical and controls equipment
- 5. Final design and installation of new concrete well pad
- 6. Installation of site fencing

Verano Well Site

- 1. Installation of one (1) new flow control valve
- 2. Installation of new water injection and conveyance piping, and appurtenances
- 3. Installation of new electrical and controls equipment

The work will include, but is not limited to site preparation, potholing, demolishing existing piping and valves, installing new piping and valves, disinfection, and/or other work as necessary to complete the project as described in the Plans and Specifications.

CONDITION OF BID

All Bids must be made on the blank Form of Bid prepared by the District without removal from the bound Contract Documents and must give the unit price of each item and the unit price extended to total, opposite each of the items which are called for in the Form of Bid.

The District reserves the right to reject any or all Bids or to accept any Bid if it considers it to be of advantage to do so. The District further reserves the right to increase or decrease the amount of any class or portion of the work. The District also reserves the right to waive any informalities not material to cost of performance in said Bids or Bids.

The price or prices bid must include all work and all materials of every kind or class as specified or shown on the Drawings or reasonably understood as included in a Contract of this nature. The Bidder must consider the cost of all such work and materials, do all the work involved in executing the Contract in a satisfactory and workmanlike manner, and allow for all such costs under whatever items they consider appropriate. It is the desire of the District to secure a complete and proper performance of the Contract, and Bidders must make their Bids with this understanding, and the prices bid must fully recognize this requirement. Consistent with this paragraph, all Bidders are hereby expressly warned that they must expect to furnish equipment which shall exactly fulfill the requirements of the Specifications and comply with the details shown on the Drawings.

The Bid must be signed by the Bidder with its business address. In signing the Bid, the Bidder shall give the individual as well as the firm or corporate name, as hereinafter provided for in the Bid. Bidders are warned against making erasures or alterations of any kind. Bids, which contain omissions, erasures, conditions, alterations, or additions, not called for, additional Bids or irregularities of any kind may be rejected as not responsive to this invitation to bid.

BIDDERS ABILITY

Each Bidder must be skilled and regularly engaged in the general class or type of work called for under this Contract. It is the intention of the District to award the Contract only to a bidder who has the requisite experience and ability in this class of work, and has sufficient capital, facilities, and plant to enable them to prosecute it successfully and promptly and to complete it within the time named in the Contract. The Bidder is required to establish to the satisfaction of the District the reliability and responsibility of the persons or entities proposed to furnish and perform the work described by submitting the form entitled EXPERIENCE QUALIFICATIONS. In determining the degree of responsibility to be credited to a Bidder, the District will weigh any definite evidence that the Bidder or personnel guaranteed to be employed in responsible charge of performance of the Contract has satisfactorily performed other contracts of like nature and magnitude or comparable difficulty at similar rates of progress. Bidders must submit such evidence with their Bids.

SITE TOUR LIMITATIONS

An optional pre-bid meeting and site tour will be held on Tuesday, July 8th, 2025 at 1:00 PM at the District office located at 19039 Bay Street, Sonoma, CA, 95476. No other site tours will be scheduled; Bidders are required to inspect the site of the work to satisfy themselves by personal examination, or by such other means as they may prefer, of the location of the proposed work and of the actual conditions, including subsurface of and at the site of work, and are not required to attend the tour. If, during the course of its examination, a bidder finds facts or conditions which appear to be in conflict with the letter or spirit of the bidding documents, the bidder may apply to the District, in writing, for additional information and explanation before submitting its bid.

Answers to significant questions will be distributed in an Addendum. However, the information provided by the District is not intended to be a substitute for, or a supplement to, the independent verification by the bidder to the extent such independent investigation of site conditions is deemed necessary or desirable by the bidder.

Submission of a bid by the bidder shall constitute conclusive evidence that, if awarded the Contract, it has relied and is relying on its own examination of (1) the site of the work, (2) access to the site, (3) all other data and matters requisite to the fulfillment of the work and on its own knowledge of existing facilities on and in the vicinity of the site of the work to be constructed under the Contract, (4) the conditions to be encountered, (5) the character, quality and scope of the proposed work, (6) the quality and quantity of the materials to be furnished, and (7) the requirements of the bid, the drawings, the specifications, and the other Contract Documents.

BID GUARANTY

Each Bid must be accompanied by a certified check, a cashier's check or Bidder's Bond in the amount of Ten percent (10%) of the amount bid.

No Bid will be considered unless such cashier's or certified check or Bidder's Bond is enclosed therewith. Any Bidder's Bond shall contain provisions of forfeiture providing for the Bidder to enter into a written contract in the prescribed form, in accordance with the bid, and file two bonds with the District, one to guarantee faithful performance, and the other to guarantee payment for labor and materials as required by law, and provide certificate of insurance coverage required by these Contract Documents.

All such certified checks, cashier's checks, or Bidder's Bonds must be made payable to the Valley of the Moon Water District and must be satisfactory to the Board. The Bid Guaranties of all except the three lowest Bidders will be returned on demand as soon as the Bids are canvassed. The Guaranties of the three lowest Bidders will be held until the execution of the Contract and the furnishing of the required bonds, after which they will be returned on demand.

Surety companies executing Bid Bonds must appear on the Treasury Department's most current list (Circular 570 as amended) and be authorized to transact business in the state of California (must be admitted as a surety in California). Surety companies must agree that the obligations of said Surety and its bond shall be in no way impaired or affected by any extension of the time within which the District may accept such Bid; and said Surety does hereby waive notice of any such extension.

Failure or refusal to enter into a Contract as herein provided or to conform to any of the stipulated requirements in connection therewith shall be just cause for annulment of the award and the forfeiture of the Bid Guaranty. If the successful bidder refuses or fails to execute the Agreement, the District may award the contract to the second lowest responsible bidder. If the second lowest responsible bidder refuses or fails to execute the Agreement, the District may award the contract to the third lowest responsible bidder. On the failure or refusal of such second or third lowest bidder to execute the Agreement, such bidder's guarantees shall be likewise forfeited to the District. The Work may then be re-advertised.

TIME ALLOWED FOR SIGNING THE CONTRACT

The successful Bidder will be allowed fourteen (14) calendar days after the mailing date of the notice that the Contract has been awarded to them by the District and that the Contract is ready for signature within which to deliver to the District the Contract with their signature affixed thereto, together with the prescribed Guaranty Bonds.

FAITHFUL PERFORMANCE BOND

As a part of the execution of the Contract, Contractor shall furnish a Bond of a Surety Company acceptable to the Board for the Faithful Performance of the work under the Contract in a sum equal to one hundred percent (100%) of the total contract price.

MATERIAL AND LABOR BOND

As a part of the execution of the Contract, Contractor shall furnish a Bond of a Surety Company acceptable to the Board, in the sum of not less than one hundred percent (100%) of the total price as set forth in the Agreement, for the payment in full of all persons, companies, or corporations who perform labor upon or furnish materials to be used in the work under the Contract, in accordance with the provisions of Sections 9550 to 9566, inclusive, of the Civil Code of the State of California, and any acts amendatory thereof, and shall by its terms inure to the benefit of all persons, companies, or corporations entitled to serve a stop notice under Section 9100 of the Civil Code of the State of California.

MAINTENANCE BOND

A maintenance bond in the amount of 25 percent (25%) of the Contract price with a corporate surety approved by the District will be required. Such bond shall be provided before final payment is made to Contractor and shall guarantee the repair of all damage due to faulty materials or workmanship provided or performed by Contractor. This guarantee shall remain in effect for a period of one year after the date of final acceptance of the job by the District.

NOTICE TO PROCEED, PROSECUTION, AND DATE OF COMPLETION

District shall issue the Notice to Proceed thirty (30) calendar days after the Notice of Award. Contractor shall begin work within 14 calendar days after official notice by the District to proceed with the work. All work on the project shall be completed within one hundred and fifty (150) calendar days from the date of the Notice to Proceed. All warranties and maintenance requirements shall be completed from the date of final acceptance of the project by the District.

LIQUIDATED DAMAGES FOR DELAY

Time is of the essence in the performance of this Contract. It is agreed by the parties to the Contract that time is of the essence in the completion of this Work, and that in case the work under this Contract is not completed within the number of days specified, as modified by extensions of time granted by the District, damage will be sustained by the District. Contractor and District agree

that a reasonable amount of damages for late completion is Five Hundred Dollars (\$500.00) per day for the first seven (7) calendar days starting the first day following the current contract completion date. Damages for late completion shall increase to One Thousand Dollars (\$1,000) per day beginning the eighth calendar day following the current contract completion date, and for every calendar day thereafter during which the work remains uncompleted. Contractor agrees to pay these sums as damages within thirty (30) days of incurrence and agrees that they are not imposed as a penalty. There shall be no additional compensation for early completion.

ADDENDUM

Every interpretation of the Specifications, changes, additions, or corrections will be in the form of an addendum to the Contract Documents and when issued will be on file at the office of Engineer before Bids are opened. In addition, all addenda will be sent to each person holding Contract Documents, but it shall be the Bidder's responsibility to make inquiry as to the addenda issued. All such addenda shall become part of the Contract Documents. Each bid shall include specific acknowledgment in the space provided of receipt of all Addenda issued during the bidding period. Failure to so acknowledge may result in the bid being rejected as not responsive and all Bidders shall be bound by such addenda whether or not received by the Bidders.

SUBCONTRACTORS

In accordance with California Public Contract Code section 4100 et seq., each Bidder, in the Bid shall set forth: (1) The name and location of the place of business of each subcontractor who will perform work or labor or render services to Contractor in or about the construction of the work, or improvement, or a subcontractor licensed by the State of California who, under subcontract to the prime contractor, specially fabricates and installs a portion of the work or improvement according to detailed drawings contained in the Plans and Specifications, in an amount in excess of one half of 1 percent of Contractor's total bid, and (2) The portion of the work which will be done by each subcontractor. In accordance with Section 4107 of the California Public Contract Code, no Contractor whose bid is accepted shall without consent of the District either: (1) Substitute any person as a subcontractor in place of the subcontractor designated in the original bid; or (2) Permit any such subcontract to be assigned or transferred, or allow it to be performed by anyone other than the original subcontractor listed in the bid. Penalties for failure to comply with the foregoing sections of the California Public Contract Code are set forth in Sections 4110, and 4111 of the Code.

STATUTORY REQUIREMENTS

No official of the District who is authorized in such capacity and on behalf of the District to negotiate, make, accept, or approve, or to take part in negotiating, making, accepting, or approving any architectural engineering, inspecting, construction or material supply contract or any subcontract in connection with the construction of the project, shall become directly or indirectly interested personally in this Contract or in any part thereof. No officer, employee, architect, attorney, engineer or inspector of or for the District who is authorized in such capacity and on behalf of the District who is in any legislative, executive, supervisory, or other similar functions in connection with the construction of the project, shall become directly or indirectly interested

personally in this Contract or in any part thereof, any material supply contract, subcontract, insurance contract, or any other contract pertaining to the project.

ATTORNEYS-IN-FACT

Attorneys-in-fact who sign Bid bonds or payment bonds and performance bonds must file with each bond a certified and effective dated copy of their power of attorney.

EXAMINATION OF CONTRACT DOCUMENTS

Each Bidder shall thoroughly examine and be familiar with the Contract Documents. The submission of a Bid shall constitute an acknowledgment upon which the District may rely that the Bidder has thoroughly examined and is familiar with the Contract Documents. The bidder shall notify the Construction Administrator (Valley of the Moon Water District) immediately if any specifications or drawings are missing or there are any other discrepancies of any sort. Unless the bidder has given such notification and the District has not responded thereto by the time bids are required to be submitted, the submission of a bid shall constitute an acknowledgment, upon which the District may rely, that the bidder has thoroughly examined and is familiar with the Contract Documents, including any drawings included in the Contract Documents. Unless the Bidder has given such notification and the District has not responded thereto by the time bids are required to be submitted, the failure or neglect of a Bidder to receive or examine any of the Contract Documents shall in no way relieve them from any obligations with respect to their Bid or to the Contract. Notwithstanding any other provision of the Contract Documents, no claim for additional compensation will be allowed which is based upon a lack of knowledge of any Contract Document, or any misinterpretation by any Bidder of the scaling of the drawings.

INTERPRETATION OF CONTRACT DOCUMENTS

No oral interpretations will be made to any Bidder as to the meaning of the Contract documents. Requests for an interpretation shall be made in writing and delivered to the District. It is the Bidder's responsibility to ensure proper delivery to the District of written requests for interpretation of the Contract Documents. Interpretations by the District will be in the form of an addendum to the Contract documents and, when issued, will be sent as promptly as is practical to all parties to whom the Contract documents have been issued. All such addenda shall become a part of the Contract.

PREPARATION OF BID FORMS

Bids shall be made on the separately bound bid forms in the Contract Documents and must be submitted at the time and place stated in the Notice to Bidders. All blanks in the bid forms must be appropriately filled in either in ink or typed, and all prices must be stated in figures. All bid forms must be submitted in sealed envelopes bearing on the outside the name of the bidder, its address, and the name of the project for which the bid is submitted. It is the sole responsibility of the bidder to see that its bid is received in proper time. Any bid received after the scheduled closing time for receipt of bids will be returned to the bidder unopened. District shall not be

responsible for errors or omissions in the bid. Bidders shall write their names on each bid form at the space provided.

The bid submitted must not contain any erasure, interlineations, or other corrections unless each such correction is suitably authenticated by affixing, in the margin immediately opposite the correction, the initials of the person or persons submitting the bid.

BID IRREGULARITIES

Changes in or additions to the bid form, recapitulations of the work bid upon, alternative bids, omissions, or any other modifications of the bid form which are not specifically called for in the Contract Documents may result in rejection of the bid by the District, as not being responsive. No oral or telephonic modification of any bid submitted will be considered.

SUBSTITUTIONS DURING BIDDING

Manufacturers or suppliers of materials, products, and things (including equipment) and suppliers of services may propose to Contractor that alternatives to specified materials, products, things, or services be considered equal. It is Contractor's responsibility to include in its bid all such alternatives that it desires to utilize in the Work. For this purpose, Contractor shall submit to the District in accordance with Public Contract Code Section 3400, prior to award, data substantiating each request for a substitution of "an equal" item. The District will favorably review such a request only if the substantiating data contains a description of each proposed substitute item and drawings, samples, literature, calculations, or other detailed information sufficient to demonstrate to the District, in its opinion, that the proposed substitute is equal in quality and utility to the item specified.

Contractor should consider including an alternative item in its bid only if Contractor believes the offered alternative is equal in quality and performance to the specified material, product, thing, or service. Any such offers of alternative items will be reviewed and processed as a substitution before award as provided under Public Contract Code Section 3400.

BID PRICES

Bid prices shall include everything necessary for the completion of the Work including, but not limited to, providing the materials, equipment, tools, plant and other facilities, and the management, superintendence, labor and services. Bid prices shall include allowance for all federal, state and local taxes.

In the event of a difference between a price quoted in words and a price quoted in figures for the same quotation, the words shall be the amount bid. In the event that the product of a unit price and an estimated quantity does not equal the extended amount quoted, the unit price shall govern, and the correct product of the unit price and the estimated quantity shall be deemed to be the amount bid. If the sum of two or more items in a bidding schedule does not equal the total amount quoted, the individual item amounts shall govern and the correct total shall be deemed to be the amount bid.

MODIFICATION OF BID

On written request filed with the District, a bid already received may be modified or withdrawn at any time prior to the time established for receiving bids. The request must be executed by the bidder or its authorized representative as described in the bid forms. Modifications shall be made in writing, executed, and submitted in the same form and manner as the original bid. Withdrawal of a bid does not prejudice a bidder's right to submit a new bid within the time designated for the submission of bids. No bid may be withdrawn after the scheduled closing time except as provided below under the heading WITHDRAWAL OF BIDS.

WITHDRAWAL OF BIDS

In accordance with Public Contract Code 5103, within five (5) working days after the opening of bids, excluding Saturdays, Sundays, and State holidays, a bidder may withdraw its bid providing the bidder can establish to the District's satisfaction that a mistake was made in preparing the bid. A bidder desiring to withdraw shall give written notice to the District, specifying, in detail, how the mistake occurred and how the mistake made the bid materially different than it was intended to be. Withdrawal will not be permitted for mistakes resulting from errors in judgment or carelessness in inspecting the site of the Work, or in reading the Contract Documents.

BIDDERS INTERESTED IN MORE THAN ONE BID

No person, firm, or corporation, under the same or different name, shall make, file, or be interested in more than one bid for the same work unless alternate bids are called for. Pursuant to Public Contract Code Section 7106, bidders shall execute and furnish with their bids a Non-Collusion Declaration. Reasonable grounds to believe that any individual, partnership, corporation, or combination is interested in more than one bid for the proposed work may cause rejection of all bids in which that individual, partnership, corporation, or combination is interested.

A person, firm, or corporation may, however, submit sub-proposals or quote prices on materials to more than one bidder.

WAGE RATES

Pursuant to provisions of the Labor Code Section 1770, et. seq., of the State of California, the Director of the Department of Industrial Relations has ascertained the prevailing rate of per diem wages of the locality in which the Work is to be performed and applicable to the Work to be done. Copies of such prevailing rate of per diem wages are on file at the District's office located at 19039 Bay Street, Sonoma, where copies will be made available during normal working hours to any interested party on request, or Bidders may prefer to obtain the current prevailing rate of per diem wages directly from the website maintained by the California Department of Industrial Relations (http://www.dir.ca.gov/dlsr/pwd/index.htm).

Bidders shall promptly notify the District, in writing, about all the classifications of labor not listed in the prevailing wage determinations but necessary for the performance of the Work before bids are submitted.

OFFER OF ASSIGNMENT OF ANTITRUST ACTIONS

As provided by Section 7103.5, of the California Public Contract Code, in entering into a public works contract or subcontract, Contractor or subcontractor offers and agrees to assign to the District all rights, title and interest in, and all causes of action it may have under Section 4 of the Clayton Act (15 U.S.C. Section 15) or under the Cartwright Act (Chapter 2) commencing with Section 16700 (of Part 2 of Division 7 of the Business and Professions Code), arising from purchases of goods, services or materials pursuant to the public works contract or subcontract. This assignment shall be made and become effective at the time the District tenders final payment to Contractor, without further acknowledgment by the parties.

ASSIGNMENT OF CONTRACT

Any attempted assignment by Contractor of any contract to be entered into hereunder, or any part thereof, or of funds to be received thereunder by Contractor, is void unless such assignment has had prior written approval of District and the Surety has been given due notice of such assignment in writing and has consented thereto in writing.

POSTPONEMENT OF OPENING

The District reserves the right to postpone the date and time for opening of Bids at any time prior to the date and time announced in the Advertisement. Postponement notices shall be delivered to plan holders of record in the form of addenda.

REJECTION OF BIDS

The District reserves the right, at its sole discretion, to reject any and all bids and further reserves the right to reject any bids which are: a) non-responsive (e.g., bids which are incomplete, obscure, or irregular; bids which omit a bid on any one or more items on which the bids are required; bids which are unbalanced; bids accompanied by insufficient or irregular bid guaranties); b) any bids from bidders who have previously failed to perform properly or to complete on time contracts of any nature with the District; or c) any bid which fails to provide satisfactory documentation of the bidder's qualifications as required. The District reserves the right to waive irregularities.

AWARD OF CONTRACT

Within 30 days after the time announced for opening Bids, the District will act either to accept the Bid of the low, responsive, responsible Bidder, or to reject all Bids. The acceptance of a Bid will be evidenced by a Notice of Award of Contract in writing, delivered in person or by certified mail to the Bidder whose Bid is accepted. No other act of the District shall constitute acceptance of a Bid. The award of Contract shall obligate the Bidder whose Bid is accepted to furnish a

Performance Bond and evidences of insurance and execute the agreement set forth in the Contract documents.

BID PROTESTS

Any party that has timely submitted a Bid has the right to protest in accordance with this Paragraph. The procedure and time limits set forth in this Paragraph are mandatory and are the Bidder's sole and exclusive remedy in the event of Bid protest, and failure to comply with these procedures shall constitute a waiver of any right to further pursue the bid protest, including filing a Government Code Claim or legal proceedings

The protest shall be in writing, addressed to the Director of Construction, and actually received by the District no later than five (5) business days after the date of the bid opening. The protest document shall contain a detailed and complete statement as to the basis of the protest, and shall include the name, address, and telephone number of the protestor or its authorized representative. All correspondence to the Director of Construction shall be delivered to the District at the address set forth above for delivery of Bids. Upon receipt of the protest, the District will send the protestor an acknowledgement of receipt and will promptly investigate the circumstances. The District will also transmit copies of the protest document and any attached documentation to those other Bidders potentially affected by the outcome of the protest. Upon completion of its investigation, the District will issue to the protestor a written recommended decision on the protest, which will be determined by the District Board at time of award. The rejection of a timely and properly delivered protest is within the District Board's sole determination.

PRECONSTRUCTION CONFERENCE

A preconstruction conference will be held prior to any work started by Contractor. Contractor's job foreman and other interested parties shall attend. Work schedules, methods, and safety practices will be outlined and discussed at this time.

FUNDING SOURCES

This project is obtaining funds from a source outside the District. The additional funding source is the Department of Water Resources Urban and Multi benefit Drought Relief Grant. Information regarding the funding source is detailed in Appendix A, including materials and forms related to the grant, and supplemental conditions and other contract language that are included as part of the contract.

Note that the forms included in Appendix A.1 are required to be submitted with the Contractor's bid.

NOTICE OF A	AWARD	
TO:		
PRO		N: Aquifer Storage and Recovery Equipping Phase Valley of the Moon Water District.
The District red described world	-	rsigned has considered the Bid submitted by you for the above-
It appears tha	t it is to the best int	erest of said District to accept your Bid in the amount of (\$). Id has been accepted.
You are hereby	y notified that your Bi	d has been accepted.
You are requir and Performan	ed to execute the form	nal contract with the undersigned District, submit the Payment ish the required insurance certificates within ten (10) calendar
	ons, which should be	ontract documents, your attention is directed to Section F-2 of called to the attention of your underwriter in preparing the
Dated this	day of	, 2025.
		VALLEY OF THE MOON WATER DISTRICT District
		Ву
		Title
Receipt of the Award is herel	CE OF NOTICE above Notice of by acknowledged day of	. 2025
Ву		
Title		

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NOTICE TO PROCEED

TO:	DATE:
	PROJECT: Aquifer Storage and Recovery Equipping Phase
Valley of the Moon Water District	Sonoma County, California
You are hereby notified to commence Work	in accordance with the Agreement to be dated
, 2025, on or b	pefore, 2025, and you are to dar days. The completion date of the Work is therefore
	Valley of the Moon Water District By
	Title
ACCEPTANCE OF NOTICE TO PROCEE Receipt of the above NOTICE TO PROCEE is hereby acknowledged by this the of, 2025.	ED
Ву	
Tr' d	

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SECTION "D"

BID

AQUIFER STORAGE AND RECOVERY EQUIPPING PHASE APRIL 2025 VALLEY OF THE MOON WATER DISTRICT SONOMA COUNTY, CALIFORNIA

The undersigned, as Bidder, declares that they have thoroughly examined all the Contract Documents herein contained, and they propose and agree, if this Bid is accepted, that they will contract with the Valley of the Moon Water District in the office of the District to provide all the necessary machinery, tools, apparatus and other means of construction; to furnish all materials; to provide superintendence, overhead expenses and all labor and expenses of whatever nature necessary; to complete the Project in conformance with these Well Construction Specifications, and Drawings, and other contract provisions herein or reasonably implied thereby or as necessary to complete the work in the manner and within the time named herein and according to the requirements and to the reasonable satisfaction of the District; to pay all charges of freight, transportation and hauling; to indemnify the District against any loss or damage arising from any act of the undersigned as Contractor; and that they will take in full payment therefor the following sums, to wit:

PARK AVENUE PRODUCTION WELL EQUIPMENT BID

Item				Unit	Total
No.	Description	Quantity	Unit	Cost	Cost
1	Demolition and Destroying Well	1	LS		
2	Sitework	1	LS		
3	Well Pump and Pump Column	1	LS		
4	Injection Piping and Valves	1	LS		
5	All Other Piping and Mechanical Work	1	LS		
6	Electrical Work Associated with Injection	1	LS		
7	All Other Electrical Work	1	LS		
8	Professional Services: Structural Design	1	LS		
9	Additive Bid Item – Site Paving	1	LS		
TOTAL	BID (ITEMS 1-9, WITHOUT ADD	ITIVE BID	ITEMS)		

VERANO AVENUE PRODUCTION WELL EQUIPMENT BID

Item				Unit	Total
No.	Description	Quantity	Unit	Cost	Cost
10	Piping and Mechanical Work	1	LS		
11	Electrical Work	1	LS		
TOTAL BID (ITEMS 10-11)					
TOTA	AL BID (ALL ITEMS, WITHOUT A	DDITIVE E	BID ITE	MS)	

total Bid. After Notice of Award,	determined by comparing the respective amounts of the Bidders' District will decide on whether or not to award Additive Bidward an Additive Bid Item, the District will be responsible for
BIDDER acknowledges the receip	t of the following ADDENDA:
No, dated	, 2025
No, dated	, 2025
No, dated	, 2025
Contract for the performance of t undersigned, to so plan and work a	Bid is accepted by Valley of the Moon Water District and if a the work is entered into by and between the District and the and to prosecute it with such diligence that the work, and all of the time required by the Contract Documents.
of Agreement and to furnish the r	e, if this Bid shall be accepted by the District to sign the Articles required Bonds with satisfactory Surety or Sureties, within tennailing of written notice from the District that the Contract is
1 0	security (Bid Bond, certified check or cashier's check) for an ant (10%) of the TOTAL BID price, pursuant to the law relating ations imposed by such law.
WITNESS OUR HANDS this	day of, 2025.
SIGNATURE OF BIDDER OR B	IDDERS, WITH BUSINESS ADDRESS:

cense No.:	Class:
ividual Contractor:	Name:
	Address:
	Signature:
nership:	Name
	Business Address
	President
er Partners:	

	Business Address
Organized under the laws of the State of:	

LIST OF SUBCONTRACTORS

The Bidder shall here give a list of their subcontractors, if the Contract is awarded to them. The information presented below must embrace the names and addresses of all subcontractors and a description of the work to be performed by each. Attach additional sheets if necessary.

Subcontractor	Description of Work
Address	<u> </u>
Subcontractor	Description of Work
Address	<u> </u>
Subcontractor	Description of Work
Address	<u></u>
	<u> </u>
Subcontractor	Description of Work
Address	

LIST OF MAJOR MATERIAL SUPPLIERS

The Bidder shall here give a list of the major material suppliers, if the Contract is awarded to them. The information presented below must embrace the names and addresses of all major material suppliers for the materials. Attach additional sheets if necessary.

	Well Pump
Supplier	Material
Address	_
Cymplion	Flow Control Valve and Panel Material
Supplier	iviateriai
Address	-
Supplier	– — <u>— Material</u>
Биррпет	iviateriai
Address	- -
Supplier	Material
Address	- -

EXPERIENCE QUALIFICATIONS

The Bidder shall submit a list of at least 5 similar potable water supply projects completed in the last 5 years, preferably for aquifer storage and recovery projects. Subcontractors that are performing more than 10% of the value of the work must complete the experience qualifications form. Subcontractors shall demonstrate completion of 3 projects similar to their portion of the work in the last 5 years. The information presented below must embrace the name of the project and the name and phone number of each District or client. Attach additional sheets if necessary.

Project Name & Description	Name of District/Client
Date Project Completed	Phone No. of District/Client
Project Name & Description	Name of District/Client
Date Project Completed	Phone No. of District/Client
Project Name & Description	Name of District/Client
Date Project Completed	Phone No. of District/Client
Project Name & Description	Name of District/Client
Date Project Completed	Phone No. of District/Client
Project Name & Description	Name of District/Client
Date Project Completed	Phone No. of District/Client

NONCOLLUSION DECLARATION TO BE EXECUTED BY BIDDER AND SUBMITTED WITH BID

The undersigned declares:	
I am the of party making the foregoing bid. The bid is not mound is closed person, partnership, company, associating enuine and not collusive or sham. The bidder has many other bidder to put in a false or sham bid. The indirectly, colluded, conspired, connived, or agreed with bid, or to refrain from bidding. The bidder has not in agreement, communication, or conference with any other bidder, or to fix any overhead, profit, or cost elebidder. All statements contained in the bid are true. submitted their bid price or any breakdown ther information or data relative thereto, to any corpor organization, bid depository, or to any member or agbid, and has not paid, and will not pay, any person or Any person executing this declaration on partnership, joint venture, limited liability company entity, hereby represents that they have full power to on behalf of the bidder.	on, organization, or corporation. The bid is not directly or indirectly induced or solicited by bidder has not in any manner, directly or ith any bidder or anyone else to put in a sham any manner, directly or indirectly, sought by one to fix the bid price of the bidder or anyone to fix the bid price, or of that of any other. The bidder has not, directly or indirectly reof, or the contents thereof, or divulged oration, partnership, company association tent thereof to effectuate a collusive or sham entity for such purpose. The bidder that is a corporation of the bidder that it is a corporation of the
I declare under penalty of perjury under the foregoing is true and correct and that this declaration	
City	State
Signature	Date

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SECTION "E"

ARTICLES OF AGREEMENT

AQUIFER STORAGE AND RECOVERY EQUIPPING PHASE APRIL 2025 VALLEY OF THE MOON WATER DISTRICT SONOMA COUNTY, CALIFORNIA

THIS AGREEMENT, made and entered into this day of in the ye Two Thousand Twenty-five (2025) by and between Valley of the Moon Water District, as party of the First Part and	ar
and the Court Devi	_
as party of the Second Part.	
WITNESSETH: That the District and Contractor have mutually covenanted and agreed, and be these presents do covenant and agree with each other as follows:	y
FIRST: That for and in consideration of the covenants and agreements hereinafter contained of the part of the District, and the sums of money hereinafter designated to be paid to Contractor the District in the manner and form as hereinbefore in the attached Specifications provide Contractor hereby covenants and agrees to and with the District, to furnish all labor, tool appliances, equipment, plant and transportation, and any and all other expenses necessary incidental to the performance of certain work hereinbefore specified and to build, erect, construct complete and install the Aquifer Storage and Recovery, Equipping Phase for the Valley of the Moon Water District, Sonoma County, State of California, all as more particularly and in detay set forth in those certain Plans and Specifications and other provisions of the Contract Documen filed in the office of EKI Environment & Water, Inc., approved and adopted by the Board of Directors, Valley of the Moon Water District and identified by the signatures of the parties of the agreement. True copies of the Notice to Bidders, Information for Bidders, Bid of Contractor, B. Guaranty, Articles of Agreement, Contract Bonds, General Stipulations, and details Specifications, together with all modifications incorporated in those documents before the execution, are hereunto annexed by reference thereto incorporated herein and made a part here as through in this document fully set forth.	by d, s, or et, ne ill ts of is id ed ir
SECOND: That said Contractor agrees to receive and accept the Bid unit prices as for compensation for furnishing all materials and for doing all the work embraced and contemplated in this agreement and set forth in Contractor's Bid submitted to the Board of Directors, Valley of the Moon Water District, on	ed of to of oe all

thereof, in the manner and according to the said Plans and Specifications and the requirements of Engineer under them, to wit: The unit prices as set forth in Contractor's Bid for the items awarded and to be constructed under this agreement, which price shall be considered as though repeated herein.

The undersigned Contractor further agrees to so plan the work and to prosecute it with such diligence that said work, and all of it, shall be completed on or before the expiration of the completion time specified in Section "C" of these Specifications.

THIRD: The District hereby promises and agrees with said Contractor to employ, and does hereby employ said Contractor to provide the materials and to do the work according to the terms and conditions herein contained and referred to for the prices aforesaid, and hereby contracts to pay the same at the time, in the manner and upon the conditions set forth in the Specifications; and the said parties for themselves, their heirs, executors, administrators, successors and assigns, do hereby agree to the full performance of the covenants herein contained.

<u>FOURTH</u>: No interest in this agreement shall be transferred by Contractor to any other party, and any such transfer shall cause annulment of this contract, so far as the District is concerned. All rights of action, however, for any breach of this Contract are reserved to said District.

<u>FIFTH</u>: Contractor agrees that they will immediately repair and replace all defective material and workmanship for one year after acceptance of final payment by them and that they will indemnify that said District against all loss and damage occasioned by any such defect, discovered within said year, even though the damage or loss may not be ascertained until after expiration thereof.

<u>SIXTH</u>: The said Contractor agrees at all times during the progress of the work to carry with insurance carriers approved by the District, full worker's compensation, property damage and public liability insurance and fire insurance and to furnish the District with certificates from said insurance carriers acknowledging full liability and fully insuring Contractor and the District, its officers, employees or agents against loss and liability on account of any and all injuries to workmen and others, caused directly or indirectly by the performance or execution of this Contract or subcontracts hereunder. Such insurance policies shall be endorsed as follows:

"It is hereby understood and agreed that the policy to which this certificate refers may not be canceled nor the amount of coverage thereof reduced until sixty (60) days after receipt by the District of a registered written notice for such cancellation or reduction in coverage." It is also understood that the District shall receive forty-five (45) days registered written notice prior to the effective date of non-renewal.

The undersigned Contractor is aware of the provisions of Section 3700 of the Labor Code which requires every employer to be insured against liability for workmen's compensation or to undertake self-insurance in accordance with the provisions of that Code, and will comply with such provisions before commencing the performance of the work of this contract.

<u>SEVENTH</u>: Contractor shall save the District harmless from any and all claims which may be made on account of any alleged infringements of any patent rights of any person or persons on any

articles of process, methods or appliances used in the construction or necessitated by reason of the use or operation of the article, work or structure contemplated by this contract, where the same is not specifically required by the Plans and Specifications, and shall defend any judgment so obtained. The District shall similarly save Contractor harmless from claims made on account of alleged infringement of any patent rights which are actually called for and specifically required by the Plans and Specifications.

EIGHTH: It is agreed by the parties that time is of the essence in the completion of the work called for in the Contract Documents, and the District has determined that in the event Contractor does not complete the work within the time limit so specified or within such further time as said Board shall have authorized, Contractor shall pay to the Valley of the Moon Water District liquidated damages in the amount of Five hundred dollars (\$500.00) per day for the first 7 calendar days starting the first day following the current contract completion date. Damages for late completion shall increase to One Thousand Dollars (\$1,000) per day beginning the eighth calendar day following the current contract completion date, and for every calendar day thereafter during which the work remains uncompleted. As it is impracticable to determine the actual delay damage; it is, therefore, agreed that Contractor shall pay liquidated damages to the District in the amount set forth above. Contractor further agrees that in case the same are not paid, the District may deduct the amount thereof from any moneys due, or that may become due, Contractor under the Contract. Additional provisions with regard to said time of completion and liquidated damages are set forth in the Specifications, which provisions are hereby referred to and incorporated herein by reference.

CONTRACTOR INITIAL	
DISTRICT INITIAL	

<u>NINTH</u>: Reference is hereby made to the rate of prevailing wage scale established by the District, a copy of which may be obtained via the internet at <u>www.dir.ca.gov/DLSR/</u>, the provisions of which are hereby specified as the rate of prevailing wage to be paid workmen on this project, and the provisions of the Labor Code (commencing with Section 1770) and particularly Section 1775 thereof, shall be complied with.

TENTH: Not used.

<u>ELEVENTH</u>: Attention is directed to Section 1735 of the Labor Code and Government Code section 12940(a), which provide that it is an unlawful employment practice:

"For an employer, because of the race, religious creed, color, national origin, ancestry, physical disability, mental disability, medical condition, genetic information, marital status, sex, gender, gender identity, gender expression, age, sexual orientation, or military and veteran status of any person, to refuse to hire or employ the person or to refuse to select the person for a training program leading to employment, or to discriminate against the person in compensation or in terms, conditions, or privileges of employment."

<u>TWELFTH:</u> To the fullest extent permitted by law, Contractor shall indemnify and hold harmless and defend Valley of the Moon Water District, EKI Environment & Water, Inc., and each entity's directors, officers, employees, or authorized volunteers, and each of them from and against:

- a. Any and all claims, demands, causes of action, damages, costs, expenses, losses or liabilities, in law or in equity, of every kind or nature whatsoever for, but not limited to, injury to or death of any person including Valley of the Moon Water District, EKI Environment & Water, Inc., and/or Contractor, or any directors, officers, employees, or authorized volunteers of Valley of the Moon Water District, EKI Environment & Water, Inc., or Contractor, and damages to or destruction of property of any person, including but not limited to, Valley of the Moon Water District, EKI Environment & Water, Inc., and/or Contractor or their directors, officers, employees, or authorized volunteers, arising out of or in any way directly or indirectly connected with the work to be performed under this agreement, however caused, regardless of any negligence of Valley of the Moon Water District, EKI Environment & Water, Inc., each entity's directors, officers, employees, or authorized volunteers, except the willful misconduct, or sole negligence or active negligence of Valley of the Moon Water District, EKI Environment & Water, Inc., each entity's directors, officers, employees, or authorized volunteers;
- b. Any and all actions, proceedings, damages, costs, expenses, penalties or liabilities, in law or equity, of every kind or nature whatsoever, arising out of, resulting from, or on account of the violation of any governmental law or regulation, compliance with which is the responsibility of Contractor.
- c. Any and all losses, expenses, damages (including damages to the work itself), attorneys' fees, and other costs, including all costs of defense, which any of them may incur with respect to the failure, neglect, or refusal of Contractor to faithfully perform the work and all of Contractor's obligations under the agreement. Such costs, expenses, and damages shall include all costs, including attorneys' fees, incurred by the indemnified parties in any lawsuit to which they are a party.

In no event shall this Agreement, or any portion thereof, be construed to give rise to any obligation on the part of the District, or its elected officials, officers, agents, employees, and representatives to defend, indemnify, or hold harmless Contractor, its agents, subcontractors (of any tier), or employees from and against all damages, costs, or expenses in law or equity, including reasonable attorney's fees, that are in any way connected with the performance of the work under this Agreement.

The District will not be liable for any accident, loss, or damage to the Work prior to its completion and acceptance. Contractor shall defend, at Contractor's own cost, expense and risk, any and all such aforesaid suits, actions, or other legal proceedings of every kind that may be brought or instituted against Valley of the Moon Water District, its directors, officers, employees, or authorized volunteers, in any and all such suits, actions, or other legal proceedings.

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

Approval of any insurance contracts by the District does not relieve Contractor or subcontractors from liability under this Agreement, and Contractors' obligation to indemnify shall not be restricted to insurance proceeds, if any, received by the Valley of the Moon Water District, or its directors, officers, employees, or authorized volunteers, and Contractor shall be responsible for payment of all amounts it is obligated to pay, which have not been paid by the insurers pursuant to such insurance contracts.

	ract being executed in triplicate and the Parties to this ned by authority of their duly authorized office 025.
PARTY OF THE FIRST PART	VALLEY OF THE MOON WATER DISTRICT
	ByBoard President
	Countersigned:
	ByBoard Secretary
PARTY OF THE SECOND PART	
	By
	Title

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CONTRACT BOND FOR FAITHFUL PERFORMANCE

KNOW ALL PEOPLE BY THESE PRESENTS: That we,		
as principal, and as surety, are held and t in the State of Californi	firmly bound unto the	e Valley of the Moon Water District, a Water District
		Dollar
truly to be made to the	Valley of the Moon W	e United States, for the payment of which, well an Vater District, we bind ourselves, our and each of ou and assigns, jointly and severally, firmly by thes
DATED: This	day of	, 2025.

THE CONDITION OF THE ABOVE OBLIGATION IS SUCH THAT,

WHEREAS, the above bounden principal, by resolution of the Board of Directors of the Valley of the Moon Water District, has been awarded a contract for the performance of the work hereinafter mentioned and for the furnishing of all necessary labor, materials and supplies therefor, and has entered or is about to enter into a Contract with said District for the performance thereof, and for the furnishing all necessary labor, materials and supplies therefor, in conformity with the Specifications, Drawings and other Contract conditions for such work heretofore adopted by the District, and hereinbefore contained and in conformity with the provisions of the foregoing Contract, as follows, to-wit: "Aquifer Storage and Recovery, Equipping Phase for Valley of the Moon Water District".

NOW, THEREFORE, if the above bounden principal shall, in all particulars, abide by, and well and truly keep and faithfully perform and abide by said Contract, and each and every condition, covenant, and part thereof, and any alterations made as therein provided, on it or their part to be kept and performed, at the time and in the manner therein specified, and in all respects according to their true intent and meaning, and shall indemnify and save harmless, the District, its officers and agents as therein stipulated, then this obligation shall be void; otherwise it shall remain in full force and effect, and principal and surety, in the event suit is brought on this bond, will pay such reasonable attorney's fees that shall be fixed by the court.

Provided, further, that the surety, for value received hereby stipulates and agrees that no change, extension of time, alteration or addition to the terms of the Contract or to the work to be performed thereunder or the specifications accompanying the same shall in any way affect its obligation on this bond, and it does hereby waive notice of any such change, extension of time, alteration or addition to the terms of the Contract or to the work or to the Specifications and furthermore waives the provisions of Sections 2819 and 2845 of the Civil Code of the State of California.

	e bounden parties have executed this instrument under the name and corporate seal
	, 20, the name and corporate seal d and these presents duly signed by its undersigned
representative, pursuant to authority of its go	overning body.
ATTEST:	
	Principal
(Principal) Secretary	
(SEAL)	By
	(Address)
Witness as to Principal	_
	_
(Address)	_
(radiess)	
	(Surety)
	By:Attorney-in-Fact
ATTEST:	Attorney-ın-Fact
Witness as to Surety	_
·	
	_ (Address)
	_
(Address)	_

IMPORTANT: Surety Companies executing bonds must appear on the Treasury Department's most current list (Circular 570 as amended) and be authorized to transact business in the state where the project is located.		
The form of the for	egoing bond is hereby appro	oved this
day	of	, 2025.
		Board President, Valley of the Moon Water District

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PAYMENT BOND

KNOW ALL PEOPLE BY THESE PRESENTS: That we		
as Principal, and		
as Surety, are held and fi in the State of California	•	y of the Moon Water District, a Water District
		Dollars
to be made, we bind ours	=	tates, for the payment of which, well and truly leirs, executors, administrators, successors and ents.
DATED: This	day of	, 2025.

THE CONDITION OF THIS OBLIGATION IS SUCH THAT,

WHEREAS, the above bounden Principal by resolution of the Board of Directors of the Valley of the Moon Water District, has been awarded a Contract for the performance of the work hereinafter mentioned, and for the furnishing of all necessary labor, materials and supplies therefor, and has entered or is about to enter into a contract with said District for the performance thereof, and furnishing all necessary labor, materials, and supplies therefor, in conformity with the Specifications, Drawings, and other Contract conditions for such work heretofore adopted by the District, and hereinabove contained, and in conformity with the provisions of the foregoing Contract, as follows, to-wit: "Aquifer Storage and Recovery, Equipping Phase for Valley of the Moon Water District."

PROVIDED, FURTHER, that the said surety, for value received hereby stipulates and agrees that no change, extension of time, alteration or addition to the terms of the Contract or to work to be performed thereunder or the Specifications accompanying the same shall in any wise affect its obligation on this bond, and it does hereby waive notice of any such change, extension of time, alteration or addition to the terms of the Contract or to the work or to the Specifications, and furthermore waives the provisions of Sections 2819 and 2845 of the Civil Code of the State of California.

NOW, THEREFORE, if the said Principal shall faithfully pay or cause to be paid to all persons, companies, or corporations who perform work or labor on or furnish materials to be used in the performance of said Contract and the work of said improvement, all sums which may become due and payable to each and every one of said persons, companies, and corporations for all work and labor of every kind by them done and materials furnished for said work and improvement, and for amounts due under the Unemployment Insurance Act, including such amounts required to be deducted, withheld, and paid over to the Employment Development Department from the wages

of employees of the contractor and subcontractors under Section 13020 of the Unemployment Insurance Code, with respect to such work or labor, or for any amounts due, and including such amounts required to be withheld pursuant to Sections 18806 of the Revenue and Taxation Code of the State of California with respect to such work or labor, then this obligation shall be void; otherwise it shall remain in full force and effect.

AND, it is understood and agreed herein and made a part of the terms hereof that this bond, although made to the Valley of the Moon Water District, shall inure to the benefit of any and all persons, companies, or corporations named in Section 9100 of the Civil Code of the State of California, all of whom shall have an action on this bond against said Principal and the Surety hereon, for the value of such labor or materials, or both, not exceeding in all, however, the amount named in this bond as the penalty thereof; and such action shall not affect any lien allowed by law nor the right to foreclose the same; except that there shall be but one satisfaction of any claim with costs and counsel's fees.

IN WITNESS WHEREOF, the above seals this	bounden parties have executed this instrument under their
of each corporate party being hereto a representative, pursuant to authority of ATTEST:	, 20, the name and corporate seal affixed and these presents duly signed by its undersigned its governing body.
	Principal
(Principal) Secretary	
(SEAL)	By
	(Address)
Witness as to Principal	
(Address)	
	(Surety)
	By:

ATTEST:	Attorney-in-Fact
ATTEST.	
Witness as to Surety	
	(Address)
(Address)	
Department's most current list (s executing bonds must appear on the Treasury Circular 570 as amended) and be authorized where the project is located (must be a).
The form of the foregoing bond is hereb	by approved this
day of	, 2025.
	Board President, Valley of the Moon Water District

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SECTION "F"

GENERAL STIPULATIONS

AQUIFER STORAGE AND RECOVERY EQUIPPING PHASE VALLEY OF THE MOON WATER DISTRICT SONOMA COUNTY, CALIFORNIA

Section F-1 - Nature Of Contract

F1-01 - Contract And Contract Documents

The Plans, Specifications and Addenda, shall form part of the contract and the provisions thereof shall be as binding upon the parties hereto as if they were herein fully set forth. The table of contents, titles, headings, running headlines and marginal notes contained herein and in said documents are solely to facilitate reference to various provisions of the contract documents and in no way affect, limit, or cast light on the interpretation of the provisions to which they refer.

F1-02 - Definitions

The following terms as used in these General Conditions are respectively defined as follows:

- a) "District", District, or words "Party of the First Part" shall mean the Valley of the Moon Water District.
- b) "Engineer" shall mean the Consulting Engineering Firm EKI Environment & Water, Inc. (EKI), the firm appointed by the District to design the work of construction under this contract.
- c) "Inspector" shall mean the engineering or technical inspector provided by the District to review and observe construction to ensure that it conforms to the design concept expressed in the Plans and Specifications.
- d) "Contractor" shall mean a person, firm or corporation with whom this Contract is made by the District.
- e) "Subcontractor" shall mean a person, firm or corporation supplying labor and materials or only labor for work at the site of the project for, and under separate contract or agreement with, Contractor.
- f) "Date of Signing of Contract" or words equivalent, thereto, shall mean the date upon which this contract, with the signature of Contractor affixed, together with the prescribed bonds, shall be or shall have been delivered to the District or its duly authorized representatives.
- g) "Day" or "Days" unless herein otherwise expressly defined, shall mean a calendar day or days of twenty-four hours each.

- h) "The Work" or "Work on (at) the Project" shall mean work to be performed at the location of the project, including the transportation of materials and supplies to or from the location of the project by employees of Contractor and any Subcontractor.
- i) "Contract Drawings" shall mean and include all Drawings which may have been prepared by or in behalf of the District, as a basis for Bids, when duly signed and made a part of this Contract by incorporation or reference; all Drawings submitted in pursuance of the terms of this Contract by the successful Bidder with their Bid and by Contractor to the District, and all Drawings submitted by the District to Contractor during the progress of the work as provided for herein.

F1-03 - Official Copies Of The Contract

This Contract shall be executed and signed in triplicate; two copies will be filed with the District; and one copy will be delivered to Contractor.

F1-04 - Contractor Not An Agent Of The District

The right of general review by the District shall not make Contractor an agent of the District, and the liability of Contractor for all damages to persons or to public or private property, arising from Contractor's execution of the work, shall not be lessened because of such general review.

F1-05 - Assignments

Contractor shall not assign the whole or any part of this contract or any monies due or to become due hereunder without written consent of the District. In case Contractor assigns all or any part of any monies due or to become due under this contract, the instrument of assignment shall contain a clause substantially to the effect that it is agreed that the right of the assignee in and to any monies due or become due to Contractor shall be subject to prior claims of all persons, firms and corporations for services rendered or materials supplied for the performance of the work called for in this contract.

Section F-2 - Bonds And Insurance

F2-01 - Faithful Performance Bond

As a part of the execution of this Contract, Contractor shall furnish a bond of a Surety Company acceptable to the District conditioned upon the faithful performance of all covenants and stipulations under this Contract. The amount of the Faithful Performance Bond shall be one hundred percent (100%) of the Total Contract Price.

F2-02 - Payment Bond

As a part of the execution of this Contract, Contractor shall furnish a bond of a Surety Company acceptable to the District conditioned upon payment in full of all persons, companies, or corporations who perform labor upon or furnish materials to be used in the work under this Contract; said bond shall inure to the benefit of all persons entitled to file claims under Section 9100 of the Civil Code of the State of California. The amount of the Material and Labor Bond shall be one hundred percent (100%) of the Total Contract Price.

F2-03 - Maintenance Bond

A Maintenance Bond in the amount of 25 percent (25%) of the Contract Price with a corporate surety approved by the District will be required. Such bond shall be provided before final payment is made to Contractor and shall guarantee the repair of all damage due to faulty materials or workmanship provided or done by Contractor including the repairs of any damage to other parts of the system resulting from such defects. Neither the final certificate of payment nor any provision in the contract documents nor partial or entire occupancy of the premises by the District shall constitute an acceptance of work not done in accordance with the contract documents or relieve Contractor or liability in respect to any express warranties or responsibility for faulty materials or workmanship. Contractor shall remedy any defects in the work and pay for any damage to other work resulting therefrom. The District will give notice of observed defects with reasonable promptness. In the event that Contractor should fail to make such repairs, adjustments, or other Work that may be made necessary by such defects, the District may do so and charge Contractor the cost thereby incurred. The Maintenance Bond shall remain in full force and effect for a period of one (1) year after the date of final acceptance of the job of the District.

F2-04 - Surety Companies Waive Right To Notification

The Surety Companies shall familiarize themselves with all of the conditions and provisions of this Contract, and they waive the right of special notification of any change or modification of this contract or of extension of time or of decreased or increased work, or of the cancellation of the Contract, or of any other act or acts by the District or its authorized agents, under the terms of this Contract; and failure to so notify the aforesaid Surety Companies of changes shall in no way relieve the surety companies of their obligation under this Contract.

F2-05 - Contractor's And Subcontractor's Insurance

F2-05.1 - General

Contractor shall not commence work under this contract until they have obtained all the insurance required under this paragraph and such insurance has been approved by the District, nor shall Contractor allow any subcontractor to commence work on their subcontract until the insurance required of the subcontractor has been so obtained and approved.

F2-05.2 - Workers' Compensation And Liability Insurance

The Contractor shall Provide, during the life of this Contract, workers' compensation insurance for all of the employees engaged in Work under this Contract, on or at the Project site, and, in case any of sublet Work, the Contractor shall require each subcontractor similarly to provide workers' compensation insurance for all the latter's employees as prescribed by State law. Any class of employee or employees not covered by a subcontractor's insurance shall be covered by the Contractor's insurance. In case any class of employees engaged in work under this Contract, on or at the Project site, is not protected under the Workers' Compensation Statutes, the Contractor shall provide or shall cause a subcontractor to provide, adequate insurance coverage for the protection of such employees not otherwise protected. The Contractor is required to secure payment of compensation to their employees in accordance with the provisions of Section 3700 of the Labor Code. The Contractor shall file with Valley of the Moon Water District certificates of its insurance protecting workers and shall provide certificates at any time upon request. Company or companies providing insurance coverage shall be acceptable to Valley of the Moon Water District, if in the form and coverage as set forth in the Contract Documents.

Contractor shall assume the immediate defense of and indemnify and save harmless Valley of the Moon Water District, EKI, and each entity's officers and employees, agents, and consultants from all claims, loss, damage, injury, and liability of every kind, nature, and description brought by any person employed or used by Contractor, or any subcontractor, to perform the Work under this contract regardless of responsibility or negligence. Contractor hereby agrees to waive rights of subrogation which any insurer of Contractor may acquire from Contractor by virtue of the payment of any loss. Contractor agrees to obtain any endorsement that may be necessary to effect this waiver of subrogation. The Workers' Compensation Policy shall be endorsed with a waiver of subrogation in the favor of the Valley of the Moon Water District and EKI for all work performed by the Contractor, its employees, agents and subcontractors.

F2-05.3 - Public Liability Insurance

Contractor shall provide the following public liability insurance:

BODILY INJURY, Affording limits of liability in the amounts of two million dollars (\$2,000,000) for each person and two million dollars (\$2,000,000) for each occurrence, and PROPERTY DAMAGE, Affording limits of liability in the amount of two million dollars (\$2,000,000) for each occurrence and five million dollars (\$5,000,000) in the aggregate; said insurance shall cover all

claims for bodily injuries, or death, or property damage suffered or alleged to have been suffered by any person or persons by reason of or in the course of operations under the Contract, whether occurring by reason of acts or omissions of Contractor or any subcontractor or both. Such insurance shall be maintained until final acceptance of the work by the District and shall include completed operations and products liability insurance with aggregate limits as indicated above, which shall continue for a period of three hundred and sixty-five (365) days after acceptance of the work by the District.

Such liability insurance shall indemnify Contractor and their subcontractors against loss from liability imposed by law upon, or assumed under contract by, Contractor or their Subcontractors for damages on account of such bodily injury, property damage and completed operations and products liability insurance. Such insurance shall be provided on a comprehensive, broad form occurrence property damage liability policy form written by underwriters through an agency satisfactory to the District covering operations, owned and non-owned vehicles and equipment, Contractors' protective coverage blanket contractual liability and completed operations liability. Such liability insurance shall not exclude explosion, collapse, underground excavation or removal of lateral support.

F2-05.4 - Insurance Certificates And Waiver Of Rights Of Subrogation

Commercial General Liability and Automobile Liability Insurance - Contractor shall provide and maintain the following commercial general liability and automobile liability insurance:

<u>Coverage</u> - Coverage for commercial general liability and automobile liability shall be at least as broad as the following:

- 1. Insurance Service Office (ISO) Commercial Liability Coverage (Occurrence Form CG 0001)
- 2. Insurance Service Office (ISO) Business Auto Coverage (Form CA 0001), covering Symbol 1 (any auto)

Contractor's professional liability insurance: If Contractor will provide or furnish professional services under this Contract, through a delegation of professional design services or otherwise, then Contractor shall be responsible for purchasing and maintaining applicable professional liability insurance in an amount of no less than one million dollars (\$1,000,000) per occurrence and one million dollars (\$1,000,000) general aggregate. The insurance shall be written on a claims made basis. This insurance shall provide protection against claims arising out of performance of professional design or related services, and caused by a negligent error, omission, or act for which the insured party is legally liable. It shall be maintained throughout the duration of the Contract and for a minimum of two years after Substantial Completion. If such professional design services are performed by a Subcontractor(s), and not by Contractor itself, then the requirements of this paragraph may be satisfied through the purchasing and maintenance of such insurance by such Subcontractor(s).

<u>Limits</u> - Contractor shall maintain limits no less than the following:

- 1. General Liability Two million dollars (\$2,000,000) per occurrence and five million dollars (\$5,000,000) in the aggregate for bodily liability, personal injury and property damage. If Commercial General Liability Insurance or other form with a general aggregate limit or products-completed operation aggregate limit is used, either the general aggregate limit shall apply separately to the project/location (with the ISO CG 2503, or ISO CG 2504, or insurer's equivalent endorsement provided to the Member Water District) or the general aggregate limit and products-completed operations aggregate limit shall be twice the required occurrence limit.
- 2. <u>Automobile Liability</u> Two million dollars (\$2,000,000) for bodily injury and property damage each accident limit.

<u>Required Provisions</u> - The general liability and automobile liability policies are to contain, or be endorsed to contain, the following provisions:

- 1. Valley of the Moon Water District, EKI, and each entity's directors, officers, employees, and authorized volunteers (collectively "Additional Insureds") are to be given insured status at least as broad as ISO endorsement CG 2010 11 85; or both CG 20 10 10 01 and CG 20 37 04 13 (or the CG 20 10 04 13 (or earlier edition date) specifically naming all of the Additional Insureds, or using language that states "as required by contract"). All Subcontractors hired by Contractor must also have the same forms or coverage at least as broad; as respects (via CG 20 38 04 13): liability arising out of activities performed by or on behalf of the Contractor; products and completed operations of the Contractor; premises owned, occupied or used by the Contractor; and automobiles owned, leased, hired or borrowed by the Contractor. The coverage shall contain no special limitations on the scope of protection afforded to Additional Insureds.
- 2. It is understood and agreed to by the parties hereto and the insurance company(s), that the Certificate(s) of Insurance and policies shall so covenant and shall be construed as primary, and Valley of the Moon Water District insurance and/or deductibles and/or self-insured retentions or self-insured programs shall not be construed as contributory using the ISO endorsement CG 20 01 04 13 or coverage at least as broad.
- 3. Any failure to comply with reporting or other provisions of the policies including breaches of warranties shall not affect coverage provided to Additional Insureds.
- 4. The Contractor's insurance shall apply separately to each insured against whom claim is made or suit is brought, except with respect to the limits of the insurer's liability.
- 5. Each insurance policy required above shall provide that coverage shall not be canceled, except with notice to the Valley of the Moon Water District.

- 6. Certificates of insurance and endorsements shall have clearly typed thereon Owner project Number and title of Contract Documents.
- 7. Written notice of cancellation, non-renewal, or reduction in coverage of any policy shall be mailed to Owner (Attention: Owner Risk Manager) at Valley of the Moon Water District, P.O. Box 280, El Verano, CA 95433, sixty (60) Days in advance of the effective date of the cancellation, non-renewal, or reduction in coverage. Written notice of cancellation for non-payment shall be mailed within ten (10) Days of cancellation

Such liability insurance shall indemnify Contractor and their sub-contractors against loss from liability imposed by law upon, or assumed under contract by, Contractor or their sub-contractors for damages on account of such bodily injury (including death), property damage, personal injury, completed operations, and products liability.

The general liability policy shall cover bodily injury and property damage liability, owned and non-owned equipment, blanket contractual liability, completed operations liability, explosion, collapse, underground excavation, and removal of lateral support.

The automobile liability policy shall cover all owned, non-owned, and hired automobiles.

All of the insurance shall be provided on policy forms and through companies satisfactory to the District.

Deductibles and Self Insured Retentions:

Any deductible or self-insured retention must be declared to and approved by the Valley of the Moon Water District. At the option of the Valley of the Moon Water District, the insurer shall either reduce or eliminate such deductibles or self-insured retentions.

Acceptability of Insurers:

Insurance is to be placed with insurers having a current A.M. Best Rating of no less than A-:V11 or equivalent or as otherwise approved by the Valley of the Moon Water District.

Worker's Compensation and Employer's Liability Insurance:

The Contractor shall Provide, during the life of this Contract, workers' compensation insurance for all of the employees engaged in Work under this Contract, on or at the Project site, and, in case any of sublet Work, the Contractor shall require each subcontractor similarly to provide workers' compensation insurance for all the latter's employees as prescribed by State law. Any class of employee or employees not covered by a subcontractor's insurance shall be covered by the Contractor's insurance. In case any class of employees engaged in work under this Contract, on or at the Project site, is not protected under the Workers' Compensation Statutes, the Contractor shall provide or shall cause a subcontractor to provide, adequate insurance coverage for the protection of such employees not otherwise protected. The Contractor is required to secure payment of compensation to their employees in accordance with the provisions of Section 3700 of the Labor Code. The Contractor shall file with Valley of the Moon Water District certificates of its insurance protecting workers and shall provide certificates at any time upon request. Company or companies

providing insurance coverage shall be acceptable to Valley of the Moon Water District, if in the form and coverage as set forth in the Contract Documents.

Contractor shall assume the immediate defense of and indemnify and save harmless Valley of the Moon Water District, EKI, and each entity's officers and employees, agents, and consultants from all claims, loss, damage, injury, and liability of every kind, nature, and description brought by any person employed or used by Contractor, or any subcontractor, to perform the Work under this contract regardless of responsibility or negligence. Contractor hereby agrees to waive rights of subrogation which any insurer of Contractor may acquire from Contractor by virtue of the payment of any loss. Contractor agrees to obtain any endorsement that may be necessary to effect this waiver of subrogation. The Workers' Compensation Policy shall be endorsed with a waiver of subrogation in the favor of the Valley of the Moon Water District and EKI for all work performed by the Contractor, its employees, agents and subcontractors.

Responsibility for Work:

Until the completion and final acceptance by the Valley of the Moon Water District of all the work under and implied by this agreement, the work shall be under Contractor's responsible care and charge. Contractor shall rebuild, repair, restore and make good all injuries, damages, re-erections, and repairs occasioned or rendered necessary by causes of any nature whatsoever.

Contractor shall provide and maintain builder's risk insurance (or installation floater) covering all risks of direct physical loss, damage or destruction to the work in the amount specified in the General Conditions, to insure against such losses until final acceptance of the work by the Valley of the Moon Water District. Such insurance shall insure at least against the perils of fire and extended coverage, theft, vandalism and malicious mischief, and collapse. Valley of the Moon Water District, EKI, and each entity's directors, officers, employees, and authorized volunteers shall be named insured(s) on any such policy. The making of progress payments to Contractor shall not be construed as creating an insurable interest by or for the Valley of the Moon Water District or be construed as relieving Contractor or their subcontractors of responsibility for loss from any direct physical loss, damage or destruction occurring prior to final acceptance of the work by the Valley of the Moon Water District.

The Contractor shall waive all rights of subrogation against Valley of the Moon Water District, EKI, and each entity's directors, officers, employees, or authorized volunteers.

Evidences of Insurance:

Prior to the execution of the Contract, Contractor shall furnish the District with a certificate of insurance (Accord Form 25-S or equivalent) signed by the insurer's representative evidencing the coverage required by this agreement. Such evidence shall include an additional insured endorsement signed by the insurer's representative and evidence of waiver of rights of subrogation against Valley of the Moon Water District (if builder's risk insurance is applicable). Such evidence shall also include (1) attached additional insured endorsements with primary & non-contributory wording, (2) Workers' Compensation waiver of subrogation, and (3) a copy of the CGL declarations or endorsement page listing all policy endorsements, and confirmation that coverage includes or has been modified to include Required Provisions in Paragraph 1.04 above. The

District reserves the right to obtain complete, certified copies of all required insurance policies, at any time. Failure to continually satisfy the Insurance requirements is a material breach of contract.

F2-05.5 Continuation of Coverage

If any of the required coverages expire during the term of this agreement, Contractor shall deliver the renewal certificate(s) including the general liability insurance additional insured endorsement and evidence of waiver of rights of subrogation against the District to the District at least ten (10) days prior to the expiration date.

Section F-3 - Contractor's General Duties, Responsibilities And Obligations

F3-01 - Contractor's Legal Address

Both the address given in the Bid and Contractor's office in the vicinity of the work are hereby designated as places to which Drawings, samples, notices, letters or other articles or communications to Contractor may be mailed or delivered. The delivery at either of these places of any such thing from the District or its agents to Contractor shall be deemed sufficient service thereof upon Contractor, and the date of such service shall be the date of such delivery.

F3-02 - Superintendence By Contractor

Within two (2) weeks after execution and delivery of the Contract, Contractor shall deliver to the District a complete list of key job personnel and a list of emergency telephone numbers.

At the site of the work, Contractor shall employ a construction superintendent or foreman who shall have full authority to act for Contractor. It is understood that such representative shall be acceptable to the District.

F3-03 - Contractor's Obligations

Contractor shall and will, in good workmanlike manner, do and perform all work and furnish all supplies and materials, machinery, equipment, facilities and means, except as herein otherwise expressly specified, necessary or proper to perform and complete all the work required by this contract, within the time herein specified, in accordance with the provisions of this contract and said Specifications and in accordance with the Plans and Drawings covered by this contract and any and all supplemental Plans and Drawings. They shall furnish, erect, maintain and remove such construction plant and such temporary work as may be required. Contractor shall observe, comply with, and be subject to all terms, conditions, requirements, and limitations of the contract and Specifications.

It is understood that, except as otherwise specifically stated in the contract documents, Contractor shall provide and pay for all materials, labor, tools, equipment, water, light, power generation including fuel and all necessary air emission permits, transportation, superintendence, temporary construction of every nature, and all other services and facilities of every nature whatsoever necessary to execute, complete, and deliver the work within the specified time.

F3-04 - Safety And Health

Contractor shall assume sole and complete responsibility and comply with the latest requirements of the California Occupational Safety and Health Act, the U.S Department of Transportation Omnibus Transportation Employee Testing Act, and all such similar legislature.

Contractor agrees that they shall assume sole and complete responsibility for job site conditions during the course of construction of this project, including safety of all persons and property; that

this requirement shall apply continuously and not be limited to normal working hours; and that Contractor shall defend, indemnify and hold the District and Engineer harmless from any and all liability, real or alleged, in connection with the performance of work on this project, excepting for liability arising from the sole negligence of the District or Engineer.

In order to protect the lives and health of their employees under the contract, Contractor shall comply with all pertinent provisions of the Contract Work Hours and Safety Standards Act, as amended, commonly known as the Construction Safety Act as pertains to health and safety standards; and shall maintain an accurate record of all cases of death, occupational disease, and injury requiring medical attention or causing loss of time from work, arising out of and in the course of employment on work under the contract.

Contractor alone shall be responsible for the safety, efficiency, and adequacy of their plant, appliances and methods, and for any damage which may result from their failure or their improper construction, maintenance or operation.

F3-05 - Protection Of Work And Property

Contractor shall at all times safely guard the District's property from injury or loss in connection with this contract. They shall at all times safely guard and protect their own work and that of adjacent property, from damage. Contractor shall replace or make good any such damage, loss or injury unless such be caused directly by errors contained in the contract or by the District, or their duly authorized representative.

All property line fences shall be protected by Contractor, and if they are temporarily removed, injured, or destroyed, they and any other property injured by Contractor, their employees or agents, shall be restored to a condition as good as when they entered upon the work.

Contractor shall be solely responsible for jobsite security including, but not limited to, security of their equipment and any materials stored on the jobsite.

F3-06 - Contractor Shall Assume Risks

Until the completion and final acceptance by the District of all of the work under and implied by this Contract, the work shall be under Contractor's responsible care and charge. Contractor shall rebuild, repair, restore and make good all injuries, damages, re-erections, and repairs occasioned or rendered necessary by causes of any nature whatsoever, excepting only acts of God and none other, to all or any portions of the work, except as otherwise stipulated.

F3-07 - Contractor's Title To Material

No materials or supplies for the work shall be purchased by Contractor or by any subcontractor subject to any chattel mortgage or under a conditional sale contract or other agreement by which an interest is retained by the seller. Contractor warrants that they have good title to all materials and supplies used in the work, free from all liens, claims or encumbrances.

F3-08 - Cooperation

Contractor shall cooperate with all other contractors who may be performing work in behalf of the District and workers who may be employed by the District on any work in the vicinity of the work to be done under this Contract, and they shall so conduct their operations as to interfere to the least possible extent with the work of such contractors or workmen. They shall promptly make good, at their own expense, any injury or damage that may be sustained by other contractors or employees of the District at their hands.

If, through acts of neglect on the part of Contractor, any other Contractors or any Subcontractor shall suffer loss of damage on work, Contractor agrees to settle with such other Contractor or subcontractor by agreement of arbitration if such other Contractor or subcontractor will so settle. If such other Contractor or subcontractor shall assert any claim against the District on account of any damage alleged to have been sustained, the District shall notify Contractor, who shall indemnify and save harmless the District against any such claim.

F3-09 - Compliance With Labor Laws And Regulations

Contractor shall keep themselves fully informed of all existing and future State and National Laws, County and City ordinances and Regulations which in any manner affect those engaged or employed in the work, or the materials used in the work, or which in any way affect the conduct of the work and of all such orders and decrees of bodies of tribunals having any jurisdiction or authority over the same. If any discrepancy or inconsistency is discovered in the Drawings or Specifications, or in this Contract in relation to any such law, ordinance, regulation, order or decree Contractor shall forthwith report the same to Engineer in writing. They shall at all times observe and comply with, and shall cause all of their agents and employees to observe and comply with, all such existing and future laws, ordinances, regulations, orders and decrees, and shall protect and indemnify the District and all of its officers, agents and servants against any claim or liability arising from or based upon the violation of any such law, ordinance, regulations, order or decree, whether by Contractor themselves or their employees. Notwithstanding the foregoing, and with regard only to Sonoma County Transportation and Public Works Construction Standard 219 -Trench Paving and Backfill, Contractor shall be relieved of its compliance and indemnification obligations to the District, so long as Contractor's trenching and paving work is in full conformance with these Drawings and Specifications.

F3-10 - Responsibility Of Contractor And Indemnification

Until the completion and final acceptance by the District of all the work under and implied by this agreement, the work shall be under Contractor's responsible care and charge. Contractor shall rebuild, restore, make good all damages, and replace as necessary all re-erections, repairs and materials occasioned or rendered necessary by causes of any nature whatsoever. Contractor shall bear all losses and damages directly resulting to him, to the District, or to others on account of the performance or character of the work, unforeseen difficulties, accidents or any other causes whatsoever, arising out of the work of Contractor under this Contract.

The parties defined as "Additional Insured(s)" above, collectively the "Indemnitees," shall not be liable or accountable in any manner for loss or damage that may happen to any part of the Work; loss or damage to materials or other things used or employed in performing the Work; injury, sickness, disease, or death of any person; or damage to property resulting from any cause whatsoever except for direct damages to the extent caused by the sole negligence, willful misconduct or active negligence of an Indemnitee, attributable to performance or character of the Work, and Contractor releases all of the foregoing Indemnitees from any and all such claims.

To the furthest extent permitted by law (including without limitation California Civil Code §2782), Contractor shall immediately defend, indemnify and hold harmless Valley of the Moon Water District, EKI, and each entity's directors, officers, employees, or authorized volunteers (the "Indemnitees"), and each of them from and against:

- a) Any and all claims, demands, causes of action, damages, costs, expenses, losses or liabilities, in law or in equity, of every kind or nature whatsoever for, but not limited to, injury to or death of any person including Indemnitees or Contractor, and damages to or destruction of property of any person, including but not limited to, Indemnitees or Contractor, arising out of or in any manner directly or indirectly connected with the work to be performed under this agreement, however caused, regardless of any negligence of Indemnitees (including passive negligence), except the sole negligence or willful misconduct or active negligence of Indemnitees. Contractor shall immediately defend upon the Valley of the Moon Water District's tender, at Contractor's own cost, expense and risk, any and all such aforesaid suits, actions or other legal proceedings of every kind that may be brought or instituted against Indemnitees, notwithstanding whether Contractor's liability is or can be established. Contractor's obligation to indemnify shall survive the termination or completion of this agreement for the full period of time allowed by law and shall not be restricted by the insurance requirements of this Contract or to insurance proceeds, if any, received by Indemnitees. Contractor's defense and indemnity obligation herein includes, but is not limited to damages, fines, penalties, attorney's fees and costs arising from claims under the Americans With Disabilities Act (ADA) or other federal or state disability access or discrimination laws arising from Contractor's Work during the course of construction of the improvements or after the Work is complete, as the result of defects or negligence in Contractor's construction of the improvements.
- b) Any and all actions, proceedings, damages, costs, expenses, fines, penalties or liabilities, in law or equity, of every kind or nature whatsoever, arising out of, resulting from, or on account of the violation of any governmental law or regulation, compliance with which is the responsibility of Contractor;
- c) Any and all losses, expenses, damages (including damages to the work itself), attorneys' fees, and other costs, including all costs of defense, which any of them may incur with respect to the failure, neglect, or refusal of Contractor to faithfully perform the work and all of the Contractor's obligations under the agreement. Such costs, expenses, and damages

shall include all costs, including attorneys' fees, incurred by the indemnified parties in any lawsuit to which they are a party.

With respect to third-party claims against Contractor, Contractor waives any and all rights to any type of express or implied indemnity against the Indemnitees. Owner shall provide timely notice to Contractor of any third-party claim relating to the Contract Documents, in accordance with Section 9201 of the California Public Contract Code.

Approval or purchase of any insurance contracts or policies shall in no way relieve from liability nor limit the liability of Contractor, its Subcontractors of any tier, or the officers or agents of any of them.

To the furthest extent permitted by law (including, without limitation, Civil Code §2782), the indemnities, releases of liability and limitations of liability, claims procedures, and limitations of remedy expressed throughout Contract Documents shall apply even in the event of breach of Contract, negligence (active or passive), fault or strict liability of the party(ies) indemnified, released, or limited in liability, and shall survive the termination, rescission, breach, abandonment, or completion of the Work or the terms of the Contract Documents. If Contractor fails to perform any of these defense or indemnity obligations, Owner may in its discretion back charge Contractor for Owner's costs and damages resulting therefrom and withhold such sums from progress payments or other Contract moneys which may become due.

The indemnities in the Contract Documents shall not apply to any Indemnitee to the extent of its sole negligence or willful misconduct; nor shall they apply to Owner or other indemnified party to the extent of its active negligence.

F3-11 - Permits, Licenses, and Regulations

Contractor shall procure and pay for all permits, licenses and approvals necessary for the execution of this contract. Contractor shall comply with all laws, ordinances, rules, orders, and regulations relating to the performance of the work, the protection of adjacent property, and the maintenance of passageways, guard fences or other protective facilities.

Contractor Responsibility

Contractor shall identify, obtain, and pay for all licenses and permits in accordance with the laws and regulations governing the work. Any information about specific licenses or permits provided in these Specifications is for informational purposes and does not relieve Contractor of this obligation. Contractor shall pay all taxes properly assessed against Contractor's equipment or property used in conjunction with the work.

Contractor's License

Contractor shall hold an active Class A - General Engineering contractor's license or a Class C57 – Well Drilling Contractor contractor's license issued by the State of California. The license shall be in good standing.

F3-12 - Construction Utilities and Materials

Contractor shall be responsible for furnishing at their expense for and in behalf of their work under this Contract all necessary utilities, materials, and labor, such as special connections to or furnishing of a water supply, telephones, power lines, fences, roads, drill pad fill materials, security personnel, etc.

F3-13 - Subcontracting

Contractor may, subject to the limitation set forth in Division 2, Part 1, Chapter 4 (commencing at Section 4100) of the California Public Contract Code, utilize the services of specialty subcontractors on those parts of the work which, under normal contracting practices, are performed by specialty subcontractors.

Contractor shall be as fully responsible to the District for the acts and omissions of their subcontractors, and of persons either directly or indirectly employed by them, as they are for the acts and omissions of persons directly employed by them.

Contractor shall cause appropriate provisions to be inserted in all subcontracts relative to the work to bind subcontractors to Contractor by the terms of the General Conditions and other contract documents insofar as applicable to the work of subcontractors and to give Contractor the same power as regards terminating any subcontract that the District may exercise over Contractor under any provision of the contract documents. It shall be Contractor's responsibility to require and confirm that each subcontractor meets the minimum insurance requirements contained herein.

Nothing contained in this contract shall create any contractual relation between any subcontractor and the District.

<u>F3-14 - Patents</u>

Contractor shall hold and save the District and its officers, agents, servants, and employees harmless from liability of any nature or kind, including cost and expenses for, or on account of, any patented or unpatented invention, process, article, or appliance manufactured or used in the performance of the contract, including its use by the District, unless otherwise specifically stipulated in the contract documents.

If Contractor uses any design, device or materials covered by letters, patent or copyright, they shall provide for such use by suitable agreement with the District of such patented or copyrighted design, device or material. It is mutually agreed and understood that, without exception, the contract prices shall include all royalties or costs arising from the use of such design, device or materials, in any

way involved in the work. Contractor and/or their Sureties shall indemnify and save harmless the District of the project from any and all claims for infringement by reason of the use of such patented or copyrighted design, device or materials or any trademark or copyright in connection with work agreed to be performed under this contract, and shall indemnify the District for any cost, expense or damage which it may be obliged to pay by reason of such infringement at any time during the prosecution of the work or after completion of the work.

F3-15 - Contractor To Report Errors Or Discrepancies

If Contractor, in the course of the work, discovers any discrepancies between the Drawings and the conditions of the ground, or any errors or omissions in the Drawings or in the layout given by stakes, points, or instructions, it shall be their duty to inform the District immediately in writing and the District shall promptly verify the same. Any work done after such discovery, until authorized, will be done at Contractor's risk.

F3-16 - Preservation Of Stakes And Marks

Contractor shall carefully preserve benchmarks, reference points, and stakes, and in case of willful or careless destruction they will be charged with the resulting expense of replacement and shall be responsible for any mistakes that may be caused by their unnecessary loss or disturbances.

F3-17 - Maintenance Of Traffic, Traveled Ways, Crossings, Etc.

Throughout the performance of the work under or in connection with this Contract, Contractor shall construct and adequately maintain suitable and safe crossings over trenches and such detours as are necessary to care for public and private traffic.

The material excavated from trenches shall be compactly deposited along the side of the trench in such manner as shall give as little inconvenience as possible to the traveling public and to adjoining property Districts.

F3-18 - Reports, Records And Data

Contractor shall submit to the District such schedule of quantities and costs, progress schedules, payrolls, reports, estimates, records and other data as the District may request concerning work performed or to be performed under this contract.

F3-19 - Inspection

Contractor shall permit the authorized representatives and agents of the District to inspect all work and materials.

F3-20 - Right Of Appeal

Contractor shall have the right of appeal from any decision by any inspector to Engineer and from Engineer to the District.

F3-21 - Maintaining Traffic

Contractor shall furnish, install, and maintain at their expense all barricades, signs, lights, or other devices necessary to adequately warn of any obstructions to the traveled and pedestrian way and provide flagmen as necessary for safety of public traffic and pedestrians and to provide access to property adjacent to the work.

Contractor shall comply with the current State of California, Department of Transportation Manual of warning signs, lights, and devices for use in performance of work within the job site.

The fact that rain or other causes, either within or beyond the control of Contractor, may force suspension or delay of the work shall in no way relieve Contractor of their responsibility for maintaining traffic through the project and providing local access as specified herein. Contractor shall at all times keep on the job such materials, force and equipment as may be necessary to keep roads, streets, and driveways within the project open to traffic and in good repair and shall expedite the passage of such traffic, using such force and equipment as may be necessary.

Contractor shall be responsible for keeping the Police and/or Sheriff's Department and the Fire Department informed of obstructions to either public or private roads caused by reason of their operations.

Contractor shall make provisions for the safe passage of pedestrians around the area of work at all times.

Full compensation for conforming to the requirements of this article shall be considered as included in the prices paid for the various contract items of work and no additional allowance will be made therefore.

Section F-4 - General Duties And Powers Of The District And Of Representatives Thereof

F4-01 - No Personal Liability On The Part Of Officers & Officials Of The District

No Agent of the District, or Engineer, or any authorized assistant of any of them, shall be personally responsible for any liability arising under this Contract except to the extent allowed by law.

F4-02 - Land And Rights-Of-Way

Prior to the start of construction, the District shall obtain all land rights-of-way necessary for the carrying out and completion of work to be performed under this contract.

F4-03 - Surveys

Unless otherwise expressly provided for in this contract, the District will furnish to Contractor all surveys necessary for the execution of the work. Contractor shall carefully preserve benchmarks, reference points, and stakes, and in case of willful or careless destruction they will be charged with the resulting expense of replacement and shall be responsible for any mistake that may be caused by their unnecessary loss or disturbance.

F4-04 - Authority Of The Engineer

The District will observe construction and may call Engineer for assistance. The District and Engineer shall observe construction for conformity to the Contract provisions; shall decide all questions relative to the true construction, meaning, and intent of the Specifications and Drawings; shall have the power to reject or condemn all work or material which does not conform to the terms of this Contract. Their estimate and decision in all matters shall be a condition precedent to an appeal to the District, or the right of Contractor to receive, demand, or claim any money or other compensation under this agreement and a condition precedent to any liability on the part of the District to Contractor on account of this Contract.

Regardless of work observed by Engineer, Contractor shall nevertheless be responsible for the conformity of all work to the Drawings and Specifications.

F4-05 - Duties And Powers Of Inspectors

Properly authorized and accredited inspectors shall be considered to be the representatives of the District limited to the duties and powers entrusted to them. It will be their duty to inspect materials and workmanship of those portions of the work to which they are assigned, either individually or collectively, under instructions of Engineer and to report any and all deviations from the Drawings, Specifications and other Contract provisions which may come to their notice.

Regardless of work observed by the inspectors, Contractor shall be responsible for the conformity of all work to the intent and provisions of this Contract.

F4-06 - Method Of Work

The review by Engineer of any drawing or any method of work proposed by Contractor shall not relieve Contractor of any of their responsibility for any errors therein and shall not be regarded as any assumption of risk or liability by the District or any officer or employee thereof, and Contractor shall have no claim under this Contract on account of the failure or partial failure or inefficiency of any plan or method so approved. Such review shall be considered to mean merely that the District has no objection to Contractor using, upon their own full responsibility, the plan or method which Contractor proposes.

Any plan or method of work suggested by the District to Contractor but not specified or required, if adopted or followed by Contractor in whole or in part, shall be used at the risk and responsibility of Contractor, and the District shall assume no responsibility therefor.

F4-07 - Suspension Of Work

Should the District be prevented or enjoined from proceeding with work or from authorizing its prosecution either before or after its prosecution, Contractor shall not be entitled to make or assert claim for damage by reason of said delay, but time for completion of the work will be extended to such reasonable time as the District may determine will compensate for time lost by such delay with such determination to be set forth in writing.

F4-08 - Right Of The District To Terminate Contract

In the event that any of the provisions of this contract are violated by Contractor, or by any of their subcontractors, the District may serve written notice upon Contractor and the Surety of its intention to terminate the contract, such notices to contain the reasons for such intention to terminate the contract, and unless within ten (10) days after the serving of such notice upon Contractor, such violations or delay shall cease and satisfactory arrangement or correction be made, the contract shall be terminated, and the Surety shall have the right to take over and perform the contract; provided, however, that if the Surety does not commence performance thereof within ten (10) days from the date of the mailing to such Surety of notice of termination, the District may take over the work and prosecute the same to completion by contract or by force account for the account and at the expense of Contractor, and Contractor and their Surety shall be liable to the District for any excess cost occasioned by the District thereby, and in such event the District may take possession of and utilize in completing the work, such materials, appliances, and plant as may be on the site of the work and necessary therefor.

F4-09 - Right Of The District To Perform Extra Work

In case of neglect or refusal by Contractor to perform any extra work which may be authorized by the District or to make satisfactory progress in the execution of the same, the District may employ any person or persons to perform such work and Contractor shall not in any way interfere with or molest the person or persons so employed.

F4-10 - Sequence of Work

Unless otherwise approved by the District or Engineer, the Sequence of Work to be performed by Contractor, progressing from first to last, is as follows:

- Destruction of existing well at the Park Avenue Site.
 Performance of all above-grade work

Section F-5 - Scope, Nature And Intent Of The Specifications And Drawings

F5-01 - Interpretation Of Specifications And Drawings

The Specifications and the Contract Drawings are intended to be explanatory of each other. Any work indicated in the Contract Drawings and not in the Specifications, or vice versa, is to be executed as if indicated in both.

Should it appear that the work to be done, or any of the matters relative thereto, are not sufficiently detailed or explained in these Contract Documents, including the Contract Drawings, Contractor shall apply to Engineer for such further explanations as may be necessary and shall conform thereto as part of this Contract, so far as may be consistent with the terms of this Contract. In the event of any doubt or question arising, respecting the true meaning of the Specifications, reference shall be made to the District and its decision thereon shall be final.

F5-02 - Performance In Accordance With True Meaning And Intent Of Contract

The work shall be performed and completed according to the true spirit, meaning and intent of the Specifications and the General Stipulations, and the Contract Drawings.

<u>F5-03 - Figure Dimensions To Govern</u>

All work shown on the Contract Drawings, the dimensions of which are not figures, shall be accurately followed to the scale to which the Drawings are made. Figured dimensions are to be followed, where given. Large scale and full size drawings shall be followed in preference to small-scale drawings. Contractor shall request a clarification from Engineer where figured dimensions differ from other figured dimensions or from scaled measurements.

F5-04 - Existing Underground Facilities

The locations of existing underground facilities as shown on the Drawings are based upon field and record information obtained during the design of the project. The information may be inaccurate or incomplete. It shall be Contractor's responsibility to notify every District of underground facilities to field verify the locations of their facilities prior to commencing excavations.

Pursuant to Government Code Sections 4216 through 4216.9, Contractor shall notify the appropriate regional notification center of all excavations as required under Government Code Sections 4216 through 4216.9. Contractor shall contact Underground Service Alert at 1-800-642-2444 for the location of subsurface installations. Contractor shall furnish to District written documentation of its contact(s) with Underground Service Alert within three (3) days after such contact(s). Contractor shall remain in full compliance with the requirements of Government Code Sections 4216 through 4216.9 at all times while performing work under this Agreement.

In the event that Contractor encounters underground facilities at locations materially different from those shown on the Drawings or indicated in the Specifications or identified in the field, they shall immediately notify the District. The District shall promptly investigate the conditions and if they find that they are significantly different than the available information would suggest they will make the necessary changes to the Drawings and/or Specifications and any increase or decrease of costs resulting from the changes shall be adjusted under Extra Work.

F5-05 - Datum

The datum of which all elevations mentioned herein or shown on the Drawings is the mean sea level datum of the United States Coast and Geodetic Survey, specifically, the National Geodetic Vertical Datum of 1988, unless otherwise noted on the Drawings.

Section F-6 - Character Of Workmanship And Materials

F6-01 - Inspection

All work and materials shall be subject to the inspection and rejection of Engineer or the District's designated representative.

The District may assign such assistant(s) as it may deem necessary to inspect the materials to be furnished and the work to be done under this Contract.

The District's designated representative shall be notified of the time and place of preparation, manufacture, or construction of all material for work or any part of the work which they may wish to inspect, and of the time and place of making the factory tests required under this Contract. Such notification shall be given a sufficient length of time in advance of the beginning of the work on such material or part, or the beginning of such test, to allow arrangements to be made for inspecting and testing or witnessing, as the case may be, if such inspection and testing or witnessing are deemed practicable by the District's designated representative.

If any Work is covered contrary to the written instructions of the District's designated representative it must, if requested by the District's designated representative, be uncovered for their observation and replaced at Contractor's expense.

If the District's designated representative considers it necessary or advisable that covered work be inspected or tested by others, Contractor, at the District's designated representative's request, will uncover, expose or otherwise make available for observation, inspection or testing as the District's designated representative may require, that portion of the Work in question, furnishing all necessary labor, materials, tools, and equipment. If it is found that such Work is defective, Contractor will bear all the expenses of such uncovering, exposure, observation, inspection and testing and of satisfactory reconstruction. If, however, such Work is not found to be defective, Contractor will be allowed an increase in the Contract Price or an extension of the Contract Time, or both, directly attributable to such uncovering, exposure, observation, inspection, testing and reconstruction and an appropriate Change Order shall be issued.

F6-02 - Subsurface Conditions Found Different

Should Contractor encounter subsurface and/or latent conditions at the site materially differing from those shown on the Plans or indicated in the Specifications, they shall immediately give notice to the District's designated representative of such conditions before they are disturbed. The District's designated representative will thereupon promptly investigate the conditions, and if they finds that they materially differ from those shown on the Plans or indicated in the Specifications, they will at once make such changes in the Plans and/or Specifications as they may find necessary, and any increase or decrease of cost resulting from such changes to be adjusted in the manner provided under Extra Work.

<u>F6-03</u> - Quality Of Materials And Workmanship In Absence Of Detailed Specifications And <u>Drawings</u>

Whenever under this Contract it is provided that Contractor shall furnish materials or manufactured articles or shall do work for which no detailed Specifications are set forth, the materials or manufactured articles shall be of the best grade in quality and workmanship obtainable in the market from firms of established good reputation or, if not ordinarily carried in stock, shall conform to the usual standards for first-class materials or articles of the kind required, with due consideration of the use to which they are to be put. In general, work performed shall be in full conformity and harmony with the intent to secure the best standard of construction and equipment of the work as whole or in part.

<u>F6-04 - Samples And Tests Of Materials</u>

When requested by Engineer, sample or test specimens of the materials to be used or offered for use in connection with the work shall be prepared at the expense of Contractor and furnished by them in such quantities and sizes as may be required for proper examination and tests, with all carriage charges prepaid and with information as to their sources.

All samples shall be submitted before shipment and in ample time to permit the making of proper tests, analyses, or examination before the time at which it is desired to incorporate the material into the work.

No material shall be used in the work unless or until it has been approved by Engineer. Samples will be secured and tested whenever necessary to determine the quality of the material.

F6-05 - Inspection And Testing Of Materials

All materials and equipment used in the construction of the project shall be subject to adequate inspection and testing in accordance with accepted standards. The laboratory or inspection agency shall be selected by the District. The District will pay for all laboratory inspection service direct, and not as a part of the contract.

Contractor shall provide certifications or letters of compliance from material suppliers as requested by Engineer. Providing the certifications or letters of compliance will be at Contractor's expense.

F6-06 - "Or Equal" Clause

Whenever a material, article or piece of equipment is identified on the Plans or in the Specifications by reference to manufacturers' or vendors' names, trade names, catalogue numbers, etc., it is intended merely to establish a standard; and, any material, article, or equipment of other manufacturers and vendors which will perform adequately the duties imposed by the general design will be considered equally acceptable provided the material article, or equipment so

proposed is, in the opinion of Engineer, of equal substance and function. It shall not be purchased or installed by Contractor without Engineer's review.

F6-07 - Storage Of Materials

Materials shall be so stored as to ensure the preservation of their quality and fitness for the work. Bulk materials delivered to the Work Site shall be protected from contamination (e.g., mixing with soil or other materials), damage by animals, vandalism, or other deleterious effects. They shall be so located and disposed of that prompt and proper inspection thereof may be made.

F6-08 - Correction Of Work

All work, all materials, whether incorporated in the work or not, all processes of manufacture, and all methods of construction shall be at all times and places subject to the inspection of Engineer who shall be the final judge of the quality and suitability of the work, materials, processes of manufacture and methods of construction for the purposes for which they are used. Should they fail to meet their approval they shall be forthwith reconstructed, made good, replaced and/or corrected, as the case may be, by Contractor at their own expense. Rejected material shall immediately be removed from the site. If, in the opinion of Engineer, it is undesirable to replace any defective or damaged materials or to reconstruct or correct any portion of the work injured or not performed in accordance with the contract documents, the compensation to be paid to the Contract hereunder shall be reduced by such amount as in the judgment of Engineer shall be equitable.

If Contractor defaults or neglects to carry out the Work in accordance with the Contract Documents, and fails after receipt of written notice from the District to commence and continue correction of such default or neglect with diligence and promptness, the District may, following receipt by Contractor of an additional written notice and without prejudice to any other remedy, make good such deficiencies.

In an emergency, the District also reserves the right to perform any portion of the Work which threatens the safety or health of the public or District and the safety of the Work or any property or equipment

F6-09 - Right To Retain Imperfect Work

If any portion of the work done or material furnished under this Contract shall prove defective and not in accordance with the Specifications and Drawings, and if the imperfection in the same shall not be of sufficient magnitude of importance to make the work dangerous or undesirable, or if the removal of such work is impracticable or will create conditions which are dangerous or undesirable, Engineer shall have the right and authority to retain such work instead of requiring the imperfect work to be removed and reconstructed, but they shall make such deductions therefor in the payments due or to become due Contractor as may be just and reasonable.

F6-10 - Final Guarantee

Contractor shall be held responsible for and must make good any defects, because of faulty, improper or inferior workmanship or materials, arising or discovered in any part of their work within one year after the completion and acceptance of the same. The bond for maintenance furnished by Contractor, shall continue for such period and shall cover such defects and protect the District against them as indicated in Section F-2.

F6-11 - Weather Conditions

In the event of temporary suspension of work, or during inclement weather, Contractor will, and will cause their subcontractors to protect carefully their and their work and materials against damage or injury from the weather. If, in the opinion of the District's designated representative, any work or materials shall have been damaged or injured by reason of failure on the part of Contractor or any of their subcontractors to so protect their work, such materials shall be removed and replaced at the expense of Contractor.

Section F-7 - Progress And Prosecution Of Work

F7-01 - Construction Schedule

Within two (2) weeks after execution and delivery of the contract, Contractor shall deliver to Engineer an estimated construction progress schedule in a form satisfactory to Engineer, showing the proposed dates of commencement and completion of each of the various subdivisions of work required under the Contract Documents.

F7-02 - Time For Completion And Liquidated Damages

It is hereby understood and mutually agreed, by and between Contractor and District, that the date of beginning and the time for completion as specified in the contract of work to be done hereunder are ESSENTIAL CONDITIONS of this contract; and it is further mutually understood and agreed that the work embraced in this contract shall be commenced by the date to be specified in the Notice to Proceed.

Contractor agrees that said work shall be prosecuted regularly, diligently, and uninterruptedly at such rate of progress as will insure full completion thereof within the time specified. It is expressly understood and agreed, by and between Contractor and the District, that the time for the completion of the work described herein as a reasonable time for the completion of the same, taking into consideration the average climatic range and usual industrial conditions prevailing in this locality.

If the said Contractor shall neglect, fail or refuse to complete the work within the time herein specified, or any proper extension thereof granted by the District, then Contractor does hereby agree, as a part consideration for the awarding of this contract, to pay to the District the amount specified in the contract, not as a penalty but as liquidated damages for such breach of contract as hereinafter set forth, for each and every calendar day that Contractor shall be in default after the time stipulated in the contract for completing the work.

The said amount is fixed and agreed upon by and between Contractor and the District because of the impracticability and extreme difficulty of fixing and ascertaining the actual damages the District would in such event sustain, and said amount is agreed to be the amount of damages which the District would sustain and said amount shall be retained from time to time by the District from current periodical estimates.

It is further agreed that time is of the essence of each and every portion of this contract and of the Specification wherein a definite and certain length of time is fixed for the performance of any act whatsoever; and where under the contract an additional time is allowed for the completion of any work, the new time limit fixed by such extension shall be of the essence of this contract. Provided that Contractor shall not be charged with liquidated damages or any excess cost when the District determines that Contractor is without fault and Contractor's reasons for the time extension are acceptable to the District; Provided further that Contractor shall not be charged with liquidated damages or any excess cost when the delay in completion of the work is unavoidable.

F7-03 - Avoidable Delays

Avoidable delays in the prosecution or completion of the work shall include all delays which might have been avoided by the exercise of care, prudence, foresight and diligence on the part of Contractor.

Delays in the prosecution of parts of the work, which may in themselves be unavoidable but do not necessarily prevent or delay the prosecution of other parts of the work nor the completion of the whole work within the time herein specified; reasonable loss of time resulting from the necessity of submitting plans to Engineer for approval and from the making of surveys, measurements, and inspections, and such interruptions as may occur in the prosecution of the work on account of the reasonable interference of other contractors employed by the District which do not necessarily prevent the completion of the whole work within the time herein specified, will be considered by the District as avoidable delays within the meaning of this Contract.

F7-04 - Unavoidable Delays

Unavoidable delays in the prosecution or completion of the work under this Contract shall include all delays which may result, through causes beyond the control of Contractor and which they could not have provided against by the exercise of care, prudence, foresight, and diligence. Orders issued by the District changing the amount of work to be done, the quantity of material to be furnished, or the manner in which the work is to be prosecuted, and unforeseen delays in the completion of the work of other contractors under contract with the District will be considered unavoidable delays, so far as they necessarily interfere with Contractor's completion of the whole of the work. Delays due to adverse weather conditions will not be regarded as unavoidable delays in this sense, as Contractor should understand that such conditions are to be expected and plan their work accordingly.

F7-05 - Careless Destruction Of Stakes And Marks No Cause For Delay

In the event that the stakes and marks placed by Engineer are destroyed through carelessness on the part of Contractor, and that the destruction of these marks causes a delay in the work, Contractor shall have no claim for damages or extension of time.

F7-06 - Contractor To Serve Notice Of Delays

Whenever Contractor foresees any delay in the prosecution of the work, and in any event immediately upon the occurrence of any delay which Contractor regards as an unavoidable delay, they shall notify Engineer in writing of the possibility of the occurrence of such delay and its cause, in order that Engineer may take immediate steps to prevent, if possible, the occurrence or continuance of the delay, or if this cannot be done, may determine whether the delay is to be considered avoidable or unavoidable, how long it continues, and to what extent the prosecution and completion of the work are to be delayed thereby.

After the completion of any part or the whole of the work, Engineer, in estimating the amount due Contractor, will assume that any and all delays which have occurred in its prosecution and completion have been avoidable delays, except such delays as shall have been called to the attention of Engineer at the time of their occurrence and found by Engineer to have been unavoidable. Contractor will make no claim that any delay not called to the attention of Engineer at the time of its occurrence has been an unavoidable delay.

F7-07 - Extension Of Time

Should any delays occur which Engineer may consider unavoidable, as herein defined, Contractor shall, pursuant to their application, be allowed an extension time, beyond the time herein set forth, proportional to said delay or delays, in which to complete this Contract; and liquidated damages for delay shall not be charged against Contractor by the District during an extension of time granted because of unavoidable delay or delays.

Should an extension of time in which to complete the Contract be granted by the District to Contractor because or on account of delays which were avoidable as herein defined, such as extension of time shall not relieve Contractor from payment of liquidated damages for delay as herein provided for.

F7-08 - Saturday, Sunday, And Holiday

Saturday, Sunday, and holiday work will be allowed only if requested in writing from Contractor with the stipulation that Contractor shall pay for all overtime labor charges at the charge out rates for inspectors and/or resident engineers. All overtime labor charges shall be deducted from the final payment along with any liquidated damages.

Work necessary for the proper care and protection of work already performed or in case of an emergency will be allowed without the permission of Engineer.

F7-09 - Pursuance Of Work Under Unfavorable Weather And Other Adverse Conditions

During unfavorable weather and other adverse conditions, Contractor shall pursue only such portions of the work as shall not be damaged thereby. No portions of the work whose satisfactory quality or efficiency will be affected by any unfavorable conditions shall be constructed while these conditions exist, unless by special means or precautions, approved by Engineer, Contractor shall be able to overcome them.

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Section F-8 - Manner, System And Amount Of Payments

F8-01 - Monthly Or Progress Estimates And Payments

Contractor will submit to the District a partial payment estimate filled out and signed by Contractor covering the Work performed during the period covered by the partial payment estimate (but not more often than once a month) and supported by such data as the District's designated representative may reasonably require. If payment is requested on the basis of materials and equipment not incorporated in the Work but delivered and suitably stored at or near the site, the partial payment estimate shall also be accomplished by such supporting data, satisfactory to the District as will establish the District title to the material and equipment and protect their interest therein, including applicable insurance. The District's designated representative will, within ten (10) days after receipt of each partial payment estimate either indicate in writing their approval of payment and present the partial payment estimate to the District, or return the partial payment estimate to Contractor indicating in writing their reasons for refusing to approve payment. In the latter case, Contractor may make the necessary corrections and resubmit the partial payment estimate. The District will, within thirty (30) days of presentation to them of an approved partial payment estimate, pay Contractor a progress payment on the basis of the approved partial payment estimate. The District shall retain ten percent (10%) of the amount of each payment until final completion and acceptance of all work covered by the Contract Documents.

Any work necessary to be performed after regular hours, on Sundays or Legal Holidays, shall be performed without additional expense to the District.

All Work covered by partial payment made shall thereupon become the sole property of the District but this provision shall not be construed as relieving Contractor of the sole responsibility for the care and protection of the Work upon which payments have been made or the restoration of any damaged Work, or as a waiver of the right of the District to require the fulfillment of all terms of the Contract Documents.

Contractor may request in writing that it be allowed at its own expense to substitute securities for monies withheld by the District to ensure performance under this Contract. Only securities listed in Government Code Section 16430 and bank or savings and loan certificates of deposit shall qualify under this section. Securities equivalent to the amount withheld shall be deposited with the District or with a state or federally chartered bank as the escrow agent. Upon satisfactory completion of the Contract and on written authorization by the District, said securities shall be returned to Contractor. Contractor shall be the beneficiary of said securities and shall receive any interest thereon.

All costs that the District incurs in evaluating a request by Contractor that securities be allowed to be substituted for monies withheld by District, and, in the event such substitution is permitted, all costs that the District incurs in effecting such substitutions shall be borne by Contractor.

F8-02 - Quantities Of Estimate

Wherever the estimated quantities of work to be done and materials to be furnished on a unit price basis under this contract are shown in any of the documents including the Bid, they are given for use in comparing bids, and the right is expressly reserved, except as herein otherwise specifically limited, to increase or diminish them as may be deemed reasonably necessary or desirable by the District to complete the work contemplated by this contract, and such increase or diminution shall in no way vitiate this contract, nor shall any such increase or diminution give cause for claims or liability for damages.

F8-03 - Breakdown Of Lump Sum Prices

Within two (2) weeks after the issuance of the Notice to Proceed, Contractor shall furnish to Engineer a detailed estimate giving a complete breakdown of large lump sum prices and items which include numerous subdivisions and work. This breakdown will be used as a basis for partial payments and will not be considered as fixing a basis for additions to or deductions from the contract price.

F8-04 - Method Of Measurement

Unless specifically stated otherwise in this Contract, no extra measurement or measurements according to local custom of any kind shall be allowed in measuring the work under this Contract, but only the length, area, solid contents, number, weight, or time in standard units, as the case may be, shall be considered as specified.

Basis of payment for all items measured by the lineal unit or square unit shall be the horizontal distance as indicated on the Drawings, irrespective of vertical curves or grade.

F8-05 - Delayed Payments

Should any payment due Contractor or any estimate be delayed, through fault of the District, beyond the time stipulated, such delay shall not constitute a breach of Contract or be the basis for a claim for damages, but the District shall pay interest to Contractor equivalent to the legal rate set forth in subdivision (a) of Section 685.010 of the Code of Civil Procedure per annum for the period of such delay. The term for which interest will be paid shall be reckoned, in the case of any monthly or progress payment, from the last day of the month next succeeding the month in which the work was performed to the date of payment of the estimate; and in the case of the final estimate, from the forty-fifth day after acceptance to the date of payment of the final estimate.

The date of payment of any estimate shall be considered the day on which the payment is offered or mailed as evidence by the records of the District. If interest shall become due on any delayed payment, the amount thereof, as determined by the District, shall be added to a succeeding payment. If the interest shall become due on the final payment it shall be paid on a supplementary voucher, provided, however, that Contractor shall not be entitled to interest on any sum or sums which, by the terms of this Contract, the District is authorized to reserve or retain.

F8-06 - No Charge For Delay

Contractor shall have no claim for extra compensation for any hindrances or delays of work from any cause whatsoever during the progress thereof, although they may ask for an extension of the time agreed upon for completing the work.

F8-07 - Compensation To District For Certain Costs Of Extension Of Time

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

F8-08 - Final Acceptance Of Work

Contractor shall notify Engineer, in writing, of the completion of the Work. Final inspection and acceptance of the Work shall be made for the District by Engineer. Such inspection shall be made as soon as practicable after Contractor has notified Engineer in writing that the Work is ready for such inspection.

F8-09 - Final Estimate And Payment

Engineer shall, as soon as practicable after the final acceptance of the work done under this Contract, make a final estimate of the amount of work done thereunder and the value thereof.

Such final estimate shall be signed by Engineer, and after approval by the District, the District shall pay or cause to be paid to Contractor, in the manner provided by law, the entire sum so found to be due hereunder, after deducting therefrom all previous payments and such other lawful amounts as the terms of this Contract prescribe.

In no case will final payment be made in less than thirty-five (35) days after the completion of the work and its acceptance by the District.

F8-10 - Final Payment To Terminate Liability Of District

The acceptance by Contractor of the final payment, made according to the terms of this Contract, shall operate as and be a release to the District, and every member and agent thereof, from all claims and liabilities to Contractor for anything done or furnished for or relating to the work, or for any act or neglect of the District or any person relating to or affecting the work under this Contract, except the claim against the District for the remainder, if there be any, of amounts kept

and retained as provided by the terms of this Contract. No payment, however, final or otherwise, shall operate to release Contractor or their Sureties from any obligation under this contract or the Performance and Payment Bond.

F8-11 - District's Right To Withhold Certain Amounts

Contractor agrees that they will indemnify and save the District harmless from all claims growing out of the lawful demands of subcontractors, laborers, workmen, mechanics, materialmen, and furnishers of machinery and parts thereof, equipment, power tools, and all supplies, including commissary, incurred in the performance of this Contract. Contractor shall, at the District's request, furnish satisfactory evidence that all obligations of the nature hereinabove designated have been paid, discharged, or waived. The District may withhold from Contractor amounts required or permitted to be withheld by law.

Section F-9 - Extra Work

F9-01 - Extra Work Or Work Omitted

Whenever corrections, alterations, or modifications of the work under this Contract are ordered by Engineer, such added work shall be known as Extra Work, and when such corrections, alterations, or modifications decrease the amount of work to be done, such subtracted work shall be known as work omitted.

When Contractor considers that any changes ordered involve Extra Work they shall immediately notify Engineer in writing and subsequently keep them informed as to when and where alleged Extra Work is to be performed and shall make claim for compensation therefor each month not later than the first day of the month following that in which the work claimed to be Extra Work was performed and they shall submit a daily complete statement of materials used and expenses incurred on account of Extra Work performed, showing allocation of all materials and expenses.

All such claims shall state the date of Engineer's written order and the date of approval by the District authorizing the work on account of which claim is made.

If Extra Work orders are given in accordance with the provisions of this Contract, such work shall be considered a part hereof and subject to each and all of its terms and requirements.

No order for Extra Work, at any time or place, shall in any manner or to any extent relieve Contractor of any of their obligations under the Contract.

F9-02 - Compensation For Extra Work Or Work Omitted

No changes in the work covered by the approved contract documents shall be made without having prior written approval of the District. Charges or credits for the work covered by the approved change shall be determined by one or more, or a combination of the following methods:

- 1) Unit bid prices previously approved;
- 2) An agreed lump sum; or
- 3) The actual cost of
 - i) Labor, including foremen;
 - ii) Materials entering permanently into the work;
 - iii) The ownership or rental cost of construction plant and equipment during the time of use on the extra work;
 - iv) Power and consumable supplies for the operation of power equipment;
 - v) Insurance; and
 - vi) Social Security and old age and unemployment contributions.

To the actual costs under Method 3 above, there shall be added a fixed fee to be agreed upon but not to exceed fifteen percent (15%) of the estimated cost of the work. The fee shall be

compensation to cover the cost of supervision, overhead, bond, profit and any other general expenses.

No claim for Extra Work or cost shall be allowed unless the same was done in pursuance of a written order of Engineer approved by the District, as aforesaid, and the claim presented with the first estimate after the changed or Extra Work is done. When work is performed under the terms of Method 3 above, Contractor shall furnish satisfactory bills, payrolls, and vouchers covering all items of cost and, when requested by the District, give the District access to accounts relating thereto.

SECTION "G"

DETAILED SPECIFICATIONS

AQUIFER STORAGE AND RECOVERY EQUIPPING PHASE APRIL 2025 VALLEY OF THE MOON WATER DISTRICT SONOMA COUNTY, CALIFORNIA

Section G-1 - Special Provisions

G1-01 - Abbreviations And Reference Specifications

- a) "ASTM" shall mean the American Society for Testing and Materials, latest edition of Specification.
- b) "AWS" shall mean the American Welding Society, latest edition of Specification.
- c) "AWWA" shall mean the American Water Works Association, latest edition of Specification.
- d) "Caltrans" shall mean the State of California, Business and Transportation Agency, Department of Transportation.
- e) "Caltrans Standard Specification" shall mean the latest edition of the Standard Specifications issued by Caltrans.
- f) "County" shall mean the County of Sonoma Public Works or Department of Permits and Resource Management.
- g) "District" shall mean the Valley of the Moon Water District.
- h) "Engineer" shall mean EKI Environment & Water, Inc.

<u>G1-02 - General</u>

Contractor will be expected to conduct their operations in a manner which creates a minimum amount of damage to the natural vegetation and landscape. Ingress and egress to work areas shall be via existing public roads or easements unless (a) access only is practicable via private property, and (b) permission has been granted by the owner of the private property, or by the owner's duly authorized representative, through prior arrangement with the District. Care shall be exercised to

avoid hazards that may cause injury to persons, animals or property either during working hours or after working hours, which would include dust control, and temporary fencing as required.

All construction outside of road right-of-way will be confined to the smallest possible area, topsoil will be stockpiled for reuse, equipment will be restricted to the immediate area of construction, and any disturbed areas will be reseeded or revegetated as soon as construction is completed to prevent erosion. Landscaped, reseeded and revegetated areas shall be adequately supported and protected.

All private roads and driveways used during construction shall be regraded and restored to their pre-project condition or better. If necessary, Contractor shall provide and place new surfacing.

Receptacles will be provided for construction residue including oil, cleaning fluids and litter. Such residues will be disposed of in a proper manner.

Dust control by watering and a prohibition on burning of waste construction materials or vegetation will be enforced in all construction activity. Watering for dust control should be limited to prevent erosion of exposed soils.

All construction activity will be confined to weekday daylight hours whenever possible to minimize nuisance to local residences. Certain critical operations (e.g. welding and installation of screen and riser) may continue on a 24-hour basis, if approved by District and Engineer. Mufflers are required on all construction equipment. Additional noise mitigation measures may be required during 24-hour operations, or on an as-needed basis, as directed by District or Engineer.

G1-03 - Permits

See Section F3-11 for information regarding permit responsibilities.

G1-04 - Public Convenience And Safety

Prior to commencing work, Contractor shall provide the District with a list of responsible personnel who may be called at any time in case of an emergency. Such list shall include the names, addresses and phone numbers of the job superintendent, foremen, subcontractors and their foremen. Contractor shall amend or supplement said list as necessary.

Contractor shall so conduct their operations as to offer the least possible obstruction and inconvenience to the public. Unless otherwise provided in the special provisions, all public traffic shall be permitted to pass through the work with as little inconvenience and delay as possible.

Contractor shall notify all emergency service providers in writing at least forty-eight (48) hours in advance of any proposed construction activity that will involve roadway closures.

Contractor shall conspicuously post notices one week prior to commencement of construction activities informing residents and visitors that traffic flows will be subject to detours and/or delays, and that access to individual driveways may be disrupted during work hours.

Contractor shall identify desirable construction staging areas prior to delivery of construction materials and equipment and that these staging areas be approved by Engineer.

Contractor's vehicles and equipment shall be equipped with appropriate exhaust and/or spark-arresting devices. Additionally, all vehicles and equipment used for construction shall be maintained in good mechanical condition with engine mufflers installed and operating properly.

Spillage resulting from hauling operations along or across any public traveled way shall be removed immediately at Contractor's expense.

Construction operations shall be conducted in such a manner as to cause as little inconvenience as possible to abutting property. Safe, adequate, continuous and unobstructed pedestrian and vehicular access shall be maintained to residences, commercial establishments, churches, parking lots, etc. unless other arrangements satisfactory to the District has been made. Vehicular access to residential driveways shall be maintained except when necessary construction precludes such access for reasonable periods of time.

Flagmen and guards, while assigned to traffic control, shall perform their duties and shall be provided with the necessary equipment in accordance with the current "Instructions to Flagmen" of Caltrans. The equipment shall be furnished and kept clean and in good repair by Contractor at their expense.

Whenever Contractor's operations create a condition hazardous to traffic or to the public, they shall furnish at their expense such flagmen and guards as are necessary to give adequate warning to the public of any dangerous conditions to be encountered and they shall erect and maintain signs and furnish, erect, and maintain such fences, barricades, lights, and other devices as are necessary to prevent accidents and avoid damage or injury to the public. Signs, lights, flags, and other warning and safety devices shall conform to the requirements set forth in the current "Manual of Warning Signs, Lights, and Devices for Use in Performance of Work Upon Highways" issued by Caltrans.

No material or equipment shall be stored where it will interfere with the free and safe passage of public traffic, and at the end of each day's work and at other times when construction operations are suspended for any reason, Contractor shall remove all equipment and other obstructions from that portion of the roadway open for use by public traffic.

Full compensation for conforming to all of the provisions of this Section shall be considered as included in the prices paid for the various contract items of work and no additional compensation will be allowed.

G1-05 - Preservation Of Property

Due care shall be exercised to avoid injury to existing improvements or facilities, fences, adjacent property, and roadside trees and shrubbery.

Roadside trees and shrubbery, fences, signs, survey markers and monuments, buildings and structures, conduits, pipe lines under or above ground, and any other improvements or facilities adjacent to the work shall be protected from injury or damage. Contractor shall provide and install suitable safeguards to protect such objects from injury or damage. If such objects are injured or damaged by reason of Contractor's operations they shall be replaced or restored to a condition as good as when Contractor entered upon the work, as approved by the District. The cost of such replacement or restoration shall be borne by Contractor under the contract.

Trees shall not be removed unless so designated on the Drawings or as directed by the District. Any damage to limbs, trunks or roots shall be repaired by a licensed tree service contractor.

Signs, fences, and other improvements within the construction area shall be moved to temporary locations satisfactory to the District and responsible agency, and replaced or restored to their original condition at the original location following the completion of construction.

Contractor shall cooperate with the various parties involved in the delivery of mail, the bussing of children to and from school, and the collection and removal of trash and garbage to maintain existing schedules for these services.

Payment for such relocation and access shall be considered as included in the prices paid for the various contract items and no additional payment shall be made.

G1-06 - Environmental Protection and Mitigation

Seasonal wetlands have been identified adjacent to the Verano Avenue site. Due care shall be exercised to avoid the seasonal wetland and Contractor shall observe, and if necessary, implement mitigation measures, to prevent the introduction of foreign material (i.e. hazardous substances) into any seasonal wetlands.

Contractor also shall comply with the conditions of all applicable permits.

During operations, Contractor shall comply with the following:

1. All standard Best Management Practices shall be implemented to prevent the movement of sediment downstream. No debris, soil, silt, sand, bark, slash, sawdust, cement, concrete, washings, petroleum products, or other organic or earthen material shall be allowed to enter into or be placed where it may be washed by rainfall or runoff into the waterways.

- 2. All staging, maintenance, and storage of heavy machinery shall be conducted in such a location and manner that no fuel, oil, or other petroleum products may run off or be washed by rainfall into the water.
- 3. All material and debris generated as a result of project construction shall be removed from the site and disposed of in an approved location.

All water bodies shall be protected from pollutants per County and District NPDES permit requirements.

G1-07 - Mitigation Measures

The following mitigation measures shall be implemented.

Air Quality

- Water all active construction areas at least twice daily.
- Cover all trucks hauling soil, sand, and other loose materials.
- Pave, apply water three times daily, or apply non-toxic soil stabilizers on all unpaved roads, parking areas, and staging areas at construction sites.
- Sweep daily (with water sweepers) all paved access roads, parking areas, and staging areas at construction sites.
- Sweep streets daily (with water sweepers) if visible soil material is carried onto adjacent public streets.
- Contractor shall obtain relevant permits from the Bay Area Air Quality Management District ("BAAQMD") and California Air Resources Board ("CARB") necessary for the operation of portable generators. Contractor shall comply with all requirements of the relevant permits to ensure that generator operations will not result in exceedance of criteria pollutants.

Biological Resources

• Indirect impacts to the creek adjacent to the Park Avenue site shall be avoided through the use of Best Management Practices ("BMPs") to control erosion (e.g., silt fences, drop inlet sediment barriers). Sediment control measures shall be in place prior to the onset of construction and shall be monitored and maintained until construction activities have ceased. Contractor shall also implement BMPs to prevent the accidental release of hazardous materials (e.g., fuel, oil) into the creek.

- Removal of trees and other woody vegetation shall be avoided to the degree feasible. If some removal is required, it should be conducted outside of the nesting season (nesting season is approximately March-August).
- The removal of oak trees and activities within their driplines shall be avoided to the degree feasible. If removal or activities within the driplines cannot be entirely avoided, the trees shall be measured for diameter at breast height to determine if they qualify for protection under the *Sonoma County Tree Protection Ordinance*. If the trees qualify for protection, project activities shall comply with the conditions of the ordinance.
- To protect oak trees intended to remain undisturbed, a 4-foot tall, brightly colored fence shall be installed as far outside the edge of the tree drip lines as feasible. No encroachment into the fenced areas shall be permitted and fencing shall remain in place until all construction activities have ceased. Upon completion of construction activities, the fencing shall be removed.
- Any tree roots to be severed shall be the maximum distance from the trunk. Any roots over one inch in diameter that are damaged as a result of construction activities shall be traced back and cleanly cut behind any split, cracked, or damaged area.

Hazards and Hazardous Materials

• Contractor shall make adequate preparations, including training and equipment, to contain spills of oil and other hazardous materials. Contractor shall ensure that adequate materials are on hand to clean up any accidental spill that may occur. Spills shall be cleaned up immediately and all wastes and used spill control materials shall be properly disposed of at approved disposal facilities.

Noise

- During the hours of 7 p.m. to 7 a.m., the Contractor will limit the number of vehicles entering and leaving the jobsite to a minimum.
- Contractor shall stage baker tanks to help dampen sound from moving beyond the jobsite.
- The drill rig will be affixed with a Hospital Grade or better engine exhaust silencer installed in accordance with the manufacturer recommendation.
- A temporary three-sided wall with roof will be constructed around the drill rig engine compartment to help mitigate sound at the source. Estimated wall will be six to eight (6-8) feet in height constructed of wood with a sound dampening liner.

G1-08 - Existing Utilities

There are a number of existing utilities in the area of work. Telephone, cable and electric service, both overhead and underground, gas, sewer, water and drainage facilities are present in close proximity to the project.

The location of the existing facilities has been compiled from the best information available during design. However, the locations of the underground and overhead facilities shown on any drawings supplied by the District or by Engineer are approximate only and cannot be relied upon as final or inclusive. Contractor is cautioned that the Drawings may be incomplete.

Contractor shall do no excavation until all existing utilities have been marked in the field by the applicable entity responsible for the particular utility. Utility companies shall be notified by contacting Underground Service Alert (USA) at telephone number 1-800-227-2600, as required by law. Notification to USA shall be made at least 48 hours before the start of any excavation. Contractor shall confirm the marked location of any underground facilities by exposing them through hand-digging ahead of excavation or drilling, to prevent damage to the facilities. If damage should occur to existing facilities, the utility company and the District shall be notified immediately. Repairs shall be made by the utility company or at the utility company's direction. Contractor shall be responsible for all costs related to the relocation and repair of all utilities damaged by Contractor's operations.

Existing facilities shall not be intentionally disturbed and shall be supported and protected against injury and maintained in good operating conditions at the expense of Contractor for the entire duration of the Contract.

Any proposed disruption of existing facilities shall be coordinated with the appropriate District and the District shall be notified prior to the disruption.

G1-09 - Water For Construction And Dust Control

Water for construction and dust control shall be the responsibility of Contractor. The District currently has drought restrictions in place and is not providing water for construction purposes. If the drought restrictions are lifted, water may be obtained from the Valley of the Moon Water District from hydrants near the project site. Contractor must request placement of a meter by the District for construction water connection. A deposit for the meter will be required which would be refundable upon removal of the meter by District personnel.

At Contractor's request and expense, a hydrant meter will be provided by the District, see section 8-2.11 of the most recent version of the Valley of the Moon Water District Codes and Regulations.

Contractors are prohibited from operating gate valves or fire hydrants on the District System. Acquisition of water through appropriation at unmetered fire hydrants or other facilities is a violation of State law.

Recycled water may be available from the Sonoma Valley County Sanitation District. Contractor shall verify availability of this water for construction purposes with the Sonoma Valley County Sanitation District.

G1-10 - Pre-Construction Conference

Prior to beginning any work, Contractor shall provide the District and affected agencies with a list of key and responsible personnel and how they may be reached at any time. A pre-construction conference shall be scheduled, at which time Contractor shall be required to present their proposed work schedule, information on off-site yards, subcontractors, location of disposal and stockpile areas and traffic control plans. All Bids shall be subject to approval of the District and applicable agencies.

G1-11 - Requirements To Submit Claim

For any claim submitted to the District, the following requirements shall apply:

- a) The claim shall be in writing and include the documents necessary to substantiate the claim. Claims must be filed on or before the date of final payment. Nothing herein is intended to extend the time limit or supersede notice requirements otherwise provided by the contract for the filing of claims.
- b) For claims of less than fifty thousand dollars (\$50,000):
 - 1) The District shall respond in writing to any written claim within 45 days of receipt of the claim, or may request, in writing, within 30 days of receipt of the claim, any additional documentation supporting the claim or relating to defenses to the claim the District may have against the claimant.
 - 2) If additional information is thereafter required, it shall be requested and provided pursuant to this subdivision, upon mutual agreement of the District and claimant.
 - 3) The District's written response to the claim, as further documented, shall be submitted to the claimant within 15 days after receipt of the further documentation or within a period of time no greater than that taken by the claimant in producing the additional information, whichever is greater.
- c) For claims of more than fifty thousand dollars (\$50,000), and less than or equal to three hundred seventy-five thousand dollars (\$375,000):
 - 1) The District shall respond in writing to all written claims within 60 days of receipt of the claim, or may request, in writing, within 30 days of receipt of the claim, any additional documentation supporting the claim or relating to defenses to the claim the District may have against the claimant.
 - 2) If additional information is thereafter required, it shall be requested and provided pursuant to this subdivision, upon mutual agreement of the District and claimant.
 - 3) The District's written response to the claim, as further documented, shall be submitted to the claimant within thirty (30) days after receipt of the further documentation or

within a period of time no greater than that taken by the claimant in producing the additional information, whichever is greater.

- d) If the claimant disputes the District's written response, or the District fails to respond within the time prescribed, the claimant may so notify the District, in writing, either within 15 days of receipt of the District's response or within fifteen (15) days of the District's failure to respond within the time prescribed, respectively, and demand an informal conference to meet and confer for settlement of the issues in dispute. Upon a demand, the District shall schedule a meet and confer conference within thirty (30) days for settlement of the dispute.
- e) Following the meet and confer conference, if the claim or any portion remains in dispute, the claimant may file a claim as provided in Chapter 1 (commencing with Section 900) and Chapter 2 (commencing with Section 910) of Part 3 of Division 3,6 of Title 1 of the Government Code. For purposes of those provisions, the running of the period of time within which a claim must be filed shall be tolled form the time the claimant submits their written claim pursuant to subdivision (a) until the time that claim is denied as a result of the meet and confer process, including any period of time utilized by the meet and confer process.
- f) This section does not apply to tort claims and nothing in this section is intended nor shall be construed to change the time periods for filing tort claims or actions specified by Chapter 1 (commencing with Section 900) and Chapter 2 (commencing with Section 910) of Part 3 of Division 3.6 of Title 1 of the Government Code.
- g) The following language regarding claims under the Public Contract Code shall apply and, if in conflict with any other provision of this Specification, shall supersede that provision:

SECTION 1. Section 9204 is added to the Public Contract Code, to read:

- 9204. (a) The Legislature finds and declares that it is in the best interests of the state and its citizens to ensure that all construction business performed on a public works project in the state that is complete and not in dispute is paid in full and in a timely manner.
- (b) Notwithstanding any other law, including, but not limited to, Article 7.1 (commencing with Section 10240) of Chapter 1 of Part 2, Chapter 10 (commencing with Section 19100) of Part 2, and Article 1.5 (commencing with Section 20104) of Chapter 1 of Part 3, this section shall apply to any claim by a contractor in connection with a public works project.
 - (c) For purposes of this section:
- (1) "Claim" means a separate demand by a contractor sent by registered mail or certified mail with return receipt requested, for one or more of the following:
- (A) A time extension, including, without limitation, for relief from damages or penalties for delay assessed by a public entity under a contract for a public works project.
- (B) Payment by the public entity of money or damages arising from work done by, or on behalf of, the contractor pursuant to the contract for a public works project and payment for which is not otherwise expressly provided or to which the claimant is not otherwise entitled.
 - (C) Payment of an amount that is disputed by the public entity.
- (2) "Contractor" means any type of contractor within the meaning of Chapter 9 (commencing with Section 7000) of Division 3 of the Business and Professions Code who has entered into a direct contract with a public entity for a public works project.
- (3) (A) "Public entity" means, without limitation, except as provided in subparagraph (B), a state agency, department, office, division, bureau, board, or commission, the California State University, the University of California, a city,

including a charter city, county, including a charter county, city and county, including a charter city and county, district, special district, public authority, political subdivision, public corporation, or nonprofit transit corporation wholly owned by a public agency and formed to carry out the purposes of the public agency.

- (B) "Public entity" shall not include the following:
- (i) The Department of Water Resources as to any project under the jurisdiction of that department.
- (ii) The Department of Transportation as to any project under the jurisdiction of that department.
- (iii) The Department of Parks and Recreation as to any project under the jurisdiction of that department.
- (iv) The Department of Corrections and Rehabilitation with respect to any project under its jurisdiction pursuant to Chapter 11 (commencing with Section 7000) of Title 7 of Part 3 of the Penal Code.
 - (v) The Military Department as to any project under the jurisdiction of that department.
 - (vi) The Department of General Services as to all other projects.
 - (vii) The High-Speed Rail Authority.
- (4) "Public works project" means the erection, construction, alteration, repair, or improvement of any public structure, building, road, or other public improvement of any kind.
- (5) "Subcontractor" means any type of contractor within the meaning of Chapter 9 (commencing with Section 7000) of Division 3 of the Business and Professions Code who either is in direct contract with a contractor or is a lower tier subcontractor.
- (d) (1) (A) Upon receipt of a claim pursuant to this section, the public entity to which the claim applies shall conduct a reasonable review of the claim and, within a period not to exceed 45 days, shall provide the claimant a written statement identifying what portion of the claim is disputed and what portion is undisputed. Upon receipt of a claim, a public entity and a contractor may, by mutual agreement, extend the time period provided in this subdivision.
 - (B) The claimant shall furnish reasonable documentation to support the claim.
- (C) If the public entity needs approval from its governing body to provide the claimant a written statement identifying the disputed portion and the undisputed portion of the claim, and the governing body does not meet within the 45 days or within the mutually agreed to extension of time following receipt of a claim sent by registered mail or certified mail, return receipt requested, the public entity shall have up to three days following the next duly publicly noticed meeting of the governing body after the 45-day period, or extension, expires to provide the claimant a written statement identifying the disputed portion and the undisputed portion.
- (D) Any payment due on an undisputed portion of the claim shall be processed and made within 60 days after the public entity issues its written statement. If the public entity fails to issue a written statement, paragraph (3) shall apply.
- (2) (A) If the claimant disputes the public entity's written response, or if the public entity fails to respond to a claim issued pursuant to this section within the time prescribed, the claimant may demand in writing an informal conference to meet and confer for settlement of the issues in dispute. Upon receipt of a demand in writing sent by registered mail or certified mail, return receipt requested, the public entity shall schedule a meet and confer conference within 30 days for settlement of the dispute.
- (B) Within 10 business days following the conclusion of the meet and confer conference, if the claim or any portion of the claim remains in dispute, the public entity shall provide the claimant a written statement identifying the portion of the claim that remains in dispute and the portion that is undisputed. Any payment due on an undisputed portion of the claim shall be processed and made within 60 days after the public entity issues its written statement. Any disputed portion of the claim, as identified by the contractor in writing, shall be submitted to nonbinding mediation, with the public entity and the claimant sharing the associated costs equally. The public entity and claimant shall mutually agree to a mediator within 10 business days after the disputed portion of the claim has been identified in writing. If the parties cannot agree upon a mediator, each party shall select a mediator and those mediators shall select a qualified neutral third party to mediate with regard to the disputed portion of the claim. Each party shall bear the fees and costs charged by its respective mediator in connection with the selection of the neutral mediator. If mediation is unsuccessful, the parts of the claim remaining in dispute shall be subject to applicable procedures outside this section.
- (C) For purposes of this section, mediation includes any nonbinding process, including, but not limited to, neutral evaluation or a dispute review board, in which an independent third party or board assists the parties in dispute resolution through negotiation or by issuance of an evaluation. Any mediation utilized shall conform to the timeframes in this section.
- (D) Unless otherwise agreed to by the public entity and the contractor in writing, the mediation conducted pursuant to this section shall excuse any further obligation under Section 20104.4 to mediate after litigation has been commenced.
- (E) This section does not preclude a public entity from requiring arbitration of disputes under private arbitration or the Public Works Contract Arbitration Program, if mediation under this section does not resolve the parties' dispute.
- (3) Failure by the public entity to respond to a claim from a contractor within the time periods described in this subdivision or to otherwise meet the time requirements of this section shall result in the claim being deemed rejected in

its entirety. A claim that is denied by reason of the public entity's failure to have responded to a claim, or its failure to otherwise meet the time

requirements of this section, shall not constitute an adverse finding with regard to the merits of the claim or the responsibility or qualifications of the claimant.

- (4) Amounts not paid in a timely manner as required by this section shall bear interest at 7 percent per annum.
- (5) If a subcontractor or a lower tier subcontractor lacks legal standing to assert a claim against a public entity because privity of contract does not exist, the contractor may present to the public entity a claim on behalf of a subcontractor or lower tier subcontractor. A subcontractor may request in writing, either on their own behalf or on behalf of a lower tier subcontractor, that the contractor present a claim for work which was performed by the subcontractor or by a lower tier subcontractor on behalf of the subcontractor. The subcontractor requesting that the claim be presented to the public entity shall furnish reasonable documentation to support the claim. Within 45 days of receipt of this written request, the contractor shall notify the subcontractor in writing as to whether the contractor presented the claim to the public entity and, if the original contractor did not present the claim, provide the subcontractor with a statement of the reasons for not having done so.
- (e) The text of this section or a summary of it shall be set forth in the plans or specifications for any public works project that may give rise to a claim under this section.
- (f) A waiver of the rights granted by this section is void and contrary to public policy, provided, however, that (1) upon receipt of a claim, the parties may mutually agree to waive, in writing, mediation and proceed directly to the commencement of a civil action or binding arbitration, as applicable; and (2) a public entity may prescribe reasonable change order, claim, and dispute resolution procedures and requirements in addition to the provisions of this section, so long as the contractual provisions do not conflict with or otherwise impair the timeframes and procedures set forth in this section.
 - (g) This section applies to contracts entered into on or after January 1, 2017 .
- (h) Nothing in this section shall impose liability upon a public entity that makes loans or grants available through a competitive application process, for the failure of an awardee to meet its contractual obligations.
- (i) This section shall remain in effect only until January 1, 2020, and as of that date is repealed, unless a later enacted statute, that is enacted before January 1, 2020, deletes or extends that date.
- SEC. 2. The Legislature finds and declares that it is of statewide concern to require a charter city, charter county, or charter city and county to follow a prescribed claims resolution process to ensure there are uniform and equitable procurement practices.
- SEC. 3. If the Commission on State Mandates determines that this act contains costs mandated by the state, reimbursement to local agencies and school districts for those costs shall be made pursuant to Part 7 (commencing with Section 17500) of Division 4 of Title 2 of the Government Code

Section G-2 - Site Requirements

G2-01 - Site Requirements

- A. The Owner has obtained the necessary legal right-of-way for the project.
- B. The Owner will provide Contractor with access to the project site for the purpose of performing work under this Contract.
- C. Contractor's use of the project site shall be limited to activities associated with performing work under this Contract.

G2-02 - Area For Construction

Contractor shall confine all construction activities to the subject parcel, adjacent easements, and public right-of-way.

A. Contractor shall not encroach onto private property without prior written permission of the property owner.

G2-03 - Health And Safety

- A. Contractor shall be solely and completely responsible for conditions of the job site, including the health and safety of all persons (including employees, subcontractors, service personnel, and site visitors) and property during performance of the work. This requirement shall apply continuously and shall not be limited to normal working hours.
- B. Health and safety provisions shall conform to U.S. Safety Orders, Title 8, U.S. Environmental Protection Agency Standard Operations Safety Guides, and all other applicable federal, state, county, and local laws, ordinances, codes, and the contract requirements. Where any of these are in conflict, the more stringent requirement shall be followed.
- C. Failure of Contractor to become familiar with the aforementioned safety provisions shall not relieve Contractor from compliance with the obligations and penalties set forth herein.

G2-04 - Staking

- A. The Owner will stake or mark property corners, the test hole location, and the well location.
- B. Contractor shall carefully preserve all stakes and marks, and shall pay for any re-staking or re-marking required because of Contractor's careless or unnecessary destruction or removal of stakes or marks.

G2-05 - Existing Utilities And Facilities

- A. The approximate location of existing utilities and other facilities are shown on the Contract Drawings; their exact location is unknown. Additional utilities may exist that are unknown to the Owner and Contractor. The Owner warrants neither the accuracy nor the extent of existing utilities as shown on the Contract Drawings.
- B. Contractor shall confirm the location of, and protect, all existing utilities and other facilities.
- C. Contractor shall contact Underground Service Alert ("USA") at (800) 227-2600 at least two working days, but no more than 28 working days, before any underground excavation at the site. For the purpose of this requirement, excavation shall be defined as any operations that take place 18 inches or more below the existing ground surface. Before contacting USA, Contractor shall clearly mark the location of planned excavation. Contractor shall not begin any underground excavation until the location of underground utilities has been identified. If necessary, Contractor shall hand dig to expose any underground utilities that may conflict with planned excavation.
- D. In the event that Contractor discovers utilities not identified in the Contract Drawings and/or Specifications, Contractor shall immediately notify the Owner and the utility owner by the most expeditious method reasonably available and later confirm in writing.
- E. If Contractor damages, disconnects, or relocates any existing facilities or utilities, Contractor shall, at Contractor's own expense, restore them to the original condition as specified by the owner of the facility or utility.

G2-06 - Security

- A. Contractor shall properly safeguard all equipment, materials, and work against loss, damage, malicious mischief or tampering by unauthorized persons until acceptance of the work by the Owner.
- B. Contractor shall provide, at Contractor's expense, secured storage or continuous surveillance by a watchman as necessary to accomplish this objective.

G2-07 - Storage

- A. Contractor's storage of materials and equipment at the project site is subject to approval by Engineer.
- B. All materials shall be stored in accordance with the manufacturer's Material Safety Data Sheet.
- C. Materials and equipment stored at the site shall not interfere with work at the site and shall not create a hazard.

G2-08 - Temporary Facilities

- A. Contractor shall incorporate all costs associated with temporary facilities into the bid prices. No additional compensation will be paid for temporary facilities.
- B. Contractor shall provide and pay for all electric power, including temporary diesel-powered generators, fuel, and transportation required to perform all work under this Contract. Permits from appropriate oversight agencies for operation of generators and other equipment shall be the responsibility of Contractor.
- C. Contractor shall provide and pay for lighting to allow for safe work at the site, and in compliance with Cal/OSHA standards.
- D. Provide temporary guard rails, ladders, stairs, guards, and barricades to protect persons in accordance with applicable regulations, including California Code of Regulations Title 8 and Cal/OSHA.
- E. The District shall provide Contractor with construction water at a demand rate of up to two hundred (200) gallons per minute at the project site. Contractor shall be billed for the water at the rates shown in Section G1-09.

F. Toilet Facilities

- (1) Contractor shall provide, pay for, and maintain in sanitary condition for the duration of the work, toilet facilities at the work site.
- (2) In the event of a spill or leakage, Contractor shall provide and pay for disinfection.

G2-09 - Drainage

- A. Contractor shall ensure that Contractor's activities do not result in fluids entering any storm drain or other drainage facility, with exceptions for rainwater and low-turbidity groundwater (<100 NTU).
- B. Contractor shall ensure that Contractor's activities do not degrade the quality of rain water runoff into any storm drain or other drainage facility.
- C. These provisions apply to both on- and off-site facilities, unless Contractor obtains written permission from the owner or operator of the facility.

G2-10 - Cooperation

- A. Contractor shall cooperate fully with all utilities, regulatory agencies, adjacent landowners, the Owner, the Operator, and their officers, officials, employees, agents, and volunteers.
- B. At all times during the performance of work on this project, Contractor shall practice good neighborhood relations.
- C. Contractor shall make every effort to be considerate of the impact of Contractor's activities on neighbors, and to minimize those impacts.

Section G-3 - Site Conditions

G3-01 - Unusual Site Conditions

- A. Contractor shall notify the Owner immediately if Contractor suspects or detects that the site contains:
 - (1) Hazardous waste.
 - (2) Material Contractor believes may be hazardous.
 - (3) Subsurface or latent physical conditions at the site differing materially from those indicated in the Contract documents.
 - (4) Unknown physical conditions at the site of an unusual nature, differing materially from those ordinarily encountered and generally recognized as inherent in work of the character provided for in the Contract.

Section G-4 - NOT USED

Section G-5 - Submittals

G5-01 - Submittal Review Process

Contractor shall provide pre-mobilization submittals to Engineer fifteen (15) working days in advance of planned mobilization date.

- A. When possible Engineer shall favorably review or reject Contractor's submittals on an expedited basis. Contractor shall inform Engineer of specific submittals that may warrant expedited review.
- B. Contractor shall not begin work on a project phase until all the required submittals have been favorably reviewed by Engineer.
- C. Contractor shall not be granted a Contract extension, nor paid stand-by time, for delays that are caused by Contractor's failure to provide the required submittals in a timely fashion.

G5-02 - Required Submittals

A. Required submittals listed in each Technical Specification.

Section G-6 - Inspections And Meetings

G6-01 - Pre-Bid Meeting

- A. A mandatory pre-bid meeting will be held at a date to be announced by District to discuss the site-specific project requirements, as referenced in Section "C" Information for and Instructions to Bidders.
- B. Attendance of the pre-bid meeting by prospective bidders is mandatory.

G6-02 - Pre-Construction Meeting

- A. A pre-construction meeting shall be held at the District Office at a time agreed upon by the Owner, Contractor, and Engineer.
- B. The pre-construction meeting shall be completed prior to, or in conjunction with, mobilization.
- C. Attendance of the pre-construction meeting by Contractor's project superintendent is mandatory.

<u>G6-03 - Inspection Purpose And General Requirements</u>

- A. The primary purpose of Engineer's inspections is to confirm that the work is being performed in accordance with the Contract requirements.
- B. The secondary purpose of Engineer's inspections is to evaluate conditions throughout construction, so Engineer can provide Contractor with interpretation and clarification of the Contract requirements as they apply to specific work items and conditions.
- C. Engineer's observations and comments during inspections are intended to provide Contractor with suggestions and guidance for completing the work in accordance with the Contract requirements. Contractor is solely responsible for determining the appropriate course of action, for directing the work, and for fulfilling the Contract requirements. Engineer's observations and comments shall not be considered to be direction of the work.
- D. Contractor shall make a good faith effort to make the work available for inspection by Engineer, to collect and provide samples for inspection by Engineer, and to honestly represent the work to Engineer.
- E. Engineer shall make a good faith effort to accommodate Contractor's construction schedule, to be available throughout construction to make inspections on short notice at Contractor's request, and to provide interpretation and clarification of the Contract requirements.

G6-04 - Mobilization

- A. Contractor shall notify Engineer a minimum of seventy-two (72) hours in advance of the anticipated time of mobilization at each site and shall update Engineer with any changes in the schedule for mobilization.
- B. Contractor shall make equipment and accessories, and sanitary facilities, available for inspection by Engineer.
- C. Contractor shall delineate with chalk marking paint the proposed location of mud pits (if used) and any other excavations, for inspection by Engineer.

<u>G6-05 - Site Preparation</u>

A. Contractor shall provide Engineer with access for inspection and approval of any site preparation to be performed as part of this Contract.

<u>G6-06 - Construction Materials</u>

A. Contractor shall make all construction materials available for inspection by Owner and Engineer.

G6-12 – Not Used

G6-13 - Site Clean-Up And Records

- A. Contractor shall make piping backfilling and compaction, and site cleanup available for inspection by Engineer.
- B. Backfilling and compaction must be witnessed by Owner or Engineer. Backfilling and compaction not witnessed by Engineer, or improperly performed, shall not be considered valid for final acceptance unless otherwise approved by Engineer in writing.
- C. Contractor shall notify Engineer a minimum of seventy-two (72) hours in advance of any punch-list or project acceptance walkthroughs.

Section G-7 - NOT USED

Section G-8 - Bid Item Descriptions

SECTION 1 PARK AVENUE PRODUCTION WELL EQUIPMENT BID ITEMS

1.1 No. 1 – Site Demolition and Destroying Well

01 - Scope Of Work

- A. This bid item shall include the following:
 - (1) Provision of all labor, equipment, and materials necessary for the successful completion of this bid item
 - (2) Obtaining well destruction permit.
 - (3) Destroying existing well per Sonoma County and State requirements. For bidding purposes, Contractor shall assume the following procedure:
 - a. Excavate around the casing to 5 feet below ground surface (ft bgs). District can make their vacuum truck available to assist Contractor with this excavation.
 - b. Cut off and remove the casing at 4.5 ft bgs.
 - c. Rip or perforate the casing from 30 to 5 ft bgs.
 - d. Backfill the casing from TD to 30 ft bgs with approved material per the permit (sand and/or bentonite).
 - e. Backfill up to 4 ft bgs with neat cement grout, forming a mushroom cap over the casing.
 - f. Backfill the excavation with compacted soil to bottom of building slab.
 - g. Pour concrete over compacted soil to match existing building slab.
 - (4) Demolition of existing site features and piping according to Drawings and Specifications.
- B. This bid item shall also include provision of all labor, equipment, and materials associated with fulfilling the requirements of this Contract, but not directly related to a specific Bid Item.

02 - Measurement And Payment

- A. This bid item will be paid as a lump sum.
- B. This bid item, satisfactorily completed, will be paid at the unit prices set forth in the Bid Schedule for Bid Item No. 1 Site Demolition and Destroying Well
- C. This bid item will be paid as a lump sum according to the Contractor provided schedule of values:

- (1) This bid item, satisfactorily completed, will be paid at the lump sum price set forth in the Bid Schedule for Bid Item No. 1 Site Demolition and Destroying Well.
- D. Ten percent (10%) of all payment for this bid item shall be withheld by the Owner until the completed project is approved.

1.2 Bid Item No. 2 – Sitework

01 - Scope Of Work

- A. This bid item shall include the following:
 - (1) Provision of all labor, equipment, and materials necessary for the successful completion of this bid item.
 - (2) Construction of new fence and gates.
 - (3) Replacement of valve boxes.
 - (4) Modifications to the distribution system piping adjacent to Park Avenue.
 - (5) Construction of new concrete well pedestal and pad around the existing well, as shown on the Drawings. Contractor is responsible for finalizing the structural design of this element (this scope is covered under Bid Item 8 for these professional services) and shall install this item in accordance with the detailed structural design.
 - a. For bidding purposes, Contractor shall assume that concrete pad is 6-inch thick using 5 sack cement reinforced with #4 rebar placed 12-inch on center each way and located 2-inches clear from top of pad. Concrete pad shall be placed on Caltrans class 2 aggregate base compacted to 95 percent of its maximum dry density. Aggregate base shall be placed on undisturbed native subgrade material.

02 - Measurement And Payment

- A. This bid item will be paid as a lump sum according to the Contractor provided schedule of values.
 - (1) This bid item, satisfactorily completed, will be paid at the lump sum price set forth in the Bid Schedule for Bid Item No. 2 Sitework.
- B. Ten percent (10%) of all payment for this bid item shall be withheld by the Owner until the completed project is approved.

1.3 Bid Item No. 3 – Well Pump and Pump Column

01 - Scope Of Work

A. This bid item shall include the following:

- (1) Provision of all labor, equipment, and materials necessary for the successful completion of this bid item.
- (2) Installation of submersible well pump and motor.
- (3) Installation of pump column.
- (4) Construction of well plate and discharge tee. Contractor is responsible for the final structural design of this element (this scope is covered under Bid Item 8 for these professional services) and shall install this item in accordance with the detailed structural design.
 - a. For bidding purposes, Contractor shall assume that well plate is a 10-inch AWWA Class D Blind flange (16-inch OD, 0.688-inch thick).

02 - Measurement And Payment

- A. This bid item will be paid as a lump sum according to the Contractor provided schedule of values.
 - (1) This bid item, satisfactorily completed, will be paid at the lump sum price set forth in the Bid Schedule for Bid Item No. 3 Well Pump and Pump Column.
 - B. Ten percent (10%) of all payment for this bid item shall be withheld by the Owner until the completed project is approved.

1.4 Bid Item No. 4 – Injection Piping and Valves

01 - Scope Of Work

- A. This bid item shall include the following:
 - (1) Provision of all labor, equipment, and materials necessary for the successful completion of this bid item.
 - (2) Installation of 2-inch stainless steel injection piping and fittings, including one (1) 2-inch ball valve, one (1) 2-inch check valve, one (1) 2-inch flow meter, one (1) pressure sensor and pressure gauge assembly, one (1) 2-inch electrically actuated ball valve, and pipe supports for these items.
 - (3) Installation of flow control valve, flow control valve control panel, three (3) pressure sensors on control panel, two (2) nitrogen canisters, two (2) nitrogen lines between panel and down well flow control valve, and 2-inch conduit to house nitrogen lines.

02 - Measurement And Payment

A. This bid item will be paid as a lump sum.

- (1) This bid item, satisfactorily completed, will be paid at the lump sum price set forth in the Bid Schedule for Bid Item No. 4 Injection Piping and Valves.
- B. Ten percent (10%) of all payment for this bid item shall be withheld by the Owner until the completed project is approved.

1.5 Bid Item No. 5 – All Other Piping and Mechanical Work

01 - Scope Of Work

- A. This bid item shall include the following:
 - (1) Provision of all labor, equipment, and materials necessary for the successful completion of this bid item.
 - (2) All piping, valving, appurtenances, connections, and relocation of existing chlorination equipment, as shown on the Drawings and described in these Specifications.
 - (3) Testing of installed equipment, piping, valves, instruments and appurtenances.
 - (4) Startup and testing of newly installed equipment, piping, valves, instruments and appurtenances.
 - (5) Disinfection of all installed equipment, piping, valves, instruments and appurtenances.
 - (6) Site cleanup.
 - (7) Preparation of record drawings.

02 - Measurement And Payment

- A. This bid item will be paid as a lump sum per the Contractor provided schedule of values.
 - (1) This bid item, satisfactorily completed, will be paid at the lump sum price set forth in the Bid Schedule for Bid Item No. 5 All Other Piping and Mechanical Work.
- B. Ten percent (10%) of all payment for this bid item shall be withheld by the Owner until the completed project is approved.

1.6 Bid Item No. 6 – Electrical Work Associated with Injection Piping

01 - Scope Of Work

- A. This bid item shall include the following:
 - (1) Provision of all labor, equipment, and materials necessary for the successful completion of this bid item.
 - (2) Purchase and installation of electrical equipment, components, and conduit for items related to the injection piping and valving listed in Bid Item No. 4 Injection

- Piping and Valves. Items include flow meter, pressure sensor and pressure gauge assembly, pressure sensors on flow control valve control panel, and electrically actuated ball valve.
- (3) Contractor is responsible for ensuring that all electrical equipment operates per manufacturer specifications and that the system as a whole operates as described in these Specifications and Drawings.

02 - Measurement And Payment

- A. This bid item will be paid as a lump sum.
 - (1) This bid item, satisfactorily completed, will be paid at the lump sum price set forth in the Bid Schedule for Bid Item No. 6 Electrical Work Associated with Injection Piping.
- B. Ten percent (10%) of all payment for this bid item shall be withheld by the Owner until the completed project is approved.

1.7 Bid Item No. 7 – All Other Electrical Work

01 - Scope Of Work

- A. This bid item shall include the following:
 - (1) Provision of all labor, equipment, and materials necessary for the successful completion of this bid item.
 - (2) Purchase and installing all other electrical components associated with the items shown in the Drawings.
 - (3) Contractor is responsible for ensuring that all electrical equipment operates per manufacturer specifications and that the system as a whole operates as described in these Specifications and Drawings..
 - (4) For bidding purposes, Contractor shall assume that existing SCADA equipment can accommodate new SCADA connections. District is responsible for SCADA integration, but Contractor shall run wires and cables from new improvements to existing electrical and SCADA equipment.
 - (5) Note that PG&E electrical service may require upgrading in order to power the larger pump at the site. Contractor is <u>not</u> responsible for coordinating with PG&E and service upgrade may occur after Contractor's work has been completed. Contractor shall ensure that all systems can be tested whether or not the electrical service has been upgraded.

02 - Measurement And Payment

A. This bid item will be paid as a lump sum.

- (1) This bid item, satisfactorily completed, will be paid at the lump sum price set forth in the Bid Schedule for Bid Item No. 7 All Other Electrical Work.
- B. Ten percent (10%) of all payment for this bid item shall be withheld by the Owner until the completed project is approved.

1.8 Bid Item No. 8 – Professional Services: Structural Engineering Design

01 - Scope Of Work

- A. This bid item shall include the following:
 - (1) Contractor shall be responsible for finalizing the design of the new well pedestal and concrete pad around the pedestal. Well pedestal dimensions and height shall be as shown in the Drawings. Well pad horizontal dimensions shall be as shown on the Drawings. Contractor shall submit detailed shop drawings for the structural design of the pedestal and pad, including but not limited to design calculations and design of the subgrade for the pad, pad thickness, reinforcement bar arrangements, chamfer of edges, and accommodating accessory pipes coming out of pedestal (sounding tube and gravel fill pipe) as shown on drawings, in order to provide a fully functioning system. Design calculations and shop drawings shall be sealed and signed by a registered California Civil or Structural Engineer for favorable review by the Engineer.

02 - Measurement And Payment

- A. This bid item will be paid as a lump sum.
 - (1) This bid item, satisfactorily completed, will be paid at the unit prices set forth in the Bid Schedule for Bid Item No. 8 Professional Services: Structural Engineering Design.
- B. Ten percent (10%) of all payment for this bid item shall be withheld by the Owner until the completed project is approved.

1.9 Bid Item No. 9 – ADDITIVE BID ITEM – Site Paving

01 - Scope Of Work

- A. This bid item shall include the following:
 - (1) Provision of all labor, equipment, and materials necessary for the successful completion of this bid item.
 - (2) Paving the site according to Drawings and Specifications.

02 - Measurement And Payment

- A. This bid item will be paid as a lump sum.
 - (1) This bid item, satisfactorily completed, will be paid at the lump sum prices set forth in the Bid Schedule for Bid Item No. 10 ADDITIVE BID ITEM Site Paving.
- B. Ten percent (10%) of all payment for this bid item shall be withheld by the Owner until the completed project is approved.

SECTION 2 VERANO AVENUE PRODUCTION WELL EQUIPMENT BID

2.1 Bid Item No. 10 - Piping and Mechanical Work

01 - Scope Of Work

- A. This bid item shall include the following:
 - (1) Provision of all labor, equipment, and materials necessary for the successful completion of this bid item.
 - (2) Performing all non-electrical work at the Verano Avenue site as shown on the Drawings and described in these Specifications.

02 - Measurement And Payment

- A. This bid item will be paid as a lump sum.
 - (1) This bid item, satisfactorily completed, will be paid at the lump sum price set forth in the Bid Schedule for Bid Item No. 11 Piping and Mechanical Work.
- B. Ten percent (10%) of all payment for this bid item shall be withheld by the Owner until the completed project is approved.

2.2 Bid Item No. 11 – Electrical Work

01 - Scope Of Work

- A. This bid item shall include the following:
 - (1) Provision of all labor, equipment, and materials necessary for the successful completion of this bid item.
 - (2) Contractor shall be responsible for installing the electrical work associated with the electrically actuated ball valve, flow meters, pressure sensors, flow control valve and control panel, and shall install this item in accordance with the manufacturer's specifications.
 - (3) Contractor is responsible for ensuring that all electrical equipment operates per manufacturer specifications and that the system as a whole operates as described in these Specifications and Drawings.

- (4) For bidding purposes, Contractor shall assume that existing electrical equipment can accommodate new electrical and SCADA connections.
- (5) District is responsible for SCADA integration, but Contractor shall run wires and cables from new improvements to existing electrical and SCADA equipment.

02 - Measurement And Payment

- A. This bid item will be paid as a lump sum.
 - (1) This bid item, satisfactorily completed, will be paid at the lump sum prices set forth in the Bid Schedule for Bid Item No. 12 Electrical Work.
- B. Ten percent (10%) of all payment for this bid item shall be withheld by the Owner until the completed project is approved.

SECTION "H"

LIST AND DESCRIPTION OF DRAWINGS AND FIGURES

AQUIFER STORAGE AND RECOVERY EQUIPPING PHASE APRIL 2025 VALLEY OF THE MOON WATER DISTRICT SONOMA COUNTY, CALIFORNIA

The Contract Drawings and figures prepared by EKI as a basis for the preparation of Bids and for the performance of the work under this contract for the Valley of the Moon Water Aquifer Storage and Recovery, Equipping Phase, are as follows:

DRAWINGS

G-1	Title Sheet, Project Location, and Vicinity Map
G-2	General Notes
G-3	Legend, Abbreviations, and Reference Symbols
C-1	Park Avenue Well - Existing Site & Demolition Plan
C-2	Park Avenue Well - Proposed Site & Piping Plan
C-3	Verano Well - Existing Site & Demolition Plan
C-4	Verano Well - Proposed Site Plan & Piping Plan
C-5	Civil Details
M-1	Verano Well - Piping Plan and Section
M-2	Park Avenue Well - Piping Plan and Section
M-3	Park Avenue Well - Piping Section
M-4	Park Avenue Well - Piping Section 2
M-5	Mechanical Details

SECTION "I"

PERMITS

AQUIFER STORAGE AND RECOVERY EQUIPPING PHASE APRIL 2025 VALLEY OF THE MOON WATER DISTRICT SONOMA COUNTY, CALIFORNIA

GENERAL

Contractor shall conform with Section F3-11 - Permits, Licenses, and Regulations, and as noted hereinafter.

Contractor shall be responsible for compliance with all provisions of the permits, including sufficient notification to the proper agencies before work begins.

If there is a difference between the permit requirements and the Contract Drawings and Specifications, Contractor shall request, in writing, a clarification from Engineer.

If, in the course of construction, other permits are required, it will be Contractor's responsibility to obtain them and pay all fees therefore.

AQUIFER STORAGE AND RECOVERY PROJECT, EQUIPPING PHASE

VALLEY OF THE MOON WATER DISTRICT Sonoma, CALIFORNIA

TECHNICAL SPECIFICATIONS (VOLUME 2)

100% / Bid Set June 2025

Prepared by:



Date: **12 June 2025**

EKI Environment & Water, Inc. 2001 Junipero Serra Blvd, Suite 300 Daly City, CA 94014

TECHNICAL SPECIFICATIONS TABLE OF CONTENTS

Aquifer Storage and Recovery Project, Equipping Phase Valley of the Moon Water District, Sonoma, CA

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02300	Earthwork
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SECTION 01040

COORDINATION AND PROJECT REQUIREMENTS

PART 1 – GENERAL

1.01 PROJECT COORDINATION

A. Coordinate scheduling, submittals and work of various Sections of the Specifications and subcontractors to assure efficient and orderly sequence of interdependent construction. Provide accommodations for items to be furnished and installed by Owner and labeled "NIC" (not in contract) on the Drawings and for Owner Furnished Contractor Installed items.

1.02 MECHANICAL AND ELECTRICAL COORDINATION

- A. The Contractor's superintendent or a specially assigned assistant shall be designated the mechanical/electrical coordinator and shall coordinate the exact location, space priorities and sequence of installation of all mechanical and electrical work with each other and with all other trades. The mechanical/electrical coordinator shall assure compliance with the requirements of this paragraph 1.02.
- B. The location of mechanical and electrical work may be indicated diagrammatically on the Drawings. Actual locations shall follow locations shown on the Drawings as closely as practicable but shall be altered or adjusted in the field by the mechanical/electrical coordinator as required by the following:
 - 1. In finished spaces install mechanical and electrical work concealed within the space available.
 - 2. Organize mechanical and electrical work to make efficient use of space. Combine similar items into groups; make all runs parallel to or at right angles with building lines.
 - 3. Layout and install work to provide adequate space and access for adjustment, servicing, and maintenance and maximize space available for future installation of additional services or replacement of existing services.
 - 4. Assure that all access doors required by code or required for adjustment, servicing or maintenance are furnished to provide convenient access and to coordinate with finished visual elements.
 - Coordinate location of fixtures, registers, grills, outlets, switches, panelboards, pullboxes, access doors, and other exposed mechanical and electrical items with functional and visual elements. Verify location of questionable items with Engineer before proceeding.
- C. Prepare large scale coordinated detailed installation drawings showing the work of all affected trades to coordinate the actual installed location of all equipment and of all mechanical and electrical work. Review coordination drawings with Engineer and all affected trades before proceeding.
- D. Review Shop Drawings and Product Data prior to submission for the Engineer's Review to assure that physical characteristics and service requirements are compatible with contract requirements, field conditions, and other items submitted.

- E. Verify that required services such as electrical power characteristics, control wiring, and utility requirements of items and equipment submitted and furnished are compatible with services provided. Notify Engineer of potential problems prior to ordering items or equipment and prior to installing services or completing construction in areas where services would have to be installed.
- F. Schedule installation sequence of various elements of mechanical and electrical work to achieve optimum compliance with requirements under Mechanical and Electrical Coordination in this Section.

1.03 CUTTING, FITTING, AND PATCHING

- A. Provide cutting, fitting, or patching required to complete the Work and to make all of its parts fit together properly. Include cutting, fitting, and patching required to:
 - 1. Fit the several parts together and to integrate with other work.
 - 2. Uncover work to install or correct ill-timed work.
 - 3. Provide openings in elements of work for penetrations of mechanical and electrical work.
 - 4. Remove and replace defective and non-conforming work.
 - 5. Remove samples of installed work for testing.
- B. Request guidance from the Engineer prior to beginning cutting or altering construction, which affects:
 - 1. Structural integrity of any element.
 - 2. Functional performance of any element.
 - 3. Integrity of weather-exposed or moisture-resistant elements.
 - 4. Efficiency, maintenance, or safety of elements.
 - 5. Visual qualities of sight-exposed elements.
 - 6. Work by Owner or separate contractor.
- C. Execute cutting and patching using workers that specialize in and are skilled in installing the type of work being cut or patched.
- D. Perform work in accordance with the Contract Documents or in the absence of specific requirements comply with best trade practice for the work involved.
 - 1. Execute work by methods that will avoid damage to other work.
 - 2. Provide proper support and substrates to receive patching and finishing materials.
 - Cut concrete materials using masonry saw or core drill. Locate all reinforcing steel, conduits and pipes with electronic detecting devices prior to cutting or core drilling existing concrete.
 - 4. Replace or patch work with new materials meeting the requirements of these specifications or if not specified matching materials and finishes of existing or adjacent work.
 - 5. Cut wall, ceiling and floor finishes to fit snugly around pipes, sleeves, ducts, conduit, and other penetrations. Provide fire and/or acoustical caulking as required by code or conditions of use.
 - 6. Maintain integrity of wall, ceiling, or floor construction; completely seal voids against smoke, fire and water.
 - 7. Refinish surfaces to match adjacent finishes. For continuous surfaces, refinish to nearest intersection; for an assembly, refinish entire unit.
 - 8. Report any hazardous or unsatisfactory conditions to the Engineer.

1.04 ALTERATION PROJECT PROCEDURES

- A. Plan, schedule and perform alteration work as required to minimize impacting the Owner's continued operations. See Section G-2 Site Requirements.
- B. Schedule utility interruptions, piping connections, and interruption of existing utility services as required to permit continued compliance with regulatory requirements and to meet Owner's flow and processing requirements.
- C. Perform cutting fitting and patching in accordance with provisions in other paragraphs of this Section. Where new work abuts or aligns with existing work perform a smooth even transition. When a smooth unnoticeable transition is not feasible cut existing surfaces along a straight line at a natural dividing point and provide a groove or cover plate as recommended by the Engineer.
- D. Provide new construction in accordance with the technical specifications or if not specified provide new construction matching adjacent or similar existing work in material and finish.

1.05 CONNECTIONS TO UNDERGROUND UTILITIES, CONDUITS, OR PROCESS PIPING

- A. Obtain best available current information on location, identification and marking of existing utilities, piping and conduits and other underground facilities before beginning any excavation. In areas where utilities that participate in Underground Service Alert may occur, call 800-642-2444 in Northern California for information at least 48 hours in advance of beginning work. Give Engineer 24 hours notice before beginning work.
- B. The location of existing utilities and underground facilities known to the Design Engineer are shown in their approximate location based on information available at the time of preparing the Drawings. The actual location, size type and number of utilities and underground facilities may differ from that shown and utilities or underground facilities may be present that are not shown. See General Stipulations for the Contractor's responsibilities and for differing conditions that warrant a change in Contract Price.
- C. Use extreme care when excavating or working in areas that may contain existing utilities, process piping, conduits, or other underground facilities. Use careful potholing, hand digging and probing to determine the exact location of underground installation. Some locations contain multiple pipes or conduits. Prior to performing any subsurface work, investigate, determine, and prepare a plan to turn off or disconnect each utility believed to be in the within 100 feet of the subsurface work in the event of an accidental breach of a utility conduit.
- D. Where connections to existing utilities or other underground facilities is required or where new piping or conduits may cross or interfere with existing utilities or underground facilities carefully excavate and uncover existing installations to a point 1 foot below the pipe or conduit to determine the actual elevation and alignment. Call the Engineer's attention to differing existing conditions that may require a clarification or change.
- E. Shutdown of existing utilities, services or operations shall be done in accordance

with Section G2-05 - Existing Utilities And Facilities.

1.06 FIELD ENGINEERING AND LAYOUT

- A. See General Stipulations regarding reference points provided by Owner.
- B. General Stipulations requires the Contractor to accurately layout the Work including the corners of buildings and other structures and the elevation of every floor, deck, roof, tank bottom, and channel.
- C. Employ a Surveyor to layout all detailed dimensions and elevations from reference points. Use recognized engineering survey methods and documentation techniques.

1.07 PRECONSTRUCTION MEETINGS

- A. Prior to beginning the Work, the Contractor and its key personnel and Subcontractors including the Contractor's Superintendent, Project Manager, and Field Engineer shall attend a meeting with the Owner and the Engineer to discuss the following:
 - 1. Name, Authority, and Responsibilities of Parties Involved
 - 2. Project Procedures:
 - a. Progress meetings
 - b. Correspondence
 - c. Notification
 - d. Submittal of Product Data, Shop Drawing Samples, and Proposed Equivalents
 - e. Requests for Information
 - f. Response to Requests for Information
 - g. Requests for Quotation
 - h. Work Directive Change
 - i. Change Orders
 - i. Engineer's "Items of Concern List"
 - 3. Temporary Schedule and Contractor's Construction Schedule
 - 4. Temporary Facilities and Control
 - 5. Testing During Construction
 - 6. Contractors Coordination
 - 7. Mechanical/Electrical Coordination
 - 8. Maintenance of Record Drawings
 - 9. Owner Provided Items or Work and Owner Furnished Contractor Installed items
 - 10. Early Beneficial or Partial Occupancy
 - 11. Final Testing, Startup, and Balancing
 - 12. Punch Lists and Project Closeout Procedures
 - 13. Final Deliverables including Record Drawings, Operation and Maintenance Manuals, and Special Guarantees.

1.08 PROGRESS MEETINGS

A. The Engineer will conduct weekly or biweekly progress meetings with Contractor and Owner at job site. Attendance required by Contractor's project manager, superintendent and affected Subcontractors and suppliers. The Engineer will prepare, maintain and distribute agenda and dated record of: (1) actions required and taken and (2) decisions needed and made. Other meetings will be scheduled as needed by the Owner or Engineer.

B. Agenda:

- 1. Review critical items/action list.
- Review work progress. Compare actual progress with planned progress shown on Contractors rolling three-week Schedule. Discuss Corrective action required. Compare actual and projected progress with Contractor's Construction Schedule, propose methods to correct deficiencies.
- 3. Review status of Submittals; review delivery dates and date of need for critical items.
- 4. Review coordination problems.
- 5. Schedule needed testing and critical inspections.
- 6. Review critical requirements for each trade or major piece of equipment prior to beginning work or installation.
- 7. Discuss Contractor Quality Control.
- 8. Discuss open items on Engineers "Items of Concern List."
- 9. Discuss impact of proposed changes on progress Schedule.
- 10. Other business.

1.09 PERFORMANCE SPECIFICATIONS AND CONTRACTOR DESIGNED WORK

- A. Work under this Contract may be specified by a combination of descriptive, performance, reference standard and proprietary specifications. In the event of conflict between any of the various specification methods used to specify a single item the order of precedence shall be the order in which the methods are listed in the preceding sentence. The terms used to describe types of Specifications are taken from the Construction Specification Institute (CSI) Handbook of Practice.
- B. Where Specifications are used to define the characteristics of Contractor designed systems, items or components, the Contractor shall be fully responsible to design, engineer, manufacture, and install the systems, items and components to meet the specified functional requirements, performance requirements, quality standards, durability standards and conditions of use as well as all applicable codes, regulations and referenced trade or industry standards. The Contractor shall perform such design by employing engineers licensed in the State in which the Work is being constructed. The Contractor's design submittals shall include calculations and assumptions on which the design is based and shall be stamped and signed by appropriately licensed engineers.
- C. In accordance with General Stipulations, the Owner and the Engineer shall have the right to rely on the expertise and professional competence of the Contractor's design. Favorable review of the Contractor's design submittal shall not relieve the Contractor from full responsibility for the adequacy of the Contractor design.

1.10 MATERIAL AND EQUIPMENT

A. General:

1. Verify that products delivered meet requirements of Contract Documents and the requirements for Favorably Reviewed submittals.

B. Compatibility of Equipment and Material:

- 1. Similar items, equipment, devices or products furnished under a single specification section shall all be made by the same maker and have interchangeable parts.
- 2. In addition, but only if so stated in each affected Specification Section, similar items furnished under two or more Specification Sections shall be made by the same maker and have interchangeable parts.
- 3. All similar materials or products that are interrelated or used together in an assembly shall be compatible with each other.

C. Transportation and Handling:

- 1. Transport and handle products in accordance with manufacturer's instructions.
- 2. Promptly inspect shipments to assure that products comply with requirements, quantities are correct, and products are undamaged.
- 3. Provide equipment and personnel to handle products by methods to prevent soiling, disfigurement, or damage.

D. Storage and Protection:

- 1. Store and protect products in accordance with manufacturer's instructions. Seals and labels shall be intact and legible.
- 2. Store moisture sensitive products including finish woodwork, gypsum products, acoustical products, motors, electrical equipment, instruments and controls in weathertight, humidity and temperature-controlled enclosures.
- 3. For exterior storage of fabricated products, place items on sloped supports, aboveground.
- 4. Cover products subject to deterioration from moisture, dust, or sunlight with opaque watertight but breathable sheet covering. Provide ventilation to avoid condensation
- 5. Provide offsite storage and protection including insurance coverage when site does not permit onsite storage or protection.
- 6. Store loose granular materials on solid flat surfaces in a well-drained area. Prevent mixing with foreign matter.
- 7. Provide facilities, equipment, and personnel to store products by methods to prevent soiling, disfigurement, or damage.
- 8. Arrange storage of products to permit access for inspection. Periodically inspect to assure products are undamaged and are maintained under specified conditions.

E. Installation Standards and Manufacturers' Recommendations:

- 1. Install all products and materials in strict compliance with the most restrictive of the following:
 - a. The manufacturer's or provider's written instructions or recommendations. Follow step-by-step installation procedures.
 - b. Recommendations of referenced trade associations or standards.
 - c. These specifications and drawings.
- 2. Where conflicts exist present alternatives with advantages and disadvantages to Engineer for decision.

F. If reference standards or manufacturer's instructions contain provisions that would alter or are at variance with relationships between the parties to the Contract set forth in the Contract Documents, the provisions in the Contract Documents shall take precedence. See General Stipulations.

1.11 BACKING, SUPPORTS AND FASTENERS

A. Provide backing, supports, bracing, fasteners and other provisions required for the proper support and attachment of all work. Backing, supports, bracing and fasteners shall be sized to resist vertical and horizontal loads including seismic and wind loads required by codes listed under Regulatory Requirements in Section 01090 and in accordance with Seismic Design Requirements in this Section. Where finishes in existing facilities must be removed to install backing or where finishes are installed in new construction prior to installing backing the Contractor shall remove finishes, install backing and reinstall finishes.

1.12 NOT USED

1.13 SAFETY

- A. In accordance with generally accepted construction practice, applicable law, the General Stipulations, and Supplementary Conditions, the Contractor shall be solely and exclusively responsible for:
 - 1. Construction means and methods.
 - 2. Safety of employees engaged in the work while on and off the site.
 - 3. Safety of the Owner, the Engineer, the Design Engineer, and others who may visit or be affected by the work.
 - 4. Safety of the work itself including material and equipment to be incorporated therein.
 - 5. Safety of other property at the site or adjacent thereto.
 - 6. Safety programs, equipment and protective devices required to assure the safety of persons and property for whom/which the Contractor is responsible.
 - 7. No smoking on the plant site.
- B. The duties of the Engineer in conducting review of the Contractor's performance is not intended to include review of the adequacy of the Contractor's work methods, equipment, bracing, scaffolding, or safety measures in, on, or near the construction site. See General Stipulations.
- C. The Contractor is hereby informed that work on this project could be hazardous. The Contractor shall carefully instruct all personnel working in potentially hazardous work areas as to potential dangers and shall provide such necessary safety equipment and instructions as required to prevent injury to personnel and damage to property, and to comply with all applicable laws and regulations including State OSHA, Federal OSHA, and other regulations referenced in these Contract Documents.
- D. The Contractor shall, at all times, maintain the job in a condition that is safe for the Owner, the Engineer and their Consultants to make site visits and to conduct construction reviews. If the Owner or the Engineer cannot allow personnel to visit the job because it is not safe, the Contractor is not providing required safe access to the Work as required by General Stipulations.

E. The Contractor shall prepare a Safety Plan meeting the requirements of applicable regulations. As a minimum, the Contractors Safety Plan shall set forth definite procedures for informing workers about safety, for instructing workers in safe practices, for assuring that workers are using appropriate safety equipment and safe work practices and for reporting accidents.

1.14 EXCAVATION AND TRENCHING; WORK WITHIN CONFINED SPACES

A. Submit specific plans to the Owner showing details of provisions for worker protection from caving ground in accordance with Section 6705 of the California State Labor Code.

The detailed plans shall show the design of shoring, bracing, sloping banks or other provisions and shall be prepared, signed, and stamped by a Civil or Structural Engineer licensed in the State in which the Work is performed and retained by the Contractor. The Owner's acceptance of the detailed plans submitted is only an acknowledgment of the submission and does not constitute review or approval of the designs, design assumptions, criteria, completeness, applicability to areas of intended use, or implementation of the plans, which are solely the responsibility of the Contractor and his Registered Engineer.

- B. Work Within Confined Spaces: Work within confined spaces is subject to applicable laws, regulations and safety orders including applicable California regulations.
- C. The foregoing provisions do <u>NOT</u> reduce the requirement for the Contractor to maintain safety in <u>ALL</u> operations performed by the Contractor or its Subcontractors.

1.15 CONTRACTOR'S QUALITY CONTROL

- A. The Contractor shall be fully responsible for inspecting the work of its suppliers and Subcontractors to assure that the work when completed will comply with the standards for materials and workmanship required by the Contract Documents. See General Stipulations.
- B. Inspections, periodic observations and testing performed by the Owner, or the Engineer are for the Owner's benefit and information only and shall not be construed as partial or incremental acceptance of the work and shall not be deemed to establish any duty on the part of the Owner or the Engineer to the Contractor, its subcontractors or suppliers. See General Stipulations.

C. The Contractor shall:

- 1. Monitor quality control over suppliers, manufacturer, products, services, site conditions, and workmanship, to produce work of specified quality.
- 2. Comply fully with manufacturer's installation instructions, including performing each step-in sequence as recommended by the manufacturer.
- 3. Submit a Request for Information to Engineer before proceeding with work when manufacturers' instructions or reference standards conflict with Contract Documents
- 4. Comply with specified standards as a minimum quality for the work except when more stringent tolerances, codes, or specified requirements indicate higher standards or more precise workmanship.

- 5. Perform work by persons specializing in the specific trade and class of work required and qualified to produce workmanship of specified quality.
- 6. Secure products in place with positive anchorage devices designed and sized to withstand seismic, static and dynamic loading, vibration, and physical distortion or disfigurement.
- D. If reference standards or manufacturers' instructions contain provisions that would alter or are at variance with relationships between the parties to the Contract set forth in the Contract Documents, the provisions in the Contract Documents shall take precedence.
- E. The Contractor shall provide assistance required by the Engineer to adequately inspect the Work including ladders, scaffolding, lighting, ventilation and other aids to facilitate access and provide a safe working environment.

1.16 TESTING LABORATORY SERVICES AND CERTIFIED LABORATORY REPORTS

- A. Provide testing service in accordance with General Conditions and specific requirements contained in each technical specification section. Submit Certified Laboratory Reports required by technical specification sections.
- B. Schedule of Required Testing and Certified Laboratory Reports. Note that structural-related specification sections, similar in vain to those listed below, will be provided by the Contractor who is responsible for developing the structural design for all Project components.

ltem	Testing Service Retained and Paid for by Contractor
Concrete Mix Design	Independent Testing Laboratory
Reinforcing Steel and Portland Cement	Mill certificates or test reports by an independent testing laboratory if certificates are not available.
Concrete Aggregate	Independent Testing Laboratory
Concrete Batch Plant Inspection	Independent Testing Laboratory Batch Plant Inspection or Suppliers Laboratory Certified Statement of detailed compliance with ASTM C94 and paragraph 2.2
Slump Tests	(by Engineer)
Compression Tests	(Cylinders cast by Engineer) Cylinders cured at job site in a curing box provided by Contractor and meeting ASTM recommendations. Cylinders picked up at the jobsite and tested by independent Owner's testing laboratory.
Testing of Concrete in place if required	Independent Testing Laboratory
Welders Qualifications	Submit ANSI/AWS D1.1 qualifying tests

Note 1: Unless indicated in parentheses as "By Engineer", all testing services shall be retained and paid for by the Contractor.

END OF SECTION

SECTION 01090

REGULATORY REQUIREMENTS AND PERMITS

1.1 APPLICABLE CODES

- A. The codes and regulations together with local amendments when applicable adopted by the State and other governmental authorities having jurisdiction shall establish minimum requirements for this project. This project shall comply with the following:
 - 1. Uniform Building Code (UBC)
 - 2. Uniform Building Code Standards (UBCS)
 - 3. Uniform Fire Code (UFC)
 - 4. Uniform Mechanical Code (UMC)
 - 5. Uniform Plumbing Code (UPC)
 - 6. National Electric Code (NEC)
 - 7. California Building Code
 - 8. California Code of Regulations
 - a. Title 8, Industrial Relations: Especially CAL-OSHA and Elevator Safety Orders.
 - b. Title 17, Public Health: Sections applicable to Food Service Facilities.
 - c. Title 19, Public Safety: Portions of the work regulated by the State Fire Marshal.
 - d. Title 24, Building Standards: Regulations applicable to Essential Service Facilities, Energy Conservation, Public Assembly and Handicapped Access.
- B. The latest edition of the requirements in effect at the date of submission of bids shall apply.
- C. General Conditions covers the Contractor's responsibility to comply with laws and codes applicable to Means and Methods for performing the Work.
- D. General Conditions covers the Contractor's responsibility to report code deficiencies in the design to the Engineer prior to proceeding with the Work.
- E. Paragraphs addressing Pre-Engineered Systems and Performance Specifications in other Sections cover the Contractor's responsibility to comply with code requirements when (1) performance specifications are used to describe all or portions of Work or items and (2) when preengineered (contractor designed) systems are specified.
- F. In cases where the Contract Documents are more restrictive than applicable codes, the Contractor shall comply with the Contract Documents.

1.2 FEES AND PERMITS

A. Contractor shall comply with all the terms, conditions and requirements attached to all permits, bonds and licenses required by any local, state, or federal agencies to

- perform work, construct, erect, test and startup of any equipment or facility for this Contract. The Contractor shall give all notices necessary and incidental to the due and lawful prosecution of the Work.
- B. Any permits, bonds, licenses, and fees therefore required for the performance of work under this Contract and not specifically mentioned herein as being obtained and paid for by the Owner shall be included in the Contractor's bid price. The Contractor shall apply for and obtain all safety permits for excavations, tunneling, trenches, construction (building structure, scaffolding, or falsework) and demolition required by CAL/OSHA.
- C. The Contractor shall post at the site of Work all required permits as stipulated by the respective regulatory agency.
- D. Contractor shall be responsible to secure, in writing, permission of adjacent property owners for use of or entry onto said lands in a form agreeable to the property owner. Submit documentation of said owner's approval to the Engineer.

E. Local Agency and Building Code Fees and Permits

- 1. If applicable to any portions of the Work, the Owner has applied for and obtained, in its name, the necessary building permit for this project. The Contractor shall be responsible for satisfying all code requirements, calling for inspections, and obtaining final approvals on behalf of the Owner. The Contractor shall notify the Engineer of the need and the readiness of all required inspections. All inspections are to be coordinated with the Engineer. The Contractor shall comply with all construction conditions stipulated in the permits. The Contractor shall be responsible for, and the Owner shall not provide reimbursement for, any costs required for the reinspection of defective work or additional costs due to the Contractor's failure to properly schedule the inspections. The Contractor shall comply with the provisions of any and all permits contained in the Appendices to these Specifications.
- 2. The Owner is not responsible for any local agency or utility permits required for temporary facilities during construction such as field office trailers and temporary electrical service for construction operations. Obtaining all such permits and the costs associated with such permits are the responsibility of the Contractor and shall be included in the Contractor's bid price.

F. Environmental Restrictions

1. In addition to the requirements in the summary of permits, the Contractor shall provide environmental protection in accordance with the County requirements. The Contractor shall coordinate its work relating to these requirements with the Engineer.

1.3 SUMMARY OF PERMITS

A. Contractor shall procure all required work permits and licenses, pay all charges and fees, and give all notices necessary and incident to the due and lawful prosecution of the work.

1.4 STORM WATER QUALITY CONTROLS

A. Contractor's Responsibilities

- 1. The Contractor shall comply with the SWRCB, RWQCB, and County requirements regarding stormwater management, inspection, monitoring.
- 2. The Contractor shall submit an erosion control plan in accordance with the County requirements.

1.5 DEWATERING

- A. Construction dewatering is regulated by the appropriate California Regional Water Quality Control Board. Should the Contractor need to control groundwater by dewatering and/or depressurization of water bearing soil and rock formations, the Contractor must comply with all laws and regulations having jurisdiction over construction dewatering. The Contractor is responsible for obtaining all permits from agencies with control over all dewatering matters. The Contractor will be held responsible for any fines or penalties from regulatory agencies resulting from its dewatering system.
- B. Before dewatering is commenced, the Contractor shall obtain acceptance of the Engineer for the method, installation, monitoring, testing, removal, discharge point(s) and other system details of the Contractor's proposed dewatering system. To that end, the Contractor is to submit to the Engineer a complete dewatering plan prepared and signed by a Professional Engineer registered in California.

END OF SECTION

SECTION 01650

FACILITY STARTUP

PART 1 – GENERAL

1.01 FACILITY STARTUP

- A. Commission all systems and equipment to verify performance, function, and correct operation by performing procedures to activate, startup, adjust, test, and demonstrate that the work is in operating order in accordance with these general requirements of this Section and the detailed requirements of the technical sections under the system or equipment specified. To ensure that the work is ready for full-time operation the procedures include verification, balancing, calibration, witness testing, documentation, inspection by equipment manufacturers and operator training where specified.
- B. Notification: Notify the Engineer 7 days prior to starting each system or piece of equipment.
- C. Coordination: During the startup period, coordinate the operation of the facility with Engineer, subcontractors, Owner's operators, and manufacturer's representatives.
- D. Furnish test equipment, measuring devices and supplies required to conduct tests.
- E. Maintain the equipment until acceptance. Provide all lubricants, chemicals, and electricity necessary until acceptance.
- F. Furnish all expendable supplies, gas, water, etc., required for startup, demonstration and testing and dispose of all waste or used supplies, water, etc.

1.02 SUBMITTALS

- A. Startup Plan, Forms, and Schedule: Prepare a facility startup plan and schedule. The plan shall include test methods and procedures and sample forms for recording test data.
- B. Affidavit.
- C. Submit documentation of tests, balancing reports, and the like.

1.03 OWNER RESPONSIBILITY FOR CONFIRMING OPERATION OF EXISTING EQUIPMENT

- A. Prior to Contactor performing systems test, Owner shall test and confirm operations of existing treatment support elements, including but not limited to:
 - 1. Existing hypochlorite delivery system;
 - 2. New and existing electrical and control panels;
 - 3. New and existing valves; and
 - 4. New and existing instruments.

- A. The following listing is a general sequence of startup activity steps to be used in placing facility systems into operation:
 - 1. Perform initial lubrication of equipment and have manufacturers check and adjust equipment. Provide all subsequent lubrication and maintenance, and such staff as required for test operation until the Owner assumes equipment maintenance responsibility after Step 14 below.
 - 2. Perform satisfactory testing of electrical work required prior to energizing of the electrical system.
 - 3. After completion of Step 2, perform satisfactory electrical testing required after energizing of the electrical system.
 - 4. Complete calibration of instruments.
 - 5. Satisfactorily complete system verification of instrumentation work.
 - 6. After completion of Steps 1 and 3, perform a rotational test of equipment and correct backward rotating drives.
 - 7. After completion of Steps 5 and 6, test operate the equipment by manually initiating the operation. Where manual operation bypasses alarm or safety monitoring, provide continuous supervision of such parameters. Perform this step using water in lieu of chemicals or other process liquids. Use dry air or nitrogen in lieu of hazardous gases.
 - 8. Concurrent with Step 7, perform instrumentation and control testing and adjustments as related to the equipment being tested.
 - 9. Concurrent with Step 7 and where possible at this stage of startup, complete the performance testing specified for the equipment.
 - 10. Concurrent with Step 7, perform adjustments of the electrical work as related to the equipment being tested.
 - 11. Repeat Steps 1 through 10 as required for other equipment items and plant systems until all plant process components and utility systems are ready for total plant operation. It may be necessary for the Contractor to put portions of the newly constructed facility in service before constructing other portions of the facility or completing the Work as a whole.
 - 12. Notify the Owner and the Engineer 30 days before total plant operation is to occur so that the Owner may order chemicals and make other arrangements for full time operation. This notification shall have an accuracy of plus or minus 7 days. Notify the Owner and Engineer again, exactly 7 days before total plant operation is to begin.
 - 13. Upon completion of all the above steps, the facility shall be started up and operated on a complete full time basis beginning on the indicated date. The Owner will provide operating personnel, chemicals and untreated water. For five consecutive days beginning with the start-up day, the Contractor shall have at the plant site, during the day shift, a mechanic, an electrician and an instrument engineer. Representatives of manufacturers of critical equipment shall also be present for these five days as needed or as required elsewhere in the specifications. The Contractor shall also provide these personnel, on a 24-hour per day, "on call" basis, if necessary, to adjust, repair, and correct deficiencies as required to keep the facilities in continuous operation for a period of 30 days. The Contractor shall train the operators in the proper operation and the control of the new facilities. The Contractor shall also furnish all such mechanical and electrical workers as required to make adjustments to and perform all required maintenance for the operating equipment until the end

- of the 30-day initial operation period. Maintenance of operating equipment shall include lubrication, adjustments, replacements, and modifications as required.
- 14. Unless specified otherwise, after successful completion of the 30-day initial operation period, the Owner will take over maintenance duties as well as operation and will begin to provide and pay for lubricants. If continuous process operation is interrupted for a period of four consecutive hours or more due to a failure of the equipment or work provided by the Contractor, then the counting of the 5-day and/or 30-day periods, described in Step 13 above, shall be restarted at day one if these periods have not reached satisfactory completion.
- 15. Following the commencement of Step 13, satisfactorily complete equipment performance testing, electrical testing and adjustments, and instrumentation/control testing and adjustments to the extent that such testing and adjustments could not be made prior to full plant operation.
- 16. Complete the documentation of test, balancing reports, and the like commissioning for submittal during the startup process and before acceptance.

1.05 MANUFACTURER'S FIELD SERVICE AND AFFIDAVITS

- A. Field Service: Where specified, manufacturers of equipment shall provide field service. Field service shall be provided by a manufacturer authorized, factorytrained technician or engineer for the specific equipment. Equipment shall not be considered ready for full time operation until after the manufacturer's representative has checked and adjusted the equipment, and certified by written affidavit that the equipment has been properly installed, tested, adjusted, lubricated, and calibrated, and is ready for full time operation.
- B. Affidavits: Acceptable affidavits shall be submitted prior to completion of the work.
 - Affidavits shall contain the following specific wording:
 "The [Name of Equipment] has been properly installed, tested, adjusted,
 lubricated, and calibrated, and is ready for full time operation. The installation
 has been inspected and has been found to be in conformance with our (the
 manufacturer's) standards and requirements."
 - No amplification, dilution, or modification of this specific wording will be permitted.

1.06 TRAINING

A. Contractor shall provide training to Owner's operations staff on operation of flow control valve (conducted by valve manufacturer).

END OF SECTION

SECTION 01700

CONTRACT CLOSEOUT

PART 1 - GENERAL

1.01 FINAL CLEANUP

- A. Prior to Final Inspection clean the entire construction area and all other areas affected by the performance of work under this Contract. Perform cleaning using personnel specializing in and skilled in cleaning and maintenance work. Perform repair work using personnel skilled in executing the type of work being repaired. Perform all work to the highest trade standards applicable to that type of work.
 - 1. Remove all temporary construction, signs, tools, equipment, excess material and debris.
 - 2. Remove all lumps, splatters, spots and stains caused by paint, adhesive, asphalt, concrete, mortar, sealant or other foreign material from exposed or finished surfaces. Remove all temporary labels.
 - 3. Repair, patch or replace new or existing work including pavement, sidewalks, curbs, gutters, catch basins, gratings, manholes, covers, landscaping, plant materials and other items that have been damaged, broken, cracked or chipped as a result of performing this Work.
 - 4. Sweep clean and wash down all exterior pavement. Remove all hazardous material and material that may cause sediment in drainage systems prior to washdown. Remove all grease and oil stains on pavement caused by Contractor's equipment.

1.02 CONTRACTOR'S ACTION LIST OF ITEMS TO BE CORRECTED AND/OR COMPLETED

A. During construction, the Contractor shall maintain an action list of items to be corrected and/or completed. The Contractor shall regularly add items and update the list as information becomes available or as requested by the Engineer. The Contractor shall deliver a current copy of the list to the Engineer at each progress meeting.

1.03 SEMIFINAL INSPECTION/SUBSTANTIAL COMPLETION

- A. See General Stipulations. When the Contractor considers the Work nearly complete, the Contractor shall review the Contract Documents, inspect the Work, and use the Contractor's action list to prepare a Contractor's Punch List of all deficient or uncompleted items. The Contractor shall complete or correct items on the Punch List. When the Work is Substantially Complete in accordance with General Conditions, the Contractor shall notify the Engineer in writing that the Contractor has reviewed the Contract Documents, inspected the Work and believes that the Work is Substantially Complete and ready for Semifinal Inspection.
- B. See General Stipulations. On receipt of the Contractor's Punch List and notice that the work is ready for Semifinal Inspection, the Engineer will inspect the Work. The Engineer may add additional items to the Contractor's Punch List, may find that the work is not ready for inspection, is ready for inspection but not Substantially

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Complete or that the Work is Substantially Complete. When the Engineer finds the Work is Substantially Complete, it will prepare a Final Punch List and a notice of Substantial Complete, which will state the date of Substantial Completion and the time agreed to by the Owner and the Contractor (not to exceed 30 days) in which the Work shall be fully complete and ready for Final Inspection.

1.04 FINAL INSPECTION, FINAL COMPLETION AND FINAL PAYMENT

A. See General Stipulations. When the Contractor has completed or corrected all the items on the Engineer's Final Punch List, the Contractor shall give the Engineer written notice that the Work is ready for Final Inspection. When the Engineer finds the Work acceptable and fully complete in accordance with the Contract Documents, and upon receipt of a final Application for Payment and all final submittals, the Engineer will recommend that the Owner issue a Notice of Final Completion, make Final Payment and Accept the Work stating that to the best of the Engineer's knowledge, information and belief, and on the basis of the Engineer's observations and inspection, the Work has been fully completed in accordance with the terms and conditions of the Contract Documents.

B. Final Submittals include:

- 1. Operation and Maintenance Manuals and Parts Lists
- 2. Record Drawings
- 3. Extra Materials
- 4. Special Guarantees
- 5. Maintenance Contracts
- 6. Insurance Certificate showing required continuation of coverage beyond Final Payment. See General Stipulations.
- 7. Release of Liens. See General Stipulations.
- 8. Waiver of Claims by Contractor. See General Stipulations.
- 9. And any other submittals required by the Contract Documents and not previously received.
- C. The Owner will record the Notice of Final Completion at the County Recorders
 Office
- D. The Owner will make Final Payment to the Contractor 35 days after recording the Notice of Final Completion.

1.05 RECORD DRAWINGS

- A. The Contractor shall maintain on the jobsite, a complete set of Contract Documents and a complete file of all addenda, contract modifications and favorably reviewed submittals. The Contractor shall prepare a set of Record Drawings concurrently with the construction of the Work and in accordance with General Conditions and the following:
 - 1. Show the invert elevation of all gravity piping and the top of pipe, top of conduit or top of protective concrete encasement for other utilities. Elevations shall be related to a permanent visible elevation benchmark by the Contractor.
 - 2. Show the horizontal location of underground utilities measured from permanent visible physical features such as face of building, face of tank, or centerline of manhole.

- Comply with detailed requirements in technical specification sections describing
 the type of information required on Record Drawings. The Contractor's copy of
 Contract Documents, Contract modifications and Record Drawings shall be
 available to the Engineer for weekly verification that the records are being
 currently updated.
- B. Not Used.
- C. Submit Record Drawings and obtain acceptance prior to completion.

1.06 EXTRA MATERIALS

A. Deliver specified extra materials and parts to Owner. Itemize all items on a transmittal letter in duplicate and obtain signature of receiving party. Submit copies of signed transmittals for all specified extra materials and parts prior to completion.

1.07 SPECIAL GUARANTEES

- A. General Stipulations covers the Contractor's responsibility to remedy defects due to faulty workmanship and materials, which appear within one year from the date of Final Completion and acceptance by the Owner.
- B. Guarantees for more than one year when called for in various sections of the Specifications shall be evidenced by the Contract Documents and in the form of a special guarantee written on the letterhead of the Contractor, Subcontractor, or Supplier doing the work and/or supplying the item to be guaranteed, and countersigned by the Contractor as follows. Failure to provide the special guarantee on the letterhead shall not relieve the Contractor, Subcontractor, or Supplier from its obligations for the special guarantees.

C. Special Guarantee:

We hereby guarantee that the	which we have
provided in the	, Project, was
done in accordance with the Drawings and Specifications, an	d that the work, as
installed, will fulfill the requirements of the guarantee included	l in Specification
Section We agree to repair or replace any or all of	of our work, together
with any other adjacent work which may be damaged or displ	aced by so doing, that
may prove to be defective in workmanship or material (with the	ne exception of defects
due to ordinary wear and tear, and unusual abuse or neglect)	within a period of
years from the date of acceptance of the abovename	d facility, without any
expense whatsoever to the Owner. In the event of our failure	to comply with the
above-mentioned conditions within the period set forth in the	General Conditions
after being notified in writing by the Owner, we, collectively or	separately, do hereby
authorize the Owner to proceed to have said defects repaired	l and made good at our
expense, and we will honor and pay the costs and charges th	erefor upon demand.
We understand that the provisions of General Conditions app	ly to this Special
Guarantee.	

Signed
(Subcontractor or Supplier)
Company
Address
Address
Telephone Number
Countersigned
(Contractor)

D. Submit two notarized original signed copies of each required Special Guarantee prior to completion.

1.08 TWELVE-MONTH INSPECTION

A. Thirty (30) days prior to the expiration of the one-year guarantee period described in General Stipulations, the Contractor shall tour the project with the Engineer and/or the Owner to prepare a list of corrective work required under the 12-month guarantee. The Contractor shall correct all items found to be defective within 20 days of receipt of the list of items to be corrected.

1.09 MAINTENANCE CONTRACTS

A. The Contractor shall deliver original signed copies of prepaid contracts for maintenance of equipment or systems in accordance with detailed requirements contained in technical specifications sections.

END OF SECTION

SECTION 01782

OPERATION AND MAINTENANCE DATA

PART 1 GENERAL

1.01 SUMMARY

A. Section Includes: Preparation and submittal of Operation and Maintenance Manuals. Operations and Maintenance information shall be provided for each maintainable piece of equipment, equipment assembly or subassembly, and material provided or modified under this contract.

1.02 SUBMITTALS

- A. Submit Operation and Maintenance Manuals. The Manuals must be accepted by the Engineer before field quality control testing and before training of Owner's staff for each piece of equipment or system may start.
- B. Submit five (5) Manuals for review and five (5) Manuals after acceptance for each piece of equipment or system.
- C. Make accepted manuals available at project site for use by construction personnel and Engineer.

1.03 OPERATION AND MAINTENANCE MANUALS

A. Preparation:

- 1. Provide Operations and Maintenance Manuals in 3-ring McBee swing hinge type binders, or equal. Size and color of binders to be approved by the Owner. Utilize properly labeled tab titles on tab sheets to organize contents of manuals.
- B. Contents of Operation and Maintenance Manuals:
 - 1. Cover Page: Equipment name, equipment tag number, project name, Owner's name, appropriate date.
 - 2. Table of Contents: General description of information provided within each tab section
 - 3. Equipment Summary Form: Completed form in the format attached at the end of this Section. Insert Equipment Summary Form after the tab sheet of each equipment section. The manufacturer's standard form will not be acceptable. Manuals submitted without equipment summary form fully completed, including equipment identification number, will be rejected and returned.
 - 4. Lubrication Information: Required lubricants and lubrication schedules.
 - Control Diagrams:
 - a. Internal and connection wiring, including logic diagrams, wiring diagrams for control panels, ladder logic for computer-based systems, and¹ connections between existing systems and new additions, and adjustments such as calibrations and set points for relays, and control or alarm contact settings.

- 6. Start-up Procedures: Recommendations for installation, adjustment, calibration, and troubleshooting.
- 7. Operating Procedures:
 - a. Step-by-step procedures for starting, operating, and stopping equipment under specified modes of operation.
 - b. Include safety precautions and emergency operating shutdown instructions.
 - c. For Complex Equipment provide in addition:
 - 1) Alternate specified operating modes.
 - 2) Emergency shutdown instructions.
 - 3) Normal shutdown instructions.
 - 4) Long-term shutdown instructions.
- 8. Preventative Maintenance Procedures: Recommended steps and schedules for maintaining equipment.
- 9. Overhaul Instructions: Directions for disassembly, inspection, repair and reassembly of the equipment; safety precautions; and recommended tolerances, critical bolt torques, and special tools that are required.
- 10. Parts List: Generic title and manufacturer's identification number of each component part of equipment; include bearing manufacturer, model and ball or roller pass frequencies for every bearing.
- 11. Spare Parts List: Recommended number of parts to be stored at the site and special storage precautions. Include manufacturer's part number for all parts.
- 12. Drawings: Exploded view or plan and section views with detailed callouts.
- 13. Provide electrical and instrumentation schematic record drawings.
- 14. Source (Factory) Quality Control Test Results: Provide copies of factory test reports as specified in Sections 15050 or the equipment section.
- 15. Field Quality Control Test Results: After field-testing is completed, insert field test reports as specified in Sections 15050 or the equipment section.
- 16. Warranty Information: List and explain the various warranties and include the servicing and technical precautions prescribed by the manufacturers or contract documents to keep warranties in force.

C. Electronic Copy:

- 1. All manuals shall be provided in an electronic format which entails all information included by the CONTRACTOR in the 3 ring binders within 45 days after acceptance of the manual by the ENGINEER and OWNER. This will include providing the following electronic format documents:
 - a. All text portions of the Operations and Maintenance Manual specifically tailored for this project shall be provided in searchable PDF format.
 - b. All graphical portions of the Operations and Maintenance Manual specifically tailored for this project shall be provided in GIF (schematics, line drawings, etc.) or JPEG (photos, etc.) format.
 - c. All shop drawings shall be provided in AutoCAD format latest release at time of O&M preparation.
 - d. All forms (including the Equipment Summary Form) that may be required for maintenance shall be provided in MS EXCEL format.

e. All other documents, including, but not limited to, brochures that need to be scanned that are specifically tailored for this project shall be provided in a searchable PDF format.

PART 2 PRODUCTS (Not used.)

PART 3 EXECUTION

3.01 PAYMENT

A. Acceptable O&M information for the project must be delivered to the Construction Manager prior to the project being 75 percent complete. Progress payments for work in excess of 75 percent completion will not be made until the specified acceptable O&M information has been delivered to the Construction Manager.

3.02 FIELD CHANGES

A. Following the acceptable installation and operation of an equipment item, the item's instructions and procedures shall be modified and supplemented by the CONTRACTOR to reflect any field changes or information requiring field data.

END OF SECTION

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Equipment Summary Form

1.	Equipment Item:							
	Is it a packaged unit, i.e. pump, motor, shaft?YesNo							
	If yes, please detail:							
		_						
2	How many:	_						
	How many:							
3.	Cost: (Break down by component level (pump,							
	motor, etc.)							
4.	Manufacturer:							
	Address:							
	Phone #: Fax:							
	Email:Website:	_						
5.	Equipment Identification Numbers:							
	Serial Number:							
	Model:							
	Part #:							
	Equipment ID No.:							
6.	Location of Equipment:							
7.	. Weight of Individual Components (Over 100 Pounds):							
		_						
8.	Nameplate Date:							
	Horsepower: RPM:	_						
	Amperage: Size:	_						
	Voltage: Frame Size:	_						
	Service Factor (S.F.): Seal Size:							

	Speed:				-	Seal Type:			
	Enclosure Type:				Seal MOC:				
						Bearings:			
	GPM:					Impeller Siz	e:		
	Maximum Capacity	@		_ ft TD	Н	Other:			
	Design Point Capac	ity @	D	_ ft TD	Н				
9.	Manufacturer's Loca	al Re	presentative	e:					
	Name:								
	Address:								
	Telephone Number								
	Email:				_ We	ebsite:			
10.	Maintenance Requi	reme	ents (includin	ng sche	edule	es):			
			TASK					SCH	EDULE
11.	Lubricant List:								
11.	Lubricant List.								
12.	Parts List (with accu	ırate	part #'s):						

13.	Spare Parts (Rec	omme	nded on Ha	nd) (with a	ccurate part #	‡'s):		
14.	Comments:							
15.	General Info:							
	Year Installed:			_				
	Expected Life:			_				
	Project Name and Number:							
	Design Engineer:					_		
16.	Warranty:							
	Start Date:			_				
	Expiration Date:			-				
	Prorated:			_				

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SECTION 02050

DEMOLITION

PART 1 - GENERAL

1.01 DESCRIPTION

- A. Provide all demolition required to perform the work covered under this contract including without limitation:
 - 1. Remove existing construction shown to be removed.
 - 2. Remove and replace existing construction and/or finishes as required to provide access to perform other work included in this contract.
 - 3. Include removal of mechanical and electrical work that is to be abandoned and is contained in construction to be removed whether or not the mechanical and electrical work is shown. Disconnect and cap off utilities in accordance with applicable codes, safety regulations, and Owner standards.
 - 4. Where utilities that are not shown pass through construction that must be removed and those utilities serve other areas notify the Engineer before disrupting service. If rerouting is required to maintain service, the Owner may issue a Change Order to accomplish the required work.
 - 5. Store and protect items intended for reuse.
 - 6. Assume ownership of debris and unwanted materials, remove from the site and dispose of legally.
 - 7. Include the cost of removing and disposing of hazardous material including without limitation asbestos or asbestos-containing material, lead-containing paint, and PCBs. If the presence of a hazardous material is suspected, have material tested. If material is identified as hazardous, retain qualified and licensed specialist to remove and dispose of it legally.
 - 8. If illegal electrical wiring is encountered such as "BX" or nonmetallic sheathed cable, notify the Engineer.
 - 9. Seven days prior to demolishing any existing items, ask the Owner whether they want to salvage the item. If the Owner wants the item, then carefully remove the item so that it is not damaged.

B. Related Sections:

1. Section 02300: Earthwork

1.02 NOISE AND DUST CONTROL

- A. Perform work in accordance with requirements in Division 1. Particular attention is directed without limitation to paragraphs titled: Owner and Contractor's Use of Premises, Cleanup During Construction, Fire Protection During Construction, Maintenance of Exit Routes for Building Users, Temporary Dust Barriers, Noise Control and Care of Existing Facilities.
- B. Provide temporary partitions to control dust and noise and exclude unauthorized persons.

- C. Perform work in a manner to cause least disturbance to nearby residences and least damage to work to remain.
- D. Maintain adequate means of safe, clear egress for nearby residents.
- E. Employ all available techniques for construction noise abatement. Use remote, well-mufflered air compressors and newest noise suppressed pneumatic and electric tools.

1.03 WARNING

A. The Contractor is advised that work under this Section may be hazardous. The Contractor is to take all necessary precautions to ensure the safety of workers and property. Removal of and/or working in areas containing even minor amounts of hazardous material including without limitation, asbestos, lead-based paint, PCBs or other hazardous materials requires special precautions, knowledge and procedures. If hazardous material is suspected, notify the Owner.

PART 2 - PRODUCTS

Not Used

PART 3 - EXECUTION

3.01 REMOVAL OF CONSTRUCTION IN AREAS TO RECEIVE NEW WORK

- A. Remove all unwanted mechanical and electrical work (whether shown or not) that is not wanted and is not needed to serve other areas that is in, on, or concealed behind work being removed. Cap off or terminate all mechanical or electrical work in accordance with the requirements of Divisions 15.
- B. Protect mechanical and electrical work that serves other areas. Relocate concealed mechanical and electrical work that is required to preserve service to other areas.
- C. Remove structural work designated for removal. Take precautions not to damage structural work intended to remain. Where temporary shoring is needed, submit a design prepared by an appropriately licensed engineer for review before proceeding.
- D. If structural elements are encountered that were not shown, protect them from damage and report their presence to the Engineer.

3.02 REMOVAL OF LIMITED PORTIONS OF EXISTING CONSTRUCTION TO PERMIT MODIFICATIONS

A. Provide careful, selective cutting and removal of existing construction as required to permit relocation or modification of partitions, doors, or openings. Cut and remove the least amount of work possible except when a larger area needs to be removed to permit strengthening existing construction or when required to remove finishes to a natural break line such as a corner or change in material.

- B. Protect existing construction to remain with temporary coverings.
- C. Treat existing mechanical, electrical or structural work as described in other parts of this Section.
- D. When modifications are complete, replace removed work with new construction and finishes to match adjacent existing work. Standards of material and workmanship shall be in accordance with other portions of this Specification or if not covered then in accordance with current practice for this class of work. Salvaged materials may be used for replacement if in good condition.

3.03 REMOVAL OF EXISTING CONSTRUCTION TO PROVIDE ACCESS TO PERFORM WORK

- A. Provide careful selective cutting and removal of existing construction where required to permit installation of new concealed mechanical or electrical work, or installation of equipment, fixtures or devices.
- B. Treat existing mechanical, electrical or structural work as described in other parts of this Section.
- C. Replace and/or patch removed construction and finishes in accordance with other parts of this Section.

3.04 PROTECTION OF WORK TO REMAIN

- A. Protect all work to remain. Repair damage with materials, workmanship and finishes matching existing work when new.
- B. Most existing floor finishes will not be replaced in this contract. It is essential that these floors be protected from any damage due to impact, dirt, abrasion, paints, and solvents.

3.05 CUTTING HOLES IN CONCRETE AND/OR CONCRETE UNIT MASONRY

- A. The Contractor is cautioned that electrical conduits and reinforcing that are not shown on drawings may be concealed in concrete CMU construction. Use electronic detection equipment to locate concealed items before cutting holes. Take all required precautions to avoid damage to existing conduits or reinforcing.
- B. New openings in existing concrete walls or slabs may be saw cut to opening perimeter lines where drawings do not call for adding reinforcing trim bars to strengthen openings. Do not run saw kerfs past corners of openings. Complete concrete removal at opening corners by chipping and grinding. Take all required precautions to avoid water damage to existing construction or the Owner's property.
- C. Where drawings call for adding reinforcing trim bars to strengthen openings, limit saw cutting to a depth of 3/4-inch to avoid cutting existing reinforcing steel. Carefully chip out concrete to avoid damaging existing reinforcing steel which is to remain.

D. Use chipping guns to chip out small holes for pipes or conduits. Proceed carefully to avoid damage to concealed conduits. Core drilling is permitted only at the Contractor's risk and only with the Engineer's permission. If core drilling is used, the Contractor shall: 1) use electronic detection equipment to locate conduit before drilling, 2) take precaution to avoid water damage to existing construction or the Owner's property, and 3) replace, at its own expense, any damaged electrical or signal wiring or conduits.

3.06 REMOVE UNWANTED FIXED EQUIPMENT

A. If items are designated on the Drawings to be salvaged, remove them carefully without causing damage. Deliver items to be turned over to the Owner at location designed by the Owner. Store and protect items to be reused until time of need on jobsite.

3.07 IF HAZARDOUS MATERIALS ARE ENCOUNTERED

A. If hazardous materials are discovered, comply with paragraph 1.01 of this Section and all applicable laws.

3.08 REMOVAL AND DISPOSAL OF MATERIAL

- A. Not Used.
- B. Not Used.
- C. Store debris in suitable covered containers located where directed by the Owner and remove from site when full. Burning on the site is not permitted.
- D. Removed material (other than material to be reused) shall become the property of the Contractor who shall remove it from the site and dispose of it in a legal manner.

END OF SECTION

SECTION 02200

SITE PREPARATION

PART 1 - GENERAL

1.01 SUMMARY

A. Section Includes:

- 1. Site preparation shall consist of all clearing, grubbing, stripping, (demolition), and related work necessary to prepare the project site for construction operations.
- 2. No open burning of debris, lumber, or other scrap will be permitted.
- 3. Trees and vegetation to be left standing shall be protected from damage incident to site preparation and construction operations by the erection of barriers or by such other means as the circumstances require.

B. Related Sections:

- 1. Section G-1: Special Provisions
- 2. Section 02050: Demolition
- 2. Section 02300: Earthwork

PART 2 - PRODUCTS

Not used

PART 3 - EXECUTION

3.01 DEMOLITION

A. Demolish and remove any fences, posts, poles, or other structures from within the project site, areas to be cut or areas to receive fill, and pipeline alignments.

3.02 CLEARING

A. Clearing shall consist of the felling, trimming, and cutting of trees, and the removal of downed timber, shrubs, grasses, debris and rubble from the project site which will obstruct or otherwise impede construction operations.

3.03 GRUBBING

A. Grubbing shall consist of the removal and disposal of stumps, roots larger than 3 inches in diameter, and matted roots from the construction area. This material, together with logs and other organic debris, shall be excavated and removed to a depth of not less than 18 inches below the original surface level of the ground in areas indicated as construction areas under this Contract, such as areas for structures, pavement, fills. Depressions made by grubbing shall be filled with structural backfill material and compacted to make the surface conform with the original adjacent surface of the ground unless further excavation is required. Grub borrow areas to the extent necessary to obtain material free of stumps and roots.

3.04 STRIPPING

A. Strip the upper 6 inches of soil containing vegetation and root matter from all areas to receive fill and from all areas to be excavated.

3.05 DISPOSAL

- A. Felled Trees and Downed Timber: Cut up and stockpile where directed by the Engineer.
- B. Strippings: Stockpile stripped material and use it to restore the site.
- C. Dispose of remaining vegetation and debris in accordance with Section G-4.

END OF SECTION

SECTION 02300

EARTHWORK

PART 1 - GENERAL

1.01 SUMMARY

A. Section Includes: Perform all excavation, shoring, dewatering, backfilling and, compaction for the construction of the work. The excavation shall include, without classification, the removal and disposal of all materials of whatever nature encountered, including water and all other obstructions that would interfere with the proper construction and completion of the required work.

1.02 REFERENCES

- A. American Society for Testing and Materials (ASTM).
- B. State of California, Department of Transportation, Standard Specifications May 2018 (Standard Specifications).
- C. State of California, Department of Transportation, Manual of Test (California Test).

1.03 SUBMITTALS

- A. Submit in accordance with Section G-5.
- B. Submit the following under the Product Review category.
 - 1. Sheeting and Shoring Plan: Comply with paragraph 1.08 below, Section 01040, paragraph 1.14, and the requirements indicated on the Drawings.
 - 2. Potholing Report as described in Paragraph 3.02.
 - 3. Samples and Test Results: Furnish, without additional cost to the Owner, such quantities of import materials as may be required by the Engineer for test purposes. Cooperate with the Engineer and furnish necessary facilities for sampling and testing of all materials and workmanship. Submit test results for import materials. Tests shall be performed within 60 days of the submission. All material furnished and all work performed shall be subject to rigid inspection, and no material shall be delivered to the site until it has been favorably reviewed by the Engineer or used in the construction work until it has been inspected in the field by the Engineer.

1.04 QUALITY ASSURANCE

- A. Source Quality Control: Test import materials proposed for use to demonstrate that the materials conform to the specified requirements. Tests shall be performed by an independent testing laboratory.
- B. Field Quality Control:
 - 1. The Owner will:
 - a. Review materials proposed for use.
 - b. Observe foundations, site grading, and borrow operations.
 - c. Observe placement and compaction of fill.

- d. Test soils during placement of fill.
- 2. Contractor shall excavate holes for in-place soil sampling. Contractor shall be responsible for costs of additional inspection and re-testing resulting from non-compliance.
- 3. Contractor shall:
 - a. Excavate holes for in-place soil sampling.
 - b. Test soils during placement of fill to verify conformance with material requirements defined herein.
 - c. Be responsible for costs of additional inspection and re-testing resulting from non-compliance.

C. Testing Methods:

- 1. Durability Index: Manual of Test, State of California, Department of Transportation.
- 2. Specific Gravity: ASTM D854
- 3. Laboratory Compaction: ASTM D1557, Method A or C.
- 4. In-place Density: ASTM D1556 or ASTM D2922.
- 5. Particle Size Analysis of Soils: ASTM D422.
- 6. Plastic Limit and Plasticity Index: ASTM D4318.
- 7. Soil Classification: ASTM D2487.
- 8. In-place Moisture Content: ASTM D3017.

D. Definitions

- 1. Relative Compaction: In-place density divided by the maximum dry density laboratory compaction expressed as percentage.
- 2. Rock Excavation: Excavation of solid rock that, in the opinion of the Engineer, requires for its removal drilling and blasting, wedging, sledging, barring or breaking up with power-operated tools. The term "Rock Excavation" indicates a method of removal and not a geological formation.

1.05 EXPLOSIVES

A. Do not use explosives unless specifically authorized, in writing, by the Engineer.

1.06 SUBSURFACE INVESTIGATIONS

- A. No geotechnical investigation has been performed at the site.
- B. The bidders may make their own subsurface investigations at the site prior to the bidding of the project. Prior to making any drillings or excavations, the bidder shall secure permission from the Owner, and property owners if on private property.

1.07 REFERENCE SPECIFICATIONS

A. Whenever the words "Standard Specifications" are referred to, the reference is to the State of California, Department of Transportation, Standard Specifications, latest edition.

1.08 ADDITIONAL SAFETY RESPONSIBILITIES

A. The Contractor shall select, install and maintain shoring, sheeting, bracing, and sloping as necessary to maintain safe excavations. The Contractor shall be responsible for ensuring such measures: (1) comply fully with 29 CFR Part 1926 OSHA Subpart P Excavations and Trenches requirements, (2) provide necessary support to the sides of excavations, (3) provide safe access to the Engineer's sampling and testing within the excavation, (4) provide safe access for backfill, compaction, and compaction testing, and (5) otherwise maintain excavations in a safe manner that shall not endanger property, life, health, or the project schedule. All earthwork shall be performed in strict accordance with applicable law, including local ordinances, applicable OSHA, CalOSHA, California Civil Code, and California Department of Industrial Safety requirements.

PART 2 - PRODUCTS

2.01 MATERIALS

- A. Crushed Rock: Class 2, 3/4-inch maximum aggregate base, Standard Specifications Section 26.
- B. Pipe Bedding and Backfill Materials:
 - Class 2, ¾-inch maximum aggregate base, Standard Specifications Section 26.
 For the purposes of this project, Class I bedding material requirements and
 Class II bedding material requirements, as shown on the Drawings, shall be
 met by Class 2 bedding.
 - 2. Soil Cement Bedding: Standard Specifications, Paragraph 19-3.025C.
- C. Imported Backfill: Imported nonexpansive soil with liquid limit no greater than 40% and a plasticity index no greater than 15%, free from clods or rocks larger than 4 inches in greatest dimension, contain no more than 15 percent larger than 2.5 inches and free from organic material.
- D. Native Backfill: Native soil prepared as necessary to be free from clods or rocks larger than 2 inches in greatest dimension, and free from organic material.
- E. Engineered Fill: Class 2, ¾-inch maximum aggregate base, Standard Specifications Section 26.
- F. Water: The water used shall be reasonably free of objectionable quantities of silt, oil, organic matter, alkali, salts, and other impurities. Water quality must be acceptable to the Engineer.
- G Aggregate base shall conform to the applicable requirements of the Standard Specifications Section 26, for Class 2 aggregate base. The aggregate base shall conform to that specified for the ¾ inch maximum, unless otherwise indicated. Paragraphs 26-1.06 and 26-1.07 are not applicable.
- H. Warning Tape: 3-inch-wide, inert, fade-resistant plastic film resistant to acids, alkalis, and other components likely to be encountered in soil.
- I. Detection Tape: Plastic metallic type consisting of a blue color-coded polyethylene or melinex film, a solid core aluminum foil detection layer and other layers as

required. The tape shall be resistant to acids, alkalines and other components likely to be encountered in soils. It shall be designed for both conductive and inductive locating procedures.

PART 3 - EXECUTION

3.01 CONTROL OF WATER

- A. All excavations shall be kept free from water and all construction shall be in the dry.
 - 1. It should be presumed that if groundwater is experienced, groundwater dewatering shall be required. Furnish, install, maintain, and operate all necessary pumping and other equipment for dewatering all excavations. At all times have on the project sufficient pumping equipment for immediate use, including standby pumps for use in case other pumps become inoperable.
 - 2. Provide a sufficient number of pumps so as to hold the groundwater level at an elevation of not less than 1 foot below the lowest elevation of the pipe, duct or other material to be placed.
 - 3. Dispose of water in such a manner as to cause no injury or nuisance to public or private property or be a menace to the public health.
 - 4. The dewatering operation shall be continuous, so that the excavated areas shall be kept free from water during construction, while concrete is setting and achieves full strength, and until backfill has been placed to a sufficient height to anchor the work against possible flotation.
 - 5. Continue dewatering during backfilling operations such that the groundwater is at least 1 foot below the level of the compaction effort at all times. No compaction of saturated materials will be allowed.
 - 6. Dewatering devices must be adequately filtered to prevent the removal of fines from the soil.
 - 7. The Contractor shall be responsible for any damage to the foundations or any other parts of existing structures or of the new work caused by failure of any part of the Contractor's protective works. After temporary protective works are no longer needed for dewatering purposes, they shall be removed by the Contractor.
 - 8. If pumping is required on a 24-hour basis, requiring engine drives, then engines shall be equipped in a manner to keep noise to a minimum. Refer to Section G-30 for noise control requirements.
 - 9. Prevent disposal of sediments from the soils to adjacent lands or waterways by employing whatever methods are necessary, including settling basins.
- B. The Contractor shall be responsible for furnishing temporary drainage facilities to convey and dispose of surface water falling on or passing over the site.

3.02 EXISTING UTILITIES

A. General: The known existing utilities and pipelines are shown on the Drawings in their approximate location. The Contractor shall exercise care in avoiding damage to all utilities as he will be held responsible for their repair if damaged. There is no guarantee that all utilities or obstructions are shown, or that locations indicated are

- accurate. Utilities are piping, conduits, wire, cable, ducts, manholes, pull boxes and the like, located at the project site.
- B. Check on Locations (Potholing): Contact all affected utility owners and request them to locate their respective utilities prior to the start of "potholing" procedures. The utility owner shall be given 7 days written notice prior to commencing potholing. If a utility owner is not equipped to locate its utility, the Contractor shall locate it.
- C. Clearly paint the location of all affected utility underground pipes, conduits and other utilities on the pavement or identify the location with suitable markers if not on pavement. In addition to the location of metallic pipes and conduits, non-metallic pipe, ducts and conduits shall also be similarly located using surface indicators and detection tape if present and shall then be similarly marked.
- D. After the utility survey is completed, commence "potholing" to determine the actual location and elevation of all utilities where crossings, interferences, or connections to new pipelines or other facilities are shown on the Drawings, marked by the utility companies, or indicated by surface signs. Prior to the preparation of piping shop drawings, or the excavating for any new pipelines or structures, the Contractor shall locate and uncover these existing utilities to a point 1 foot below the utility. Submit a report identifying each underground utility and its depth and location. Any variation in the actual elevations and the indicated elevations shall be brought to the Engineer's attention.
- E. Excavations around underground electrical ducts and conduits shall be performed using extreme caution to prevent injury to workmen or damage to electrical ducts or conduits. Similar precautions shall be exercised around gas lines, telephone, and television cables.
 - Excavations shall have a surface dimension of no more than 18" x 18". Air spades and vacuum excavators shall be used to limit the size of the excavation and damage to adjacent facilities. Backfill after completing potholing. In existing streets pave with 1 inch of cold mix asphalt concrete.
- F. Interferences: If interferences occur at locations other than shown on the Drawings, the Contractor shall notify the Engineer, and a method for correcting said interferences shall be supplied by the Engineer. Payment for interferences that are not shown on the plans, nor which may be inferred from surface indications, shall be in accordance with the provisions of the General Conditions. If the Contractor does not expose all required utilities prior to shop drawing preparation, he shall not be entitled to additional compensation for work necessary to avoid interferences, nor for repair to damaged utilities.
- G. Any necessary relocations of utilities, whether shown on the Drawings or not, shall be coordinated with the affected utility. The Contractor shall perform the relocation only if instructed to do so in writing from the utility and the Engineer.
- H. Shutdowns: Planned utility service shutdowns shall be accomplished during period of minimum use. In some cases, this may require night or weekend work. Such work shall be at no additional cost to the Owner. Program work so that service will be

restored in the minimum possible time and shall cooperate with the utility companies in reducing shutdowns of utility systems to a minimum.

- 1. Disconnections: No utility shall be disconnected without prior written approval from the utility owner. When it is necessary to disconnect a utility, the Contractor shall give the utility owner not less than 72 hours notice when requesting written approval. The Contractor shall program his work so that service will be restored in the minimum possible time.
- I. Overhead Facilities: There may be existing overhead electric and telephone transmission lines at the site. These overhead utilities are not shown on the Drawings. Extreme caution shall be used when working in the vicinity of overhead utilities so as to prevent injury to workmen or damage to the utilities. The Contractor shall be required to comply with the applicable provisions of the California Construction Safety Orders when working anywhere on this project.

3.03 GENERAL CONSTRUCTION REQUIREMENTS

- A. Site Access: Access to the site will be over public and private roads. Exercise care in the use of such roads and repair at own expense any damage thereto caused by Contractor's operations. Such repair shall be to the satisfaction of the Owner or agency having jurisdiction over the road. Take whatever means are necessary to prevent tracking of mud onto existing roads and shall keep roads free of debris.
- B. Barriers: Barriers shall be placed at each end of all excavations and at such places along excavations as may be necessary to warn all pedestrian and vehicular traffic of such excavations. Lights shall also be placed along excavations from sunset each day to sunrise of the next day until such excavation is entirely restored.
- C. Demolition of Pavement: Where trenching or excavation occurs in paved areas, the pavement shall be scored and broken ahead of the trenching or excavation operation. The extent of paving removed shall be limited to the minimum necessary for the excavation.
- D. Dust Control: Take proper and efficient steps to control dust.
- E. Permits: Refer to General Stipulations.
- F. Storage of Materials: Neatly place excavated materials far enough from the excavation to prevent stability problems. Keep the materials shaped so as to cause the least possible interference with facilities operations and drainage.
- G. Existing Facilities: Maintain access to existing facilities to permit continued operation. Maintain access for fire fighting equipment and to fire hydrants.

3.04 COMPACTION

A. Add water to the backfill material or dry the material as necessary to obtain moisture content within 2% of optimum. Employ such means as may be necessary to secure a uniform moisture content throughout the material of each layer being compacted.

- B. After the material has been moisture conditioned, compact it with compaction equipment appropriate for the use to achieve specified compaction.
- C. If the backfill material becomes saturated from rains or any other source because it was not compacted to the specified density or was not backfilled and compacted to surface grade, through negligence or otherwise, remove the faulty material and replace it with suitable material compacted to the specified density. No additional payment will be made for doing such work or removal and replacement.
- D. Compaction of embankment and backfill materials by flooding, ponding or jetting is not permitted.
- E. When densities of compacted materials do not meet the requirements, remove and/or recompact the material until the requirements are met. The Contractor will be backcharged the cost of retesting all failing tests, including the initial retest. Such backcharges will be deducted from the Contractor's Progress Payments.

F. Material Requirements

- 1. Pipe Bedding Material: Compact to a minimum 95 percent of maximum density, in accordance with AASHTO T-99 unless otherwise specified or shown on the Drawings.
- 2. Pipe Zone Material: Compact by hand methods under the haunches of the pipe and in areas not accessible to mechanical tampers unless otherwise specified or shown on the Drawings.
- 3. Imported Backfill: Compact to a minimum 95 percent of maximum density, in accordance with AASHTO T-99 unless otherwise specified or shown on the Drawings.
- 4. Native Backfill: Compact to a minimum 85 percent of maximum density, in accordance with AASHTO T-99 unless otherwise specified or shown on the Drawings.
- 5. Foundation Stabilization: Compact to a minimum 95 percent of maximum density, in accordance with AASHTO T-99 unless otherwise specified or shown on the Drawings.
- 6. Engineered fill: Compact in accordance with the Geotechnical Report/Engineer unless otherwise specified or shown on the Drawings.
- 7. Landscape Fill: Compact to a minimum 85 percent of maximum density, in accordance with AASHTO T-99 unless otherwise specified or shown on the Drawings.
- 8. Impervious Material: Compact to a minimum 90 percent of maximum density, in accordance with AASHTO T-99 unless otherwise specified or shown on the Drawings.

G. Testing Frequency:

- a. Trench Backfill: Test every 200 feet of trench.
- b. Earthwork: Test every 500 square feet for each 2 feet of fill.
- c. Engineered Fill:
 - 1) Sub-base: Test every 200 square feet.
 - 2) Base:
 - Test every 200 square feet of building footprint, with no less than 2 tests per structure.

ii. Test every 200 cubic yards of material placed within 10 feet around the building.

3.05 NOT USED

3.06 TRENCH EXCAVATION

- A. Excavation for pipe and other utilities such as electric conduit or duct banks shall be in open cut. The trench shall be as wide as necessary for sheeting and bracing and the proper performance of the work up to the maximum width permitted by the typical cross-sections shown on the Drawings. The sides of the trenches shall be vertical in paved areas. The bottom of the trench shall be constructed to the grades and shapes indicated on the Drawings. Should the Contractor desire to use other equivalent methods, he shall submit his method of construction to the Engineer for favorable review prior to its use.
- B. Take care not to overexcavate. Accurately grade the bottom of the trenches to provide uniform bearing and support for each section of the pipe or conduit at every point along its entire length, except for the portions of the pipe sections where it is necessary to excavate for bell holes and for the proper sealing of pipe joints, and as hereinafter specified. Dig bell holes and depressions for joints after the trench bottom has been graded. In order that the pipe rest on the bedding for as nearly its full length as practicable, bell holes and depressions shall be only of such length, depth and width as required for properly making the joint. Remove stones as necessary to avoid point bearing.
- C. Backfill and compact overexcavations in accordance with the requirements of Section 3.04 with bedding material. There shall be no additional payment to the Contractor for overexcavations not directed by the Engineer. Remove unsatisfactory material encountered below the grades shown as directed by the Engineer and replace with bedding material. Payment for removal and replacement of such unsatisfactory material directed by the Engineer shall be made in accordance with the provisions of the General Conditions.
- D. Grade trenches so that they are uniformly sloped between the pipe elevations shown on the Drawings. If no elevations are shown on the Drawings, provide 3 feet of minimum cover. Comply with the minimum and maximum trench widths shown on the Drawings. Notify the Engineer if the trench width exceeds the maximum allowable width for any reason.
- E. For all piping or conduits to be placed in any excavated and backfilled area, such as at manholes or for building connections, the engineered fill shall be first compacted to a level at least 3 feet from the top of the piping or conduit elevation and then retrenched to pipe grade.
- F. Provide ladders for access to the trench by construction and inspection personnel.

3.07 EXCAVATION FOR STRUCTURES

A. All excavation for structures shall be done to the dimensions and levels indicated on the Drawings or specified herein. Excavate to such width outside the lines of the

- structure to be constructed as may be required for proper working methods, the erection of forms and the protection of the work.
- B. Take care to preserve the foundation surfaces shown on the Drawings in an undisturbed condition. If the Contractor overexcavates or disturbs the foundation surfaces shown on the Drawings or specified herein, without written authorization of the Engineer, he shall replace such foundations with concrete fill or other material approved by the Engineer in a manner that will show by test an equal bearing value with the undisturbed foundation material. No additional payment will be made for the added quantity of concrete fill or other material used because of overexcavation.
- C. Inspection of Excavation: Notify the Engineer when excavation for the structure is complete. No forms, reinforcing steel, concrete, or precast structure shall be placed until the excavation has been inspected by the Engineer.
- D. Where unsatisfactory material is encountered below the grades shown for structural excavations, it shall be removed and replaced with crushed rock as directed by the Engineer and compacted. Payment for removal and replacement of such unsatisfactory material directed by the Engineer shall be made in accordance with the provisions of the General Conditions.

3.08 SUPPORT OF EXCAVATIONS

- A. Adequately support excavation for trenches and structures to meet all applicable requirements in the current rules, orders, and regulations. Excavation shall be adequately shored, braced and sheeted so that the earth will not slide or settle and so that all existing structures and all new pipe and structures will be fully protected from damage. Keep vehicles, equipment, and materials far enough from the excavation to prevent instability.
- B. Take all necessary measures to protect excavations and adjacent improvements from running, caving, boiling, settling, or sliding soil resulting from the high groundwater table and the nature of the soil excavated. Attention is directed to Section 832 of the Civil Code of the State of California relating to lateral subadjacent supports, and wherever structures or improvements adjacent to the excavation may be damaged by such excavation, the Contractor shall comply with this law.
- C. The support for excavation shall remain in place until the pipeline or structure has been completed. During the backfilling of the pipeline or structure, the shoring, sheeting and bracing shall be carefully removed so that there shall be no voids created and no caving, lateral movement or flowing of the subsoils.
- D. Refer to the Drawings for criteria to support excavations above rock.

3.09 TRENCH BACKFILL

A. Place bedding and backfill materials true to the lines, grades, and cross-sections indicated on the Drawings and compacted to the degree specified on the Drawings. Place bedding and backfill materials in horizontal lifts not to exceed 6 inches in thickness measured before compaction. The difference in level on either side of a pipe shall not to exceed 4 inches.

- B. Backfill material shall not be placed over the pipe or conduit until after the joints have been completed and inspected by the Engineer.
- C. It shall be incumbent upon the Contractor to protect the pipe or conduit from damage during the construction period. It shall be his responsibility to repair broken or damaged pipe at no extra cost to the Owner. Carefully place backfill around and over the pipe and do not allow it to fall directly upon the pipe. Tamping of backfill over the pipe shall be done with tampers, vibratory rollers and other machines that will not injure or disturb the pipe.
- D. Do not allow construction traffic nor highway traffic over the pipe trench until the trench backfill has been brought back even with existing adjacent grade.

3.10 ENGINEERED FILL

A. Crushed Rock Subgrade: Place a layer of rock, compacted in accordance with the requirements of Section 3.04, under structures to the lines, grades and minimum thicknesses shown on the Drawings. Unless shown specifically otherwise in the Drawings, do not use rock as backfill above the elevation of the highest base slab of the structure.

B. Backfill Adjacent to Structures:

- 1. Backfill shall be engineered fill compacted in accordance with the requirements of Section 3.04 unless otherwise specified or shown on the Drawings. Native backfill may be allowed in locations where backfill is below unpaved surfaces, and it can be compacted to 95%.
- 2. Do not place backfill against structures until the concrete has been patched and
- Do not place backfill against structures until at least 28 days after the concrete was placed, or until the concrete has achieved a strength of at least 2,500 psi, whichever is earlier. Concrete strength shall be demonstrated by field cured cylinders tested at the Contractor's cost, prepared and tested in accordance with ASTM C31 and ASTM C39.
- 4. Do not place backfill against hydraulic structures until the structure has passed the specified leakage tests.
- 5. Place backfill in uniform, level layers, not exceeding 8 inches thick measured before compaction. Bring backfill up uniformly on all sides of the structure, and on both sides of buried walls.
- 3.11 NOT USED
- 3.12 NOT USED

3.13 FINISH GRADING

A. Except where shown otherwise in the Drawings, restore the finish grade to the original contours and to the original drainage patterns. Grade surfaces to drain away from structures. The finished surfaces shall be smooth and compacted.

3.14 DISPOSAL OF EXCAVATED MATERIAL

A. Dispose of unsuitable material or excavated material in excess of that needed for backfill or fill offsite in accordance with the requirements of Section G-4.

END OF SECTION

SECTION 02400

WATER PIPING AND APPURTENANCES

PART 1 - GENERAL

1.01 SUMMARY

- A. The work of this section consists of furnishing and installing water system piping and appurtenances.
- B. Contractor shall install stainless steel for under 4-inch above-grade pipe, ductile iron for 4-inch and larger above-grade piping, HDPE for under 4-inch below-grade piping, C900 PVC for 4-inch and larger below-grade piping, and Schedule 80 PVC for chemical piping. Contractor to provide all appurtenances to accommodate connection of dissimilar materials.

1.02 REFERENCE SPECIFICATIONS

- A. American Association of State Highway and Transportation Officials (AASHTO)
- B. American National Standards Institute (ANSI)
- C. American Society of Mechanical Engineers (ASME)
- D. American Society for Testing and Materials (ASTM)
- E. American Water Works Association (AWWA)
- F. National Science Foundation (NSF 61)

1.03 SUBMITTALS

- A. Submit in accordance with Section G-5.
- B. Layouts and Schematics: Submit detailed installation drawings of all piping. Schematics may be submitted for piping 4 inches and smaller. The Drawings and schematics shall include: pipe support locations and types, fittings, valves, other appurtenances. (Product Review).
- C. Potholing report.
- D. Manufacturer's literature and certificates of compliance with the reference standards for pipe, fittings, and couplings.
- E. Manufacturer's installation instructions or guide.
- F. Leakage Testing Plan

1.04 PRODUCT HANDLING

A. Delivery: Handle pipe carefully to ensure delivery at the project site in sound, undamaged condition. Engineer will reject damaged pipe on site. Contractor shall replace damaged pipe at no additional expense to the Government.

B. Storage: Do not store materials directly on the ground. Adequately support piping to prevent warpage. Use protective covers where pipe may be damaged by direct sunlight.

1.05 POTHOLING

A. Do not prepare any shop drawings for, or make final order for, or design any pipe materials for any particular section of pipeline until all utilities in that section of pipeline have been exposed, If interferences are found in any particular section of pipeline, do not prepare any shop drawings for, or make final order for, or design any pipe materials for that particular section of pipeline until the pipeline alignment has been modified by the Engineer to eliminate all such interferences.

1.06 PIPE SUPPORTS

A. General:

- 1. Pipe supports are generally not shown. When shown, it is for illustrative purposes and does not relieve the Contractor for complying with the design stated herein. Where supports are not shown, it shall be the Contractor's responsibility to support all such piping in accordance with the design criteria stated hereinafter. Piping 2-inches and larger and all piping for hazardous chemicals shall be supported with pipe supports designed to resist seismic loads. Piping smaller than 2 inches with non-hazardous contents may be supported with non-seismic resistant supports.
- 2. Where not detailed or otherwise indicated, pipe support types and spacing shall be in accordance with the Manufacturer's Standardization Society (MSS) Standard Practice No. SP 58 and No. SP 69, except as superseded by the requirements of these Specifications. Hangers and supports used as components of a fire protection system shall comply with NFPA Standard No. 13 and be listed and labeled by UL and FM.

B. Pipe Support System Design:

- 1. Design Loads: Pipe suspension shall prevent excessive stress or excessive variation in supporting force while system is in operation. Pipe supports shall support the combined weight of the pipe, fittings, appurtenances, and contents. In addition, the pipe shall be anchored to resist internal pressure forces tending to separate any unrestrained joint at pressures 1-½ times the maximum working pressure for the applicable service.
- 2. Location: All piping shall be supported in a manner that will prevent undue strain on any valve, fitting, or piece of equipment. In addition, pipe supports shall be provided at changes in direction or elevation, adjacent to flexible couplings, at all nonrigid joints, and where otherwise shown. Where piping connects to equipment, it shall be supported by a pipe support and not by the equipment.
- C. Piping penetrations through concrete walls and slabs are considered to resist seismic loading, provided penetrations for pipes 3 inches in diameter and larger are complete with a wall flange.
- D. Anchors: Provide and install Anchors for connecting pipe supports to concrete pads.

PART 2 - PRODUCTS

2.01 GENERAL

- A. Pipe and valve sizes are nominal inside diameter unless otherwise noted.
- B. All materials delivered to the job site shall be new, free from defects, and marked to identify the material, class, and other appropriate data such as thickness for piping.
- C. Acceptance of materials shall be subject to strength and quality testing in addition to inspection of the completed product. Acceptance of installed piping systems shall be based on inspection and leakage and bacteriological tests as specified hereinafter.
- D. Buried nuts and bolts for flanges and couplings shall be Type 304 stainless steel unless otherwise specifically specified herein.
- E. Fusion Epoxy Coating: Materials and application shall be in accordance with AWWA C213, expect application shall be by the fluid bed method only unless the greatest dimension of the article to be coated exceeds 10 feet, in which case electrostatic spray method may be used.

2.02 DUCTILE IRON PIPE, FITTINGS, AND JOINTS (ABOVE GRADE)

A. Pipe:

- 1. Flanged Pipe: AWWA C115 including Appendix A, minimum thickness Class 53.
- 2. Grooved End Pipe: AWWA C151 with grooves in accordance with AWWA C606, Table 3, for rigid joints. Provide minimum thickness classes in accordance with AWWA C606.
- B. Joints: Where flanges are shown on the Drawings, provide mechanical rigid grooved couplings up to 24-inch or flanges, at the Contractor's option, except where grooved couplings are required in the Drawings. (See Paragraph 1.06A.1 for special requirements for pipe supports with grooved couplings.) Provide flanges where required to connect to valves, equipment or certain pipe supports.
- C. Flanges: Ductile iron, plain faced, AWWA C115. Submit certification that flanges comply with AWWA C115.
- D. Mechanical Grooved Couplings: AWWA C606, minimum pressure rating of 150 psi.

E. Fittings:

- 1. Flanged: Ductile iron, AWWA C110
- 2. Grooved End: Ductile iron, AWWA C110 for materials, dimensions, and pressure ratings. Grooves shall be in accordance with AWWA C606, Table 3, for rigid joints.
- 3. Special Fittings: Special fittings not available in ductile iron may be fabricated of fusion epoxy lined and coated welded steel pipe with a design pressure of 450 psi. Submit design and wall thickness to the Engineer for review.
- F. Lining: Provide standard thickness cement mortar lining for pipe and fittings, AWWA C104. Manufacturer recommended epoxy liner can be submitted to Engineer for consideration. All lining shall be NSF-61 certified.
- G. Coating: Buried pipe shall receive asphalt coating per AWWA C115. Exposed pipe requiring protective coating shall be factory primed compatible with selected field paint system.

- H. Gaskets:
 - Flanged: Full face, 1/8-inch-thick SBR or neoprene, AWWA C115, Appendix A.
 - 2. Mechanical Grooved Coupling: Nitrile or neoprene, AWWA C606.
- I. Flange Bolts: AWWA C115, Appendix A. Submerged and buried fittings shall have Type 304 or Type 316 stainless steel.
- J. Pipe Taps:
 - 1. Direct threaded taps are not acceptable. Pipe branch line connections shall be made using service saddles, by using reducing flanges on tees, or by tapping blind flanges on tees.
 - 2. Service Saddles:
 - a. Materials: Ductile iron saddle with electro-galvanized straps and hardware, or 316 stainless steel band, nitrile or neoprene gaskets.
 - b. Type:
 - 1) For ductile iron pipe 4 inches and less, single strap saddles may be used. For pipe greater than 4-inch, double strap saddles shall be used.
 - 2) Or stainless-steel full circumference band
 - c. Manufacturers: Smith-Blair Model 311 or 313; R. H. Baker and Company Series 180-0; equivalent Romac or equal

2.03 PVC PIPE, FITTINGS, AND JOINTS (BELOW GRADE PIPING)

- A. Pipe: Polyvinyl chloride pressure pipe, cast iron pipe outside dimensions. Pipe shall be UL listed or Factory Mutual Approved. Pipe shall be NSF-61 approved for potable water use.
 - 1. a. 4-inch through 12-inch: AWWA C900.
- B. Pressure Class 235 (DR18)
- C. Joints: AWWA C900/C905, Restrained joints: Bell and spigot (push-on) gasketed, or mechanical joints; both using ductile iron clamp-on restraining devices.
 - 1. Restraining devices: Ductile iron with ductile iron or cor-ten rods and bolts. Pressure rating of at least 235 psi. Series 1900 by EBBA Iron; equivalent by Uni-Flange; or equal for bell and spigot joints. Series 19MJ00 by EBBA Iron; equivalent by Uni-Flange; or equal for mechanical joints for pipes up to 12-inch diameter. Series 2000PV Megalug by EBAA, equivalent by Uni-Flange; or equal for mechanical joints for pipes greater than 12-inch diameter to 36-inch diameter.
 - 2. Bolts and nuts: High strength low alloy steel, coated with a zinc base coat and a Xylan fluoropolymer top coating for corrosion control and to control thread friction torque during tightening (Romac R-Blue or TriPac 2000 Blue).
- D. Gaskets: AWWA C900/C905: Styrene Butadiene Rubber (SBR). Submit two sample gaskets of each gasket type with an explanation of the markings
- E. Fittings: AWWA C900/C905: Push-on cast iron or mechanical joint, AWWA C110, with hubs cast and/or ground as required for pipe furnished. Coating and lining to be as described for ductile iron fittings below. All rods and nuts shall be stainless steel.
- F. Protection: Polyethylene encasement, AWWA C105, black. Double wrap flanged fittings, mechanical joints, or other appurtenances with significantly different outside diameters from the pipe. Tape to seal seams and overlaps shall be plastic adhesive tape at least 4 mils thick and at least 2 inches wide.

2.04 SCHEDULE 80 PVC PIPE, FITTINGS, AND JOINTS (CHEMICAL PIPING ONLY)

- A. Poly (Vinyl Chloride) and Chlorinated Poly (Vinyl Chloride) Pipe and Fittings PVC and CPVC.
 - See all reference standards above. Pipe shall be manufactured from PVC compounds meeting ASTM D1784, Class 12454-B in accordance with ASTM D1785, PVC 1120. The pipe shall have a minimum hydrostatic design stress of 2,000 psi at 73 degrees F and shall be suitable for field cutting and solvent welding.
 - 2. Fittings shall be the socket type for solvent welded joints conforming to ASTM D2467 or ASTM D2466 where Schedule 40 pipe is specified. Fittings shall be manufactured from PVC compound meeting ASTM D1784, Class 12454-B. Solvent cement shall be as specified in ASTM D2564. Primer shall be as recommended by the pipe and fitting manufacturer for the piping service (e.g., chemical type) and installation conditions.
 - 3. All unions and transition unions shall be Chemtrol, IPEX, or approved equal.
 - 4. Pipe, fittings, and solvent for use with water shall be certified by NSF in accordance with NSF Standard No. 14 and the NSF seal shall be included on the pipe. Pipe, fittings, solvent, gaskets, and joint materials shall be NSF 61 approved.
- B. Threaded joints shall be as specified under the applicable ASTM standard for the pipe and fittings being used. Thread sealer shall be thread tape which shall be standard industrial quality Teflon, Type 1.
- C. Flanged Joints
 - 1. Where flanged joints are shown on the Drawings, they shall be supplied with 1/8-in thick full-faced Viton, PFTE gaskets, or approved equal as required for product service. Backer flanges of Type 304 stainless steel shall be provided for all PVC flanges on chemical piping.
 - 2. Flange bolt spacing, number and dimensions shall conform to the requirements of ANSI B16.5. CPVC and PVC flanges shall be single piece, suitable for solvent cementing to the pipe and shall be suitable for a minimum pressure of 150 psi.
 - 3. Bolts, nuts, and washers for flanged joints shall be for corrosive service conditions and shall be ASTM F593 and F594, Type 316 stainless steel. Antiseize compound for stainless steel bolts and nuts shall be of a molybdenum disulfide base.
- D. Fittings, specials, unions, and flanges shall be of the same schedule number and manufactured of the same materials as the pipe. Whenever unions are called out on the Drawings (except at pump piping installations), flanged connections may be substituted, provided that dimensional controls do not preclude use of flanges.
- E. Contractor shall use the primer and cement (glue) currently recommended by the pipe and fitting and cement manufacturers for specifically each application. Application information shall include pipe and fitting material (e.g., PVC, CPVC), application (e.g., sodium hypochlorite service, caustic soda service, hydrofluosilicic acid), and installation and temperature conditions.
- F. Expansion joints for PVC and CPVC sizes 1/2-in to 6-in shall be telescoping type, Schedule 80, as manufactured by Plastinetics, Inc.; ASAHI/America, or approved equal. Expansion in pipes smaller than 1/2-in shall be accommodated with expansion loops unless otherwise shown on the Drawings.

2.05 STAINLESS STEEL PIPING

- A. Unless otherwise shown, stainless steel pipe shall be Grade 304L, conforming to ASTM A312. Pipe sizes smaller than 12" (nominal) diameter shall be Schedule 40S. Pipe sizes 12" (nominal) diameter and larger shall be 0.375" pipe wall thickness (minimum).
- B. Fittings 2 inch and smaller shall be threaded, Class 150, Grade 304L conforming to ASTM A351 and ANSI B16.3. Fittings 2-1/2 inch and larger shall be flanged, welded or grooved, smooth flow (mitered fittings are not acceptable), Grade 304L conforming to ASTM A403 and A774, and ANSI B16.9, with fitting wall thickness/schedule matching the adjoining piping. Where grooved type couplings are indicated on the Drawings, the ends of pipe shall be shoulder banded with Type D collared ends of the identical materials of construction as that of the pipe using double fillet welds per AWWA C606. Where pipe 12" diameter and smaller is furnished in Schedule 40 thicknesses, and where the wall thickness equals or exceeds the coupling manufacturer's minimum wall thickness, the pipe ends may be grooved.
- C. Flanges shall be Class 150 or Class 300, slip-on or weld neck, Grade 304L conforming to ASTM A182 and ANSI B16.5. Bolting shall be Type 316 stainless steel, ASTM A193, Grade B8M hex head bolts and ASTM A194 Grade 8M hex head nuts. Bolts shall be provided with washers of the same material as the bolts. Gaskets shall be EPDM full face type for flat face flanges and shall be NSF 61 approved for potable water applications. Blind flanges shall be gasketed covering the entire inside face with the gasket cemented to the blind flange.

2.06 HIGH-DENSITY POLYETHYLENE PIPING FOR WATER SERVICE

A. Material

- Provide HDPE for the nominal sizes shown on the Drawings. Nominal sizes shown on the Drawings are based upon outside diameter (OD) of the HDPE pipe. HDPE shall have a dimension ratio (DR) that is adequate to safely resist all installation and service loads.
- 2. Pipe shall be high molecular weight, high-density polyethylene pipe (HDPE) suitable for use with potable water per NSF-61.
- 3. The color of the pipe shall be black or black with blue stripes.
- 4. The pipe shall contain no recycled compound except that generated in the manufacturer's own plant from resin of the same specification from the same raw material pipe.
- 5. Pipe and fittings shall be of the same material and class and made in conformance with ASTM F714 and joined in accordance with ASTM D3261 as modified for the specified material.
- 6. The pipe shall be homogeneous throughout and free of cracks, holes, foreign inclusions or other injurious defects. Pipe shall be uniform in density and other physical properties.
- 7. Any pipe not meeting these criteria shall be rejected.

B. Manufacturers

- 1. JM Eagle, Los Angeles, CA.
- 2. Performance Pipe, Plano, TX.
- 3. Or approved equal.

2.07 PIPE INSULATION

A. General:

- 1. Delivery: Deliver insulation materials to the job in original packages with manufacturer's "R" values clearly shown. Provide certification of compliance.
- 2. Warning: The Contractor is warned that working with fiberglass or rock wool materials may constitute a serious health hazard. The Contractor shall take all necessary precautions to ensure the safety of the workers.
- 3. Insulation shall be flexible elastomeric cellular material. Insulation shall have a "K" factor of not more than 0.28 at 70°F. Provide vapor barrier and a PVC, aluminum or stainless-steel jacket.

2.08 PIPE COUPLINGS

- A. General: For typical pipe joints refer to pipe material specifications. Other joint devices shall be furnished where called for as specified below. Double-wrap with 8-mil polyethylene encasement per paragraph 2.2.G, and AWWA C105. Tape the edges of the encasement with PVC tape.
- B. Flexible Couplings and Flange Coupling Adaptors:
 - 1. Sleeve: Cast iron or fabricated steel.
 - 2. Followers: Cast iron, ductile iron, or steel.
 - 3. Sleeve Bolts: High strength low alloy steel bolts conforming with AWWA C-111, coated with a zinc base coat and a Xylan fluoropolymer top coating for corrosion control and to control thread friction torque during tightening (Romac R-Blue or TriPac 2000 Blue).
 - 4. Coating: Fusion epoxy line and coat sleeve and followers. Double-wrap per paragraph under galvanized steel pipe subsection above.
 - 5. Pressure Rating: 250 psi.
 - 6. Buried Flexible Coupling Sleeve: Long barrel
 - 7. Manufacturers:
 - a. Flexible Couplings:
 - 1) Connecting pipe with identical outside diameters: Smith-Blair 411 or 431, Dresser Style 38 or 53, or approved equal.
 - 2) Connecting pipe with slightly different outside diameters: Smith-Blair 413 or R 441, Dresser Style 162, or approved equal.
 - b. Flange Coupling Adaptors:
 - Connecting new pipe or new pipe to existing non-ferrous pipe: Smith- Blair 912 or 913, Dresser Style 127 or 128, or approved equal.
 - 2) Connecting new pipe to existing ferrous pipe: Insulating flange coupling adaptor with insulating boot: Smith-Blair 932 or 933, or approved equal.
 - 8. Gaskets: Oil and grease-resistant; Smith-Blair Grade 60; or approved equal.
 - 9. Joint Restraint: Provide joint harnesses (tie rod lug or attachment plate assemblies) across flexible couplings and flange coupling adaptors. For flanged coupling adaptors, anchor studs may be substituted for the harnesses on pipe up to 12-inch. Design restraint in accordance with AWWA M-11 for 250 psi if sizes of the rods are not indicated on the Drawings. Double wrap with 8mil polyethylene encasement, AWWA C105 and tape the edges of the encasement with PVC tape.
 - 10. Protection for Buried Couplings and Adaptors:

- a. High-density, cross-laminated polyethylene film encasement, as described in AWWA C105. Double wrap couplings and adapters with a significantly different outside diameter from the pipe by at least 3 feet.
- C. Not Used

2.09 PIPE SUPPORTS

- A. Manufacture and Design: Pipe supports shall to the maximum extent possible be standard factory fabricated units conforming to the typical supports and braces shown in the Drawings and as specified below. Where required support cannot be provided by standard factory fabricated units, and is not detailed on the Drawings, the Contractor shall provide special pipe supports. Provide ¾ inch chamfer on corners of all support elements and file or grind smooth. Supports designated to allow axial pipe movement shall have smooth and even contact surfaces.
- B. Materials: All support systems shall be galvanized steel except that those that are submerged or that are located within a tank, channel, or other structure designed to hold water, below the top of surrounding walkway elevation or tank wall top, or otherwise called out on the Drawings, shall be Type 316 stainless steel. Trays for continuous support of plastic pipe or tubing shall be made of 20-gauge galvanized steel. Support stainless steel piping with stainless steel pipe supports.
- C. Insulation Protection Shields: Provide insulation protection shields at all pipe supports for insulated piping.
- D. Provide plastic caps with rounded corners on all exposed ends of channels.

2.10 INSULATING FLANGE KIT

A. When connecting piping of dissimilar metals, Contractor shall provide insulating flange set. Each insulating flange set shall consist of a full-face gasket, a full-length sleeve for each flange bolt, two insulating washers and two Type 316 stainless steel washers for each stainless-steel bolt. The gasket shall be 1/8-inch thick, neoprene-faced over phenolic resin. Bolt sleeves shall be high-density polyethylene or nylon, and insulating washers shall be constructed of fabric-reinforced phenolic resin. The complete assembly shall have an ASA pressure rating equal to that of the flanges between which it is installed. Insulating gaskets shall be Advanced Products Type F or equivalent PSI Products

2.11 CHEMICAL HOSES AND CHECK VALVE

- A. All hoses shall be furnished by a single manufacturer who is experienced in the manufacture of the items to be furnished. The hose shall be designed, constructed, and installed in accordance with the best United States industry practices and methods and shall be suitable for the intended service. The hose manufacturer shall guarantee that the hose supplied is adequate and suitable for the intended service. Hoses shall be rated for 150 psi minimum and NSF-61 certified.
- B. Check Valves for chemical service:
 - 1. Shall have a minimum working pressure of 150 psig at 70 degrees F or be of the same working pressure as the pipe they are connected to, whichever is higher and suitable for the pressures noted where they are installed. All valves shall be given hydrostatic and pressure and leakage tests at the factory.

- 2. Each manufacturer shall provide confirmation that the listed materials as used in their products have excellent corrosion resistance to the listed chemicals with respect to precise material formulation, durometer, and actual installation experience. All valves shall be NSF-61 certified and certified completely compatible with the intended and specified service; compatibility shall apply to the material of the valve and internal components, including all seals, gaskets, O-rings, and washers.
- 3. Check valves shall be ball check type of same material as the pipe, double-union style with socket ends, solid and completely spherical ball and capable of either horizontal or vertical mounting. Where installation conditions require a spring to ensure proper operation, provide the minimum spring force needed.
- 4. Check valves not designated to be ball check valves, or when the valve manufacturer does not recommend ball check valves for the installation conditions, shall be Y check valves or all plastic swing check valves. Swing check valves shall be designed so that they are separated into halves for access to the clapper and seats. Where installation conditions require a spring to ensure proper operation, provide the minimum spring force needed.

2.12 APPURTENANCES

- A. Provide all necessary assembly bolts, washers, and nuts, thrust blocks, supports, gaskets, flanges, and all other appurtenant items shown on the Drawings, specified or required for the proper installation and operation of the piping, and devices included in or on the piping, equipment, and piping accessories.
- B. Pressure Gauge Assembly:
 - 1. Complete assembly shall include isolation valve, pulsation dampeners or snubbers. Provide a support plate to the nearest flange.
 - 2. Pressure gauges
 - a. Type: 316 stainless steel or phosphor bronze bourdon tube, liquid filled
 - b. Dial: Not less than 4 ½ inches
 - c. Case: Phenolic or polypropylene flangeless turret style
 - d. Socket: ½-inch NPT bottom entry
 - e. Accuracy: ½ % of span, ANSI Grade 2A
 - f. Pressure indication: Dual in psi and feet, black figures on white dial. Label face of dial to identify unit of measurement
 - g. Window: Shatterproof glass or heat resistant acrylic
 - h. Complete gauge shall be US Gauge Solfrunt 1981L; Ashcroft 1279; Trerice Series 450; or equal.
 - 3. Diaphragm Seal
 - a. Type: Teflon over 316 stainless-steel
 - b. Material: 316 stainless-steel
 - c. Size: ½-inch process by ½-inch gauge
 - d. Manufacturer: complete unit shall be M&G (AMTEK) or approved equal
 - 4. Gauge cocks shall be Type 316 stainless steel needle valves (unless ball valves are shown on the Drawings); Trerice 735 or 740; Ashcroft 7004L; or equal.
 - 5. Pulsation dampeners and snubbers shall be stainless steel for the specific service involved and shall be Chemquip 25B; Trerice No. 870; or equal.
 - 6. Installation: All protectors and bourdon tubes shall be evacuated of air, filled at the factory and factory calibrated. On all pump discharges, snubber or

pulsation dampeners shall be installed between the top of the protector and the gauge.

C. Chemical Injection Assemblies:

- 1. Rating: 150 psi.
- 2. Type: Insertion type injection quill.
- 3. Connection: Connect to process pipe using service saddle and corporation stop.
- 4. Construction: Injection assembly shall come complete with corporation stop, solution tube, solution tube adapter, packing nut, safety chain with restraint hook, and threaded inlet connection. Solution tube shall be of sufficient length to extend into the process pipe to between one third and one half the pipeline diameter.)
- 5. Supply appropriate materials for chemicals listed in Section 11400 for corporation stop, tube adapter and packing nut, stainless steel safety chain and restraint hook, and solution tube with standard tip configuration.
- 6. Manufacturer: Saf-T-Flo, or equal.
- 7. Quick disconnect shall be male/female coupling with cam seated washer type seal. Kamlok or equal.

D. Pressure Sensing Level Transmitters

- 1. Performance:
 - a. Range: Range of the transmitter shall be the standard range of the manufacturer closest to the pressure range to be metered.
 - b. Accuracy: 0.05 percent of span.
 - c. Operating Temperature: -20 to 80° C.
 - d. Temperature Effect: Combined temperature effects shall be less than 0.2 percent of maximum span per 28° C temperature change.
 - e. Output: 4 20 mA DC linear with level.
 - f. Zero adjustable over the range of the instrument provided calibrated span is greater than the minimum calibrated span.
 - g. Stability: 0.2 percent of upper range limit for 1 year.
 - h. Display: Digital indicator displaying pressure or level in the engineering units indicated in the Instrument Device Schedule.
 - i. Diagnostics: Self diagnostics with transmitter failure driving output to above or below out of range limits.
 - j. Over Range Protection: Provide positive over range protection to 150% of the maximum pressure of the system being monitored by the instrument.
 - k. If required to meet the range or suppression/elevation requirements, a differential pressure transmitter shall be provided.

2. Physical:

- a. Enclosure: NEMA 4X (IP66), explosion proof, approved for Class I, Division 1, Groups C and D (EEx d IIC T5).
- b. Process Wetted Parts: Isolating diaphragm and other wetted metal parts shall be 316L stainless steel, unless otherwise indicated in the device schedule. Gaskets and O rings shall be Teflon.
- c. Power Supply: 24 VDC loop power.
- d. Sensor Fill Fluid: Silicone.
- 3. Accessories Required:
 - a. Provide span and zero adjustment at each transmitter and through the handheld programming unit.
 - b. For each transmitter provide a 316 stainless steel block and bleed valve. Valves may be mounted directly to the instrument or separately

mounted. Valves shall be by the instrument manufacturer or by D/A Manufacturing or Anderson Greenwood.

- 4. Manufacturer(s):
 - a. Rosemount 3051CG
 - b. Endress+Hauser PMC71.
 - c. Approved equal.
- E. Electromagnetic Flow Meter:
 - 1. Performance:
 - a. Accuracy: 0.2 percent of target flowrate.
 - b. Operating Temperature: -10 to 50° C.
 - c. Output: 4 20 mA.
 - d. Diagnostics: Self diagnostics with transmitter failure driving output to above or below out of range limits.
 - e. Display: Digital indicator displaying flow in gallons per minute (mounted in building)
 - f. Totalizer: A fully configurable totalizer integral to the transmitter. Totalized flow shall be displayed.
 - 2. Physical:
 - a. Transmitter shall be remote mounted as directed by Owner.
 - b. Not used.
 - c. Enclosure shall be NEMA 4X (IP65)
 - d. Input Power: 120VAC.
 - 3. Accessories Required:
 - a. Keypad where required for transmitter configuration.
 - 4. Manufacturer(s):
 - a. Badger Mod-Mag M2000
 - b. No alternates

PART 3 - EXECUTION

3.01 GENERAL

- A. Connections to existing potable water systems shall not occur until testing and disinfection is complete and all tests have passed per the Sections.
- B. Exercise great care to prevent injury to or scoring of the pipe lining and coating, as applicable, during handling, transportation, or storage. Pipe shall not be stored on rough ground and rolling of the pipe on the coating will not be permitted. Repair any damaged pipe sections, specials, or fittings or replace at the direction of the Engineer.
- C. Inspect each pipe fitting, valve and accessory carefully before installation. Inspect the interior and exterior protective coatings and patch all damaged areas in the field or replaced at the direction of the Engineer.
- D. Place or erect all piping to accurate line and grade and backfill, support, hang, or brace against movement as specified or shown on the Drawings, or as required for proper installation. Remove all dirt and foreign matter from the pipe interior prior to installation and thoroughly clean all joints before joining.
- E. Use reducing fittings where any change in pipe size occurs. Bushings shall not be used, unless specifically noted on the Drawings. Use eccentric reducing fittings wherever necessary to provide free drainage of lines.

- F. Connections between ferrous and non-ferrous piping and accessories shall be made using a dielectric coupling, union, or flange.
- G. Where no grade elevations are shown on the Drawings, buried piping shall have at least 3 feet of cover.
- H. Provide each pipe with a firm, uniform bearing for its full length in the trench except at field joints. Do not lay pipe in water or when trench conditions or weather are unsuitable for such work.
- I. Laying: After the trench bottom has been prepared for pipe installation in accordance with Section 02300, lay pipe with bells facing in the direction of laying, unless otherwise approved. On slopes exceeding 20 percent, bells shall face upgrade and laying shall proceed upgrade. Where connections are made with other lines, bells may face as needed.
- J. Whenever pipe laying is discontinued for short periods, or whenever work is stopped at the end of the day, close the open ends of the pipe with watertight plugs or bulkheads.
- K. Cleaning: As work progresses, clear the pipe interior of dirt and other debris by keeping swabs in the pipe and pulling them forward past each completed joint.
- L. Pipe Cutting: Cutting for closure or other reasons shall be done neatly by methods recommended by the manufacturer.
- M. Provide adequate trench pumping to ensure against groundwater contacting the inside of the pipeline at any time. Do not lower any pipe or fitting into a trench where groundwater is present and may enter the pipe. When necessary, pump the water from trenches and keep the trench dry until the joints have been completed and the open ends of the pipe have been closed with a watertight plug. Do not remove the plug until the trench has again been pumped dry.
- N. Keep new pipe sections clean and dry.
- O. Jointing: Clean gaskets, seats, and threads of foreign materials prior to joint assembly. Apply lubricant or sealing tape as recommended by the manufacturer.
 - 1. Push-On Joint: Carefully insert the spigot end into the bell to prevent entry of dirt and incorrect entry angle. With fork tool or crowbar, or by hand, make the joint to the insertion depth recommended by the manufacturer. When the selected pipe uses joints not designed for full depth insertion, prevent further closure of previously completed joints by restraining movement of the installed line while making succeeding joints.
 - 2. Mechanical Joint: Carefully center the spigot in the bell and position the gasket evenly in the seat. Tighten bolts alternately to an even torque, causing the follower gland to expand the gasket uniformly for a tight seal.
 - 3. Plain End Jointing: Install factory made couplers in accordance with manufacturer's directions. Center the coupling collar over the joint and tighten bolts evenly.
 - 4. Threaded Joint: Cut threads accurately with sharp dies. Assemble screwed joints after applying Teflon tape to male threads. Once the joint has been tightened, backing off will not be permitted unless new tape is applied to the threads.
 - 5. Flanged End Jointing: Install correct gasket for flange faces used and tighten bolts evenly.
- P. When making the connection between a new pipeline and an existing pipeline, or when repairing a damaged pipe, take the following extra precautions:

- 1. Excavation for connection shall be dry. Control of groundwater and excess water is the Contractor's responsibility.
- Clean the exterior of the existing pipeline of all dirt and debris, and spray or swab with a standard 5.25 percent or stronger chlorine solution (as specified) in the immediate vicinity of the work. Clean equipment and materials, including new pipe and fittings, to be used in making these connections of all dirt and debris and disinfect them. Allow at least 30 minutes contact time for disinfection before the chlorine solution is diluted or rinsed off. Provide sufficient trench pumps to prevent flooding of the trench.
- 3. When an old line is opened, either by accident or by design, the excavation may be wet or badly contaminated from groundwater. Apply liberal quantities of standard chlorine solution or tablets to the open trench areas to lessen the danger from such pollution. Tablets are recommended because they dissolve slowly and continue to release hypochlorite as water is pumped from the excavation. Scatter liberally around and locate the tablets so that flow entering the work site will contact the disinfecting agent. Trench application should be done very carefully to avoid contact by skin and clothing with chlorine solution. Minimally, safety dictates wearing safety goggles and rain gear.
- 4. When excavating a leaking or broken pipeline, "valve-off" the system gradually to less than watertightness. This is to prevent causing areas of zero pressure which would allow entry of foreign material. A flow should be maintained which is slightly less than trench pump capability. Once the break is exposed and cleaned to disallow site contamination, the valving can then be made watertight.

3.02 DUCTILE IRON PIPE INSTALLATION

- A. Buried pipe shall be installed in accordance with AWWA C600.
- B. Asphalt dip and wrap buried pipe with 8-mil polyethylene film in accordance with AWWA C105 and paragraph 2.2.G. Continuously seal seams and overlaps with tape. Seal circumferential overlaps with two turns of tape, half lapped. Gather excess polyethylene on top of pipe so as not to block backfill material from getting under bottom of pipe. Use caution so as not to rip or cut the polyethylene film. Seal any rips or cuts in the film with tape.
- C. Wherever the pipeline crosses over or under a sewer main or house service lateral, center a standard length pipe, 18-foot minimum, on said sewer main or lateral so as to have the pipeline joints as far as possible away from the sewer. This may require field cutting of some pipe pieces.
- D. Flanged Joints: Flanged joints shall be made up tight with care being taken to avoid undue strain in the flanges, fittings, and other accessories. Bolt holes shall be aligned for each flanged joint. Bolts shall be full size for bolt holes; use of undersize bolts to make up for misalignment of bolt holes or for any other purpose will not be permitted. Adjoining flange faces shall not be out of parallel to such a degree that the flanged joint cannot be made watertight without over-straining the flange. Replace any flanged pipe or fitting whose dimensions do not allow the making of a proper flanged joint as specified herein by one of proper dimensions. Clean flanges prior to making joints.
- E. Restrained Joints: Install in accordance with manufacturer's instructions. Pull slack out of joint after makeup. Provide one full pipe length on each side of restrained joints.

F. Mechanical Joints: Deflections from a straight line or grade measured between extended centerlines of the connecting pipe shall not exceed the following:

Size of Pipe in Inches

Deflection per Linear Foot in Inches
Mechanical Joint

4, 6

5/8

8, 10, 12

5/8

G. If the required alignment necessitates deflection in excess of that specified above, provide either special bends or a sufficient number of shorter lengths of pipe to effect angular deflections within the limits specified.

3.03 POLYVINYL CHLORIDE PIPE INSTALLATION

- A. Deliver material to site at least 24 hours prior to installation to permit temperature equalization.
- B. Cut pipe ends squarely, ream and deburr inside and out.
- C. Solvent Weld Joints: Clean pipe ends and sockets and join in strict conformance with the pipe manufacturer's instructions. Make joints in accordance with ASTM D2855. Handle solvent cement joints and primers in accordance with ASTM F402.
- D. For threaded connections on PVC pipe, provide a short nipple, threaded at one end, with a socket fitting at the opposite end. Provide thread sealant in accordance with the pipe manufacturer's recommendations. Take care not to overtighten the connection.

3.04 NOT USED

3.05 COUPLING INSTALLATION

- A. Flexible Couplings and Flange Coupling Adaptors: Prior to installation, thoroughly clean oil, scale, rust, and dirt from the pipe to provide a clean seat for the gasket. Care shall be taken that the gaskets are wiped clean before they are installed. If necessary, flexible couplings and flanged coupling adapter gaskets may be lubricated with soapy water or manufacturer's standard lubricant before installation on the pipe ends. Install in accordance with the manufacturer's recommendations. Bolts shall be tightened progressively, drawing up bolt on opposite sides a little at a time until all bolts have a uniform tightness. Workers tightening bolts shall be equipped with torque-limiting wrenches or other favorably reviewed type. Anchor studs on restrained flanged coupling adapters shall be installed so as to lock into holes drilled through pipe wall in accordance with manufacturer's recommendation.
- B. Flexible Expansion Joints: Install in accordance with manufacturer's instructions, unless otherwise shown, install flat, with half the maximum expansion.

3.06 PIPE SUPPORT INSTALLATION

- A. General:
 - 1. Install and adjust supports for each pipeline such that the pipeline is true to the indicated line and grade.
 - 2. Locate anchors and braces for any single support on a continuous structure; that is, not on two sides of a structural expansion joint.

- 3. Tighten clamps to develop full friction along the pipeline except where loose fitting clamps are called for.
- B. Electrolytic Protection: Pipe supports serving copper pipe or tubing shall be dielectrically insulated from the pipe by dielectric sleeves or plastic pipe wrap at the point of contact

3.07 INSTALLATION OF VALVES AND ACCESSORIES

A. Wrap buried valve bodies as specified for flexible couplings and flanged coupling adapters.

3.08 CLEANING

- A. Prior to testing, thoroughly clean the inside of each completed piping system of all dirt, loose scale, sand and other foreign material. Cleaning shall be by sweeping, flushing with water or blowing with compressed air or oil-free nitrogen gas, as appropriate for the size and type of pipe. Flushing shall achieve a velocity of at least 3 feet per second. The Contractor shall install temporary strainers, temporarily disconnect equipment or take other appropriate measures to protect equipment while cleaning piping.
- B. Special attention and skill is required to properly clean piping, valves and accessories for chlorine solutions service. After erection, the chlorine solution piping shall be flushed with clear water until there is not evidence of dust, dirt or debris

3.09 FIELD TESTING

- A. General: Perform leakage tests on all pipe installed in this project. Furnish all equipment, material, personnel and supplies to perform the tests and make all taps and other necessary temporary connections. The test pressure, allowable leakage and test medium shall be as specified and as shown in the following Schedule. Test pressure shall be measured at the highest point on the line, except that pressure at lowest point shall not exceed pipe manufacturer's rated test pressure, unless specifically noted otherwise. Leakage tests shall be performed on all piping at a time agreed upon and in the presence of the Engineer.
- B. Buried Piping: The leakage test for buried piping shall be made after all pipe is installed and backfilled. However, the Contractor may conduct preliminary tests prior to backfill. If the Contractor elects to conduct preliminary tests, provide any necessary temporary thrust restraint.
- C. Exposed Piping: All supports, anchors and blocks shall be installed prior to the leakage test. No temporary supports or blocking shall be installed for final test.
- D. Encased Piping: The leakage test for encased piping shall be made after all pipe is installed and encased, and before any structures are constructed above it. However, the Contractor may conduct preliminary tests prior to encasement. If the Contractor elects to conduct preliminary tests, provide any necessary temporary thrust restraint.
- E. Accessories: It shall be the responsibility of the Contractor to block off or remove equipment, valves, gauges, etc., which are not designed to withstand the full test pressure.
- F. Testing Apparatus: Provide pipe taps, nozzles, and connections as necessary in piping to permit testing including valves to isolate the new system, addition of test

- media, and draining lines and disposal of water, as is necessary. These openings shall be plugged in a manner favorably reviewed by the Engineer after use. Provide all required temporary bulkheads.
- G. Pneumatic Testing: Piping tested by air or another gas shall show no reduction of pressure during the test period after corrections have been made for changes in temperature in conformance with the following relationship: (P1/T1)=(P2/T2), Where T1 and T2 are the absolute temperatures of the gas in the pipe and P1 and P2 are the absolute pressures. The subscript "1" denotes the starting conditions and the subscript "2" denotes the final conditions.
- H. Precautions for Pneumatic Testing: Where air or another gas is called for as the test medium, the Contractor shall take special precautions to protect personnel. During the initial pressurization of a pipeline to the specified test pressure, personnel shall be protected by suitable barricades or shall remove themselves to locations where a concrete structure is between them and the pipeline under test.
- I. Correction of Defects: If leakage exceeds the allowable, the installation shall be repaired or replaced, and leakage tests shall be repeated as necessary until conformance to the leakage test requirements specified herein have been fulfilled. All visible leaks shall be repaired even if the pipeline passes the allowable leakage test.
- J. Drying: Gas lines tested with water shall be drained and blown dry with air or oil-free nitrogen gas. The annular space of the double containment piping shall be purged of moisture containing air and replaced with clean dry nitrogen.
- K. Reports: The Contractor shall keep records of each piping test, including:
 - 1. Description and identification of piping tested.
 - 2. Test pressure.
 - Date of test.
 - 4. Witnessing by Contractor and Engineer.
 - 5. Test evaluation.
 - 6. Remarks, to include such items as:
 - a. Leaks (type, location).
 - b. Repairs made on leaks.
- L. Test reports shall be submitted to the Engineer.
- M. Venting: Where not shown on the Drawings, the Contractor may install valved "tees" at high points on piping to permit venting of air. Valves shall be capped after testing is completed.
- N. Testing Specifics: Piping shall be tested as indicated in the following Schedule. All other piping systems shall be tested as required for the pipe type used. Unless specified otherwise, test each system as noted below.

Piping Test Schedule					
Legend	Pipe	Test Pressure (psi)	Test Medium	Allowable Leakage	Test Duration (hours)
W	SS	150	Water	0	3
W	DI	150	Water	Note 1	3
W	PVC	100	Water	0	3
W	HDPE	Note 3	Water	Note 3	3

Notes:

1. No visible leakage. For buried PVC or ductile iron gasketed bell and spigot joints, use the following formula:

$$L = \frac{N D P^{1/2}}{7400}$$

where

L = allowable leakage, gallons per hour

N = number of joints being tested

P = pressure, psi

D = nominal pipe diameter, inches

- 2. Soap external joints and visually inspect for leaks.
- 3. Test per ASTM F 2164 "Standard Practice for Field Leak Testing of Polyethylene (PE) Pressure Piping Systems Using Hydrostatic Pressure." Test Pass/Fail Criteria per paragraph 9.8.

END OF SECTION

SECTION 02700

PAVING AND SURFACING

PART 1 - GENERAL

1.01 SUMMARY

- A. Furnishing all labor, material, equipment, tools, and services required for the placing and compacting of asphalt concrete pavement for airfields, roadways, parking lots, and walkways to the lines, grades, and dimensions shown on the Drawings and as specified herein.
 - 1. Also included shall be the repair and resurfacing of existing roadway and area paving damaged or removed during construction.
 - 2. Also included shall be applying penetration treatment to aggregate base surfaces shown on the Drawings.

1.02 REFERENCE SPECIFICATIONS

- A. Whenever the words "Standard Specifications" are referred to, the reference is to the State of California, Department of Transportation, Standard Specifications dated May 2006 (or latest edition).
- B. ASTM International (ASTM):
 - 1. D422 Test Method for Particle-Size Analysis for Soils
 - 2. D1556 Test Method for Density and Unit Weight of Soil in Place by the Sand-Cone Method
 - 3. D2027 Specification for Cutback Asphalt (Medium Curing Type)
 - 4. D2922 Test Methods for Density of Soil and Soil-Aggregate in Place by Nuclear Methods (Shallow Depth)
- C. California Department of Transportation (CALTRANS):
 - California Test 216 Method of Test for Relative Compaction of Untreated and Treated Soils and Aggregates
 California Test 231 Method of Test for Relative Compaction of
 - Untreated and Treated Soils and Aggregates by the

Area Concept Utilizing Nuclear Gauges

1.03 SUBMITTALS

- A. Submit in accordance with Section G-5.
- B. Submit the following under the Product Information category.
 - Samples: Furnish, without additional cost to the Owner, such quantities of construction materials as may be required by the Engineer for test purposes. The Contractor shall cooperate with the Engineer and furnish necessary facilities for sampling and testing of all materials and workmanship. All materials furnished and all work performed shall be subject to rigid inspection, and no

- materials shall be used in the construction work until it has been inspected by the Engineer.
- 2. Submit a signed verification from each source of supply for each construction material employed on this project indicating that the materials meet the Specification requirements.
- 3. Mix design for asphalt concrete.
- 4. Submit manufacturer's certification of the actual volatile organic compound (VOC) content for all pavement paints and bituminous pavement sealers proposed for use on this project. Submit certification of the actual VOC content for coatings manufactured after 1 September 1987. For coatings manufactured before 1 September 1987, submit VOC content and date of manufacture. VOC content shall be measured in grams per liter by weight of coating as applied excluding water and color added to the tint base.

1.04 QUALITY ASSURANCE

- A. Comply with "Standard Specifications" of State of California, Department of Transportation (CALTRANS, most recent edition).
- B. All pavement stripe painting shall be performed by competent and experienced Equipment operators and painters using proper equipment, tools, stencils, templates, and shields in a workmanlike manner.

1.05 REGULATORY REQUIREMENTS

A. All work, material, procedures and practices under this Section shall conform to requirements of the California Air Resources Board (CARB).

PART 2 - PRODUCTS

2.01 ASPHALT CONCRETE

- A. Asphalt Concrete Type B shall conform to the applicable requirements of Section 39 of the Standard Specifications. Asphalt binder shall be paving asphalt or liquid asphalt (cutback). Mineral filler shall consist of portland cement or mechanically reduced rock. Proportioning shall be as set forth in Paragraph "D" below.
- B. Paving asphalt PG 64-10 conforming to the requirements of Section 92 of the Standard Specifications shall be used as the asphalt binder. Bitumen ratio shall be selected by the supplier in accordance with the tests specified in Paragraph 39-3.04 of the Standard Specifications.
- C. Liquid asphalt (cutback) MC-800 or SC-800 conforming to the requirements of Section 93 of the Standard Specifications shall be used as the asphalt binder.

D. Mineral filler shall be mechanically reduced rock, conforming to the following gradations when tested in accordance with ASTM D422:

Particle Size	Percentage		
Passing No. 200 sieve	75-100		
Finer than 0.05 mm	65-100		
Finer than 0.02 mm	35-65		
Finer than 0.01 mm	26-35		
Finer than 0.0005 mm	10-22		

E. Mix Design:

Mix	Туре	Grade	Binder Content (%)
Normal	Α	3/4" max.	4.5 to 6.5
Patching	A or B	No. 4 max.	4.8 to 7.5
Open graded	-	3/8" max.	5.0 to 8.0

2.02 TACK COAT

A. Material for tack coat shall be SS-1, grade emulsified asphalt conforming to Section 94 of the Standard Specifications.

2.03 FOG SEAL

A. Fog seal shall be SS-1 asphaltic emulsion fog seal conforming to the requirements of Sections 37 and 94 of the Standard Specifications.

2.04 PRIME COAT (PENETRATION TREATMENT)

A. Material for prime coat shall be liquid asphalt SC-70 conforming to the requirements of Sections 92 and 93 of the Standard Specifications and ASTM D2027.

2.05 NOT USED

2.06 HEADERS

- A. At straight sections, wood headers shall be constructed of 2-inch by 8-inch construction heart redwood, held in place by 2-inch by 4-inch stakes, of the same materials, 2 feet long and set at 8-foot centers.
- B. At curved sections, wood headers shall be constructed of three ½-inch by 4-inch construction heart redwood bender boards. Boards shall be lapped at one-third of the length of individual boards, with no two boards lapped at the same place. Hold boards in place with stakes same as above.

2.07 AGGREGATE BASE

A. Aggregate base shall conform to the applicable requirements of the Standard Specifications Section 26, for Class 2 or 3 aggregate base. The aggregate base

shall conform to that specified for the ¾-inch maximum, unless otherwise indicated. Paragraphs 26-1.06 and 26-1.07 are not applicable.

- 2.08 NOT USED
- 2.09 NOT USED

2.10 TEMPORARY PAVEMENT (COLD MIX)

A. Temporary pavement shall consist of No. 4 sieve maximum aggregate size, graded in accordance with Section 39 of the Standard Specifications. The aggregate shall be blended with 5-8% SC-800 liquid asphalt.

2.11 LIQUID ASPHALT DISTRIBUTOR

- A. The distributor used in applying all liquid asphalt shall be of the self-propelling type, of sufficient power and capacity to apply the asphalt under pressure uniformly and at the proper rate with not more than 10% variation therefrom. The distributor shall be equipped with tachometer and charts, pressure gauge, thermometer well, and thermometer; and shall have adjustable length spray bars of sufficient length to cover one-half of the roadbed at one time. The spray bars shall be adjustable vertically to permit application of the asphalt at the height above the surface approved by the Engineer and shall be of the full-circulating type with satisfactory cutoff device at each nozzle. The use of trailer-type distributors shall not be permitted.
- B. A trough shall be located under the sprays, properly arranged to be swung out of the way after the sprays are operating in a uniform manner at the desired pressure or, in lieu thereof, building paper shall be spread over the treated surface for a sufficient length back so that the sprays are operating properly when the uncovered surface is reached. The building paper shall then be removed and disposed of. If the cutoff is not sufficiently positive, the similar use of paper may be required at the end of the area being covered. The distributor shall be operated in such a manner that liquid asphalt will not be splashed on adjacent guardrails or structures. Any asphalt so splashed may be removed at the expense of and by the Contractor.
- C. Contractor may use other methods of distributing liquid asphalt if agreeable to the Owner.

PART 3 - EXECUTION

3.01 GENERAL

- A. This Specification shall cover newly paved areas as well as existing pavement restoration.
- B. Where trenching or other construction activity has resulted in damage to a localized area of pavement, the damaged pavement shall be cut back 6 inches and shall be removed and replaced.

- C. Where the damaged area extends over more than 50% of the road width or paved area, as determined by the Engineer, the full pavement width or area shall be cut away, removed and repaired.
- D. Structures such as valve boxes, manhole frames and covers, and electrical vaults shall be adjusted to grade as necessary within paved areas.
- E. Existing asphalt pavement islands of 50 ft² or less and strips 18 inches or less in width shall be removed and replaced.
- F. Adjust existing manholes, meter boxes, cleanouts, etc. to match the new grade.

3.02 PAVEMENT CUTTING

- A. After backfilling and prior to paving, proper tools and equipment shall be used in marking and breaking so that the pavement shall be cut accurately and on neat lines parallel to the trench. The asphalt pavement shall be saw cut (using a concrete saw) to a minimum depth equal to or greater than one-half the thickness thereof. The pavement shall be cut back 6 inches on each side of the trench or excavation wall. Any pavement damaged outside these lines shall be re-cut and restored at the expense of the Contractor. Should voids develop under existing pavements during construction, those affected pavements shall be neatly saw cut in straight lines and replaced after the voids have been filled.
- B. Construct joints between successive runs vertical and at right angles to the line of the improvement. Exercise care in construction of all joints to ensure that the surface of the pavement is true to grade and cross-section. Lapped joints will not be permitted.

3.03 PLACEMENT OF AGGREGATE BASE

- A. Subgrade Preparation: The subgrade shall be watered or dried as required to bring the soil, as close as practicable, to the optimum moisture content for proper compacting and then compacted, as specified, to a relative compaction of not less than 95% in the upper 6 inches. When compaction of the subgrade areas on fill and embankments has been properly obtained, only such additional rolling will be required as necessary to obtain a thoroughly compacted subgrade immediately prior to placing the aggregate base thereon.
- B. Aggregate Base Tolerance: The aggregate base shall not be placed before the subgrade is approved by the Engineer. The finished aggregate base shall not vary more than 0.05-foot above, nor 0.10-foot below, the planned grade.
- C. Aggregate Base Placing: The aggregate base material shall be spread on the prepared subgrade by means of approved spreading devices subject to approval by the Engineer; the aggregate base material may be dumped in piles upon the subgrade and spread by bulldozing ahead from the dumped material. Each layer shall not exceed 0.50 feet. Segregation of large or fine particles of aggregate shall be avoided, and the material as spread shall be free from pockets of large and fine material

D. Compaction: The relative compaction of each layer of compacted aggregate base material shall not be less than 95% as determined by California Test 216 or ASTM D1556 (Sand Cone), or California Test 231 or ASTM D2922 (Nuclear method when approved by the Engineer). Compaction shall be in accordance with Section 26-1.05 of the Standard Specifications. Aggregate base, after compaction, shall be watered as provided in Section 17 of the Standard Specifications. Paragraph 17-1.04 is not applicable.

3.04 PRIME COAT APPLICATION

- A. Prime Coat: In advance of spreading paving materials, a prime coat of liquid asphalt shall be applied to all base course surface areas to be covered with asphaltic concrete.
 - Preparation of Base Course: Immediately before applying the prime coat, the area to be surfaced shall be cleaned of all loose material by means of hand brooms.
 - 2. Application: Liquid asphalt shall be applied by pressure distributors at a temperature between 125 and 200°F. The Engineer reserves the right to require an adjustment of the temperature of the liquid asphalt at the time of placement. The rate of application shall be between 2/10 and 3/10 gallon per square yard. Excess liquid asphalt, which has failed to penetrate the base, shall be covered with fine sand. All loose sand shall be removed from the treated areas before placing any surfacing material thereon. Liquid asphalt shall not be applied when the atmospheric temperature is below 50°F. The prime coat shall be applied at least 24 hours in advance of paving. Immediately in advance of paving asphalt concrete surfacing, additional prime coats shall be applied, as directed by the Engineer, to areas where the prime coat has been damaged.

3.05 TACK COAT APPLICATION

- A. Tack Coat: In advance of spreading bituminous material upon an existing bituminous or portland cement concrete surface, a tack coat shall be applied to all areas to be surfaced and to all vertical surfaces of existing pavement, curb, gutters and construction joints in the surfacing against which additional material is to be placed. When two or more lifts of asphaltic concrete are required, a tack coat shall be applied between each lift.
 - 1. Preparation: Immediately before applying a tack coat, the area to be surfaced shall be cleaned of all loose material.
 - 2. Application: The tack coat shall be applied by means of pressure distributors by pressure hand-spray equipment. The rate of application shall be 1/20 gallon per square yard. Emulsified asphalt shall not be applied when the atmospheric temperature is below 40°F. If emulsified asphalt Type SS-1 is used, it may be diluted with an equal part of water. The rate of application of the dilution shall be such that the rate of application of undiluted emulsion shall be within the tolerances specified.

3.06 PLACEMENT OF ASPHALT CONCRETE

A. Delivery and Spreading: Bituminous mixtures shall be delivered to the roadbed at temperatures specified in the Standard Specifications. Spreading of the mixture shall be in accordance with Section 39 of the Standard Specifications. Paragraph 39-8 does not apply. All loads shall be covered with tarpaulin or other

- material during transportation. The top layer of asphalt concrete shall not exceed 0.20 feet in compacted thickness. The next lower layer shall not exceed 0.25 feet in compacted thickness, and any lower layers shall not exceed 0.50 feet in compacted thickness.
- B. Compaction: Initial or breakdown rolling and the final rolling of the uppermost layer of the asphalt concrete shall be compacted in accordance with Section 39 of the Standard Specifications. Paragraph 39-8 does not apply. Compaction by vehicular traffic shall not be permitted. The Engineer reserves the right to require an adjustment of the temperature of the asphalt concrete at the time of placement.
- C. Pavement Thickness: Pavement shall match the existing adjoining pavement in thickness, or as indicated on the Drawings, or as specified, whichever is greater.
- D. Joining Pavement: The joints between old and new pavements or between successive days' work shall be carefully made in such manner as to ensure a continuous bond between old and new sections of the course. Edges of existing pavement shall be exposed and cleaned and edges cut to straight, vertical surfaces. All joints shall be painted with a uniform coat of tack coat before the fresh mixture is applied.
- E. Protection of Pavement: After final rolling, no vehicular traffic of any kind shall be permitted on the pavement until it has cooled and hardened and in no case less than 6 hours.

3.07 APPLICATION OF FOG SEAL

A. A fog seal shall be applied to the upper surfaces of all installed asphalt concrete. It shall be applied in accordance with the applicable requirements of Section 37, BITUMINOUS SEALS, of the Standard Specifications, Seal Coats. Subparagraphs 37-1.08 and 37-1.09 are not applicable.

3.08 PAVEMENT RESTORATION

A. Final pavement restoration shall be made as soon as practicable after backfilling. In that period of time between backfilling and final pavement restoration, the trench shall be maintained level with the adjacent pavement and shall be covered with a 1-inch minimum layer of cutback. Prior to placing the final pavement, the temporary pavement shall be removed, the aggregate base excavated to the lines indicated on the Drawings, and the existing pavement edges saw cut as herein specified. The final asphalt pavement shall not be placed before the primed aggregate base surface is approved by the Engineer.

3.09 PENETRATION TREATMENT APPLICATION

A. Preparation of Base Aggregate Surface: Immediately before applying the first coat of the penetration treatment, the area to be treated shall be cleaned of all loose material.

B. Application:

- 1. The penetration treatment shall be applied in three applications. The first application shall be applied at the rate of 0.5 gallon per square yard, and the second and third applications shall be applied at the rate of 0.25 gallons per square yard. The second and third application shall be placed two to three weeks apart as approved by the Engineer and after the previous applications have thoroughly penetrated the base.
- 2. Liquid asphalt shall be applied by pressure distributors at a temperature between 140 and 255°F. The Engineer reserves the right to require an adjustment of the temperature of the liquid asphalt at the time of placement. Excess liquid asphalt, which has failed to penetrate the base in the third application, shall be covered with fine sand. Liquid asphalt shall not be applied when the atmospheric temperature is below 50°F.

3.10 NOT USED

3.11 HEADERS

A. Install wood headers along pavement edges bordered by soil. Install new headers where existing wood headers are damaged during construction, or removed for construction. Install headers with uniform slope between spot elevation indicated on the Drawings or to conform to existing grades.

3.12 PAVEMENT MARKINGS

- A. Preparation: Immediately before applying the paint, the pavement surface shall be thoroughly cleaned of all dust, dirt, scale, curing compound, oil, grease, or other objectionable matter as directed by the Engineer. Solvent material that will damage the pavement shall not be used as a cleaning agent.
- B. Tolerances: Marking and striping shall be within 2 inches of the correct alignment. Dimensions of marking and stripings shall be within ½-inch.
- C. Mixing: Mechanical mixers shall be used to mix paint. Prior to applying, the paint shall be mixed a sufficient length of time to thoroughly mix the pigment and vehicle together, and shall be kept thoroughly agitated during its application.
- D. Application: Pavement marking shall be applied only on dry surfaces and only during periods of favorable weather. Painting shall not be performed when the atmospheric temperature is below 40°F when using solvent-borne paint or below 50°F when using water borne paint; when freshly painted surfaces may become damaged by rain, fog, or condensation; nor when it can be anticipated that the atmospheric temperature will drop below said 40°F or 50°F temperatures during the drying period.
 - 1. Immediately following the preparation of the pavement, the paint shall be applied. The paint shall be applied at the rate of 100 to 110 square feet per gallon of paint. The stripe painting machine shall have a compressor capacity of at least 105 cubic feet per minute and be capable of operating at an air pressure of 125 psi. The paint shall be mechanically agitated while the machine is in operation. The striping machine shall be equipped with a guide post so designed that the machine will hold exactly to the alignment. The propelling vehicle shall be equipped with a guide post so designed that the machine will

- hold exactly to the alignment. The propelling vehicle shall be equipped with a speedometer or tachometer, and with a suitable device for determining the quantity of paint in the container. The paint container and spray nozzles on the machine shall be thoroughly cleaned before starting each day's work. The stripe shall be of the required width, with clean, true edges and without sharp breaks.
- 2. Allow 10 days between the application of a bituminous seal coat and the permanent pavement marking. The paint shall not bleed, curl or discolor when applied to bituminous surfaces. If bleeding or discoloring occurs, apply an additional coat of paint.
- 3. Remove existing permanent or temporary markings and striping which are to be abandoned or obliterated, by wet sandblasting or other favorably reviewed methods. Dry sandblasting may be used in selected areas only with prior approval of the Engineer and with approval of the air pollution control authority having jurisdiction over the area in which the work will be performed. Obliteration of traffic striping with black paint or light emulsion oil shall be done only with the prior favorable review shall not be used as a removal agent.
- E. Provide all warning devices required to protect the painting operation and the finished work. Repaint, to the applicable specifications, any portion of the stripe damaged by any type of traffic within 24 hours after the stripe has been applied. For striping less than 50 feet in length, favorably reviewed portable painting equipment may be used.

END OF SECTION

SECTION 02820

FENCES AND GATES

PART 1 - GENERAL

1.01 SUMMARY

- A. Work includes: Furnish and install redwood fence, as shown on the drawings and as specified herein. Furnish and install temporary fencing per Section 80 of the Caltrans Standard Specifications. In locations where existing fence is to be replaced or extended, the fence type and size shall match the existing fence as nearly as possible. The materials and workmanship shall conform to these Specifications.
- B. Fence and accessories shall be the product of a single manufacturer.
- C. Not Used

1.02 REFERENCES

- A. American Society for Testing and Materials (ASTM):
 - 1. A53 Specification for Pipe, Steel Black and Hot-Dipped, Zinc-Coated, Welded and Seamless
 - 2. A702 Specification for Steel Fence Posts and Assemblies
- B. State of California, Department of Transportation, Standard Specification (Standard Specification) May 2006.

1.03 NOT USED

1.04 SUBMITTALS

- A. Submit in accordance with front end documents.
- B. Submit in the Product Information category complete descriptive information and technical specifications on the chain link fence, gates, gate operators, and appurtenances.
- C. Shop Drawings: Indicate layout, grid, spacing of components, post foundation dimensions, post foundation concrete mix data, hardware anchorage, hardware, and schedule of components.

PART 2 - PRODUCTS

2.01 TEMPORARY FENCING

A. Temporary fencing shall consist of hot-dip galvanized or painted steel, or pretreated or untreated wood posts and braces of suitable length and strength. Bottom wire shall be not more than 9-1/2 inches above ground surface and the remaining strands between top and bottom strands shall be equally spaced.

B. Untreated wood posts shall conform to Section 80-3.01B (1) of the Standard Specifications.

2.02 WOOD FENCING AND GATES

- A. All components of fence and gates, including slats, braces, and posts shall be redwood. Bolts, fittings and accessories shall be zinc coated, galvanized or stainless steel.
- B. Redwood shall be straight and free from loose or unsound knots, shakes over 1/3 the post thickness, or other defects that would make it unfit structurally for the intended purpose. Post knots must be sound, tight, well spaced, and not over 2 inches on any face.
- C. Each redwood line post and brace may be split material and must have:
 - 1. Length of at least 7 feet
 - 2. Perimeter of at least 16 inches
 - 3. Each cross-sectional dimension of at least 4 inches
- D. Each redwood end, corner, and brace post must be sawed or hewed and ahve:
 - 1. Length of at least 8 feet
 - 2. Nominal size of at least 6 inches
- E. Concrete shall conform to Standard Specifications.

2.03 GATES

- A. Gates shall be installed in the sizes and at the locations as shown on the Drawings.
- B. Unless shown otherwise on the Drawings, gates for temporary fences shall be of the "cowboy" type as detailed on the State of California, Department of Transportation, Standard Plans, May 2006, Plan A86.
- C. Not Used.

PART 3 - EXECUTION

3.01 TEMPORARY FENCING

A. Where it is necessary to temporarily remove or alter portions of the existing fence, the Contractor shall install adequate bracing to maintain original tension in the remaining fence. Temporary fencing shall be installed to maintain security. The fencing shall be of adequate design to prevent inadvertent access by either people or livestock. Upon completion of the work, remove the temporary fencing and rebuild and restore all fences to their original position, or revised position as shown on the Drawings, using all new material. Salvaged existing materials may be used if undamaged and if approved by the Engineer.

3.02 INSTALLATION OF REDWOOD FENCING

A. Install chain link fencing and gates at the locations shown on the Drawings.

- B. The area to be fenced shall be uniformly and smoothly finish graded before beginning the fence installation. Fence shall be installed after roadway surfacing has been completed. Except where crossing a drainage ditch, the finish grade shall not deviate from a straight line by more than 3 inches.
- D. All posts shall be embedded into the ground in concrete. Allow concrete footings to cure for seven days before installing fence.
- E. Fencing and gates shall be properly braced to prevent sagging.
- F. Demonstrate that all gates swing smoothly or roll freely without binding or dragging, that all gates are lockable, and that all gate hardware operates properly.

 Demonstrate that all automatic gate operators function properly.
- G. Surplus excavated material remaining after the fence has been constructed shall be disposed of as specified in Section 02050.

END OF SECTION

SECTION 02900

DISINFECTION

PART 1 - GENERAL

1.1 SUMMARY

- A. Section Includes:
 - 1. Disinfect all inside surfaces with which water may come in contact in the following:
 - a. Pipelines
 - b. Valves
 - 2. Dispose of disinfection solution.
- B. Contractor shall disinfect the pipeline prior to service in accordance with AWWA standard specifications and test the water for total coliform using a State Certified Laboratory to verify no positive bacterial results. The contractor shall prepare a disinfection plan for approval by the State Water Resources Control Board, Division of Drinking Water prior to initiating tie in work to the existing drinking water system.

1.2 REFERENCES

- A. American Water Works Association (AWWA):
 - 1. C651 AWWA Standard for Disinfecting Water Mains

1.3 SCHEDULING

- A. Schedule and coordinate the work with operating personnel. Once disinfection has been satisfactorily accomplished, no further entry to the interior of the facilities will be allowed unless entry must be made to perform repairs, in which case repeat disinfection on a localized basis at no additional cost to the Owner. The Contractor shall be responsible for maintaining security of the disinfected facilities.
- B. Maintain the existing plant in operation, except when shutdowns are allowed per Section G-1.
- C. Disinfect pipelines following successful pressure testing.

1.4 SUBMITTALS

- A. Submit in accordance with Section G-5.
- B. Submit a Disinfection Plan in the Product Review category including the procedures, methods, materials and schedules proposed for disinfecting the required surfaces.
- C. Favorably reviewed Disinfection Plan shall also include acceptance by State Water Resources Control Board, Division of Drinking Water.

1.5 QUALITY ASSURANCE

A. State Certified Laboratory testing related to disinfection will be performed by and paid for by the Contractor.

PART 2 - PRODUCTS

2.1 MATERIALS

A. Water: Shall be supplied by Contractor.

PART 3 - EXECUTION

3.1 PREPARATION

- A. Provide all necessary appurtenances required for the disinfection procedures including taps, temporary piping, connections and shutoff valves. Submit data on appurtenances which will be permanently installed for review by the Engineer.
- B. The Contractor is advised that precautions taken to keep surfaces clean during construction and avoiding the entry of deleterious substances on the work during construction will facilitate achieving the disinfection requirements of this project.
- C. Prior to disinfecting, thoroughly clean accessible surfaces of dust, dirt, foreign matter, and deleterious substances remove any oil by contact with absorbents. Use water sprays, steam cleaning, vacuum cleaning, swabbing, hand brushing or a combination of methods and rinsing to affect the cleaning, but do not use any method that will be detrimental to the finish surfaces. Flush inaccessible surfaces clean.

3.2 APPLICATION

A. After completing all construction activities, disinfect the required surfaces with chlorine solutions in accordance with the following procedures. Following disinfection and flushing, the Owner will take water samples for bacteriological analysis of the water. Provide one (1) week of notice to Owner for collecting samples. If the specified bacteriological requirements are not satisfied, repeat disinfection procedure until the requirements are met.

B. Large Pipelines:

- 1. Standard: AWWA C651 as amended herein.
- 2. Forms of Chlorine: Sodium hypochlorite or calcium hypochlorite
- 3. Method: Continuous feed.

C. Small Pipelines:

- 1. Preparation: Provide the system with a 1-inch minimum service cock or valve or other means to inject chlorine solution at a point within 2 or 3 feet of its junction with the supply source. When system is complete, thoroughly flush it by fully opening every outlet until clear water flows from all of them.
- 2. Disinfecting Agent: Sodium hypochlorite or calcium hypochlorite in sufficient quantities to produce chlorine concentration of at least 50 parts per million in

Valley of the Moon Water District Aquifer Storage and Recovery Project, Equipping Phase the system.

3. Disinfecting Procedure:

- a. Connect a hand-operated pump, or other means of injecting the disinfecting agent, to one-inch minimum service cock or valve or other injection device. Pump must provide a pressure greater than that of supply of system.
- b. With system completely full of water and supply valve open, proceed to adjust every outlet of system so that a trickle of water flows from each.
- c. Inject disinfectant slowly and continuously at an even rate, not in slugs, until a test at each outlet shows a free chlorine residual concentration of at least 50 parts per million.
- d. Close all outlets and valves, including valve connecting to supply line and one-inch minimum service cock on solution injection connection. Maintain condition for 24 hours. After 24 hours, test for residual chlorine at each outlet. The free residual chlorine concentration indicated should be not less than 10 ppm. If the indicated free chlorine concentration is less than 10 ppm, repeat disinfection procedure until an approved result is obtained.
- e. When the above procedure has been completed to the satisfaction of the Engineer, flush out entire system with fresh water until tests at all outlets show a residual of not more than the chlorine residual in the fresh water being used.

3.3 FIELD QUALITY CONTROL

- A. Chlorine Residual Testing: AWWA C651, Appendix A, DPD Drop Dilution Method, except where otherwise specified. Testing shall be performed by Contractor.
- B. Bacteriological Analyses of Water: After the completion of disinfecting procedure, including the final flushing as described in AWWA C651 and heretofore, the Owner will obtain water samples from this system for bacteriological analyses. Requirements for satisfactory disinfection of water supply are that bacteriological analyses indicate that water samples are negative for coliform organisms, and that Heterotrophic plate count (standard plate count) is less than 100 colony forming units per milliliter. If bacteriological analyses do not satisfy the above requirements, then repeat disinfection procedure until these requirements are met.

3.4 DISPOSAL OF DISINFECTION SOLUTION

A. Contractor shall be responsible for dispose of disinfection solution.

3.5 PROTECTION OF DISINFECTED STRUCTURES

A. If required to re-enter a disinfected structure, the work shall be conducted utilizing techniques and work methods as necessary to maintain the disinfected status. This shall include use of disinfected foot coverings, tools, and the like. In the event the Contractor contaminates the facilities, effect decontamination at no additional cost to the Owner.

END OF SECTION

SECTION 11210

DEEP WELL SUBMERSIBLE PUMPS (PARK WELL ONLY)

PART 1 - GENERAL

1.01 SUMMARY

A. Section Includes:

 Submersible turbine type pump assembly with electric submersible motor, power cable, inlet strainer, suction casing, pump bowls, discharge column, well plate, discharge head and pump appurtenances as shown on the Drawings and specified herein.

1.02 REFERENCES

- A. American Society for Testing and Materials (ASTM)
 - 1. A48, Gray Iron Castings
 - 2. A276, Stainless Steel Bars and Shapes
 - 3. A320, Alloy Steel Bolting Materials for Low Temperature Service Ductile Iron Castings
 - 4. A582, Free-Machining Stainless Steel Bars
 - 5. B584, Copper Alloy Sand Castings for General Applications

1.03 PERFORMANCE REQUIREMENTS

A. The required pump characteristics shall be as follows:

Tag Numbers P-100 Pump Name Well Pump

Design Point 150 gpm @ 265 ft TDH ± 10 ft

Speed 3500 rpm Maximum Motor Horsepower 15 hp

Minimum Pump Efficiency

@ Design Operating Point 75 Percent Shut Off Head, @ 0 GPM 380 ft ± 10 ft Motor Data (speed/phase/volts) 3500/3/230

1.04 SUBMITTALS

- A. Shop Drawings and Product Data: Submit the following as a single complete initial submittal in accordance with Section G-5 and include the following:
 - 1. Not used
 - 2. Pump name, identification number and specification number.
 - 3. Product data fully describing all items proposed for use to demonstrate that the equipment conforms to the Specifications.
 - 3. Motor data as specified in Electrical Specifications or herein.
 - 4. Pump layouts and dimensions.
 - 5. Pump performance curves.
 - Materials of construction.
 - 7. Certification with related drawings that well plate anchors are designed per requirements to be established by Contractor Design Engineer.
- B. Performance Testing: Certified non-witnessed factory performance tests in accordance with Hydraulics Institute Standards are required for each pump. Obtain favorable review from the Engineer prior to shipment of the pumps.
- C. Manuals: Furnish manufacturer's installation, lubrication, operation and maintenance manuals, bulletins, and parts lists.
- D. Affidavits: Furnish affidavits from the manufacturer stating that the equipment has been properly installed, adjusted and tested and is ready for full time operation.

1.05 QUALITY ASSURANCE

- A. All equipment furnished under this Section shall: (1) be of a single manufacturer who has been regularly engaged in the design and manufacture of the equipment for at least five years; and (2) be demonstrated to the satisfaction of the Engineer that the quality is equal to equipment made by those manufacturers specifically named herein.
- B. All pumps furnished under this Specification Section shall be of a single pump manufacturer.

PART 2 - PRODUCTS

2.01 MANUFACTURERS

A. Deep well submersible pump shall be Grundfos 150S-7; Goulds; or equal, modified to provide the specified features and to meet the specified operating conditions.

2.02 MATERIALS

A. Materials of construction shall be as follows:

<u>Com</u>	<u>ponent</u>	<u>Material</u>
	ion inlet, bowl assembly discharge adapter	ASTM A276 or A582, Stainless Steel
2. Bow	wear rigs	ASTM B584, Bronze, or ASTM A48, Cast Iron
3. Pum	p shaft	ASTM A276 or A582, Type 416 Stainless Steel
4. Impe	eller	Cast stainless steel (all stages)
5. Impe	eller lock Collets	ASTM A276, Stainless Steel
6. Pum	p bearings	ASTM B584, Bronze
7. Pum	p discharge column	ASTM, Stainless Steel
8. Moto	or adapter	ASTM, Stainless Steel
9. Moto	or coupling	ASTM A582, Stainless steel, Type 416
10. Disc	harge elbow	ASTM, Fabricated Stainless Steel
11. Strai	ner	ASTM A320, Stainless Steel, Type 304
12. Bolts	s, studs, and nuts	ASTM A320, Stainless Steel, Type 304

2.03 EQUIPMENT FEATURES

- A. Motor Adapter: The bottom of the pump shall be fitted with a one-piece casting motor adapter designed to serve as the suction inlet, lower bearing housing and motor adapter piece. The coupling housing portion shall be designed to prevent the entrance of abrasive material into the top end of the motor. The coupling connecting the motor to the pump bowl assembly shall be of sufficient size and strength to withstand maximum torque generated by the motor.
- B. Strainer: The suction inlet shall be provided with a strainer having a net inlet opening area of not less than four times the impeller inlet area. The strainer or mesh openings shall be sized to prevent passage of particles larger than the solids handling capability of the impeller.
- C. Suction Inlet: The suction case shall be designed to provide conservative entrance velocities and evenly distribute the flow to the impeller. The inner surface of the case shall be smooth and free from projections or cavities. The pump shaft lower bearing shall be housed in a streamlined casing, centered and held in place by means of rigid cast vanes.
- D. Pump Bowl: The pump bowl shall be flanged for registered fit. Flow passages through the bowl shall be porcelain enamel lined. The first-stage bowl shall be designed to facilitate a low NPSH impeller arrangement and first stage impellers shall be cast stainless steel. All pump bowls shall be designed to handle the shutoff

head of the pump. Bowls shall not be designed to different pressure depending on stage.

Bowl assembly shall be equipped with wear rings. One bowl wear ring shall be installed for each bowl in the bowl assembly. Bowl wear rings shall be installed on the suction side of the bowl seat.

E. Impeller: The impeller shall be constructed free from projections, cavities, or abrupt transitions. The impeller surfaces shall be either polished or porcelain lined.

Impellers shall be of the enclosed type, with the shroud designed to rotate against wearing rings installed in the bowl assembly. Impellers shall be secured to the pump shaft using tapered collets or keyways.

- F. Shafts: Shafts shall be sized to prevent excessive elongation and transmit the required torque without distortion in both the forward and reverse direction. Shafts shall have a first critical speed not less than 20 percent above maximum operating speed. The pumping units shall utilize a single pump shaft extending from the suction case through a discharge case or upper bowl case containing an upper pump shaft bearing.
- G. Bearings: Suction case, bowl, and lower tube bearings shall be close tolerance, sleeve type. Bearings shall be lubricated by the process fluid or grease lubricated. The top case of the bowl assembly shall contain an extra long sleeve bearing with a sand cap. Intermediate bearings shall be furnished at each bowl assembly. The bearings shall have a minimum B-10 lift expectancy of 100,000 hours for continuous service.
- H. Motor: The motor shall be of the submersible electric motor type, capable of continuous operation at nameplate rating under water at a maximum temperature of 95 degrees F and suitable for across the line starting. Motor shall be a nominal 3,450-rpm unit. The maximum horsepower rating of the motor shall be as specified in Section 11210 1.03A, and the motor shall have a minimum Service Factor of 1.15. The motor nameplate full load rating shall not be exceeded at any point on the pump performance curve.

The motor's full load efficiency rating shall not be less than the amount specified in Section 11210 - 1.03A with a minimum power factor of 87 percent. The full load efficiency shall include 100 percent of the thrust bearing's rated loading. For purposes of flow, the maximum motor diameter at the stator case shall not exceed 6 inches.

The motor shall be water filled "wet winding type". It shall be filled with a 50/50 solution of water and food grade propylene-glycol. Motor shall be designed to be properly cooled by passage of water past the motor.

Motor materials of construction shall be stainless steel, or stainless steel fitted. All wetted fasteners and washers shall be of Type 316 stainless steel. Mating threaded components shall be of non-galling alloys.

The motor shall be totally enclosed, utilizing an elastomer expansion diaphragm for the equalization of internal and external pressure.

The motor shall be equipped with a double rubber type shaft seal to seal the motor at the point that the shaft extends through the casing.

Replaceable carbon composite material sleeve type radial bearings shall be provided at each end of the motor.

Thrust bearings shall have capacity to carry the weight of all rotating parts plus the hydraulic thrust at shutoff head. This shall be an integral part of the driver. The pivotal shoes shall be stainless steel and the thrust driver (or thrust bearing) shall be of stainless-steel material. Antifriction bearings shall be designed such that the L_{10} calculated life shall be no less than 8,800 hours. Thrust bearings shall also be able to support down thrust conditions for a minimum of five minutes with the discharge valve closed.

The motor leads shall be sealed at the motor top bracket.

The multiconductor cable shall be stranded copper conductors and meet ASTM class B. Insulation shall be ethylene propylene rubber (EPR) type suitable for continuous immersion in water. Cable shall be non-hygroscopic with an overall neoprene jacket and classified for RHW service. The cable shall have sufficient area to meet ICEA requirements for operation in air. Cable shall be mechanically shielded where it passes the pump bowls. Sufficient cable shall be provided to reach from the motor to the wellhead splice box. The length of cable shall include adequate length to account for sagging of the cable or wrapping around the column pipe. The cable shall be supported on the column pipe with stainless steel straps every 8 feet.

2.04 COLUMN CHECK VALVE

A. The pump column shall be equipped with a column check valve, located immediately above the pump assembly and below the flow control valve. Check valves shall be stainless steel body, slow bleed back, double door type. Check valves shall be nominal size as column pipe, threaded to match the column pipe. Valves will meet all strength requirements for the column pipe.

2.05 DATA PLATES

A. Mount a data plate on each pump unit. Data plates shall contain the manufacturer's name, pump size and type, serial number, speed, impeller diameter, capacity and head rating, and other pertinent data. Attach a special data plate to the pump frame that contains identification of frame and bearing numbers.

2.06 PAINTING

- A. Do not paint stainless steel components.
- B. Provide pumps, motors and bases with the manufacturer's standard factory applied paint finish. The columns, suction inlets, inlet bells, and pump bowls shall be lined and coated with factory applied 8-mil coat of paint as specified below.
 - 1. Manufacturer: Epoxy coating shall be NSF-61 certified and suitable for use with potable water. Factory test the coating and lining for thickness and holidays.
 - Protect the lining and coating against transportation damage. The lining and coating shall be subject to retesting and inspection at the job site, and deficiencies will be corrected by the Contractor in the field to the satisfaction of the Engineer.

2.07 WELL BASE PLATE

A. Pump supplier shall design a steel well plate and discharge elbow/tee and anchors to accommodate the well pump weight, riser pipe weight (based on steel pipe), and any pump up or down thrust. As part of this scope, Contractor shall install a neoprene gasket between the well plate and pump discharge head.

2.08 COLUMN RISER PIPE

A. The stainless steel column pipe shall be of Type 304 in interchangeable sections not over 20' in length and with the ends of each section faced parallel and machined with NPT or flush threads permitting the ends to butt and insuring alignment when connected. The weight of the column pipe shall be no less than that stated in ANSI Specification E101, Section 5.1 "Standard Specifications for Discharge Column Pipe".

2.09 SPECIAL TOOLS

A. Furnish a full set of manufacturer's special tools that are necessary for the replacement of parts and the adjustment of the equipment.

PART 3 - EXECUTION

3.01 INSTALLATION

A. Install equipment in strict conformance with manufacturer's installation instructions. Check pump and motor alignment according to the Standards of the Hydraulics Institute after pump and motor have been installed.

3.02 FIELD SERVICE

A. The manufacturer shall provide a competent field service Engineer to thoroughly check and inspect the pumps after installation, place the pumps in operation and make necessary adjustments, and instruct plant personnel in proper operating and maintenance procedures.

3.03 FIELD PAINTING

A. Pumps, motors and appurtenances shall receive touchup service in the field as recommended by the manufacturer(s).

3.04 FIELD TESTING

A. Perform field testing, observed by the Engineer, to demonstrate that the installed pump equipment provides the hydraulic performance determined by factory tests and that the equipment runs smoothly and is free from excessive noise and vibrations. Hydraulic Institute vibration limits shall govern.

3.05 NOT USED

3.06 FINAL ACCEPTANCE AND WARRANTY

A. Final acceptance of all equipment furnished under these Specifications will be withheld until after the installation and satisfactory field testing. The manufacturer and the Contractor shall warranty the equipment against defects of any kind for a period of two years after Substantial Completion.

END OF SECTION

SECTION 11401

CHLORINE CHEMICAL FEED EQUIPMENT

PART 1 - GENERAL

1.01 SUMMARY

A. Section Includes:

1. Provide complete, tested and operating ammonia (ammonium sulfate) feed equipment as shown on the Drawings and as specified herein.

1.02 REFERENCES

- A. Uniform Fire Code (UFC)
- B. California Building Code (CBC)
- C. National Electrical Manufactures association (NEMA)
- D. American Society for Testing and Materials (ASTM)

1.03 SUBMITTALS

- A. Shop Drawings and Product Data: Submit the following as a single complete initial submittal in accordance with Section G-5:
 - 1. Product data to demonstrate that equipment conforms to the specifications.
- B. Manuals: Furnish manufacturer's installation, lubrication, operation and maintenance manuals, bulletins, and spare parts lists for each system specified.
- C. Affidavits: Furnish affidavits from the manufacturer stating that the equipment has been properly installed, adjusted and tested and is ready for full time operation.
- D. Safety Data Sheets (SDS) for each chemical to be used during testing of each chemical feed system.

1.04 QUALITY ASSURANCE

- A. All equipment furnished under this Section shall: (1) be from manufacturers who have been regularly engaged in the design and manufacture of the equipment for at least five years; and (2) be the equipment made by those manufacturers specifically named herein.
- B. Comply with the Following Regulatory Standards:

- 1. Uniform Fire Code, especially Article 80, Hazardous Materials with local amendments, if any.
- 2. California Building Code.

PART 2 - PRODUCTS

2.01 TOTAL CHLORINE ANALYZER AND CONTROLLER

- A. Equipment: Total Chlorine Analyzer shall be:
 - a. ProMinent DAC Total Chlorine Residual Analyzer/Controller Package
 - b. DAC Controller No. DACBW006VA4000010010EN
 - c. Sensor Housing No. DGMA401T010
 - d. Chlorine Sensor (CTE): 0-5 ppm
 - e. Backboard Assembly to include:
 - i. Backboard (30"Wx24"H)
 - ii. Pressure Regulating Valve
 - iii. Needle Valve
 - iv. Sample Valve
 - v. Bubble Diffuser
 - f. All necessary wiring
 - g. All equipment fully assembled and tested at factory prior to shipment.
- B. Seismic: Entire pump and installation shall comply with the seismic requirements to be developed by Contractor Design Engineer.

2.02 CHLORINE METERING PUMP

- A. Equipment: Chemical metering pumps shall be:
 - a. Blue-White CHEM-FEED Multi Diaphram Metering Pump
- B. Seismic: Entire pump and installation shall comply with the seismic requirements to be developed by Contractor Design Engineer.

2.02 CHLORINE TANK

- A. Equipment: Chemical metering pumps shall be :
 - a. Peabody ProChem Storage Tank, 65 Gallons No. 85243
- B. Seismic: Entire pump and installation shall comply with the seismic requirements to be developed by Contractor Design Engineer.

2.04 CHEMICAL FEED EQUIPMENT APPURTENANCES

- A. General: Materials of construction shall be satisfactory for continuous exposure to the hereinbefore-listed chemicals.
- B. Piping Specialties:

- 1. Provide properly sized pulsation dampeners with pressure gauges on the discharge pipelines of each metering pump and suction pipelines as shown on the Drawings. Provide Viton bellows in the pulsation dampeners for hypochlorite service.
- 2. Provide pressure relief valves with pressure gauges and backpressure valves with pressure gauges for all services. Valves shall be of PVC except caustic service which shall be 316 stainless steel. Provide Teflon diaphragms in all pressure relief and backpressure valves. Valves for caustic and hypochlorite shall have flanged connections only. Valves shall be field adjustable and installed where shown on the Drawings and/or as recommended by manufacturer. Valves shall be by Top Valves supplied by Primary Fluids; Jesco America Corporation; Wallace & Tiernan; or equal.
- 3. Provide discharge pressure gauges for each pump with features and accessories in accordance with Manufacturer recommendations.
- C. Chemical Piping Flexible Connections: Provide hoses made from reinforced PVC where shown in the chemical piping systems on the Drawings. Hoses shall be not less than 6 inches long at the suction and discharge connections to the metering pumps. Hoses at tanks shall be not less than 18 inches long. Each chemical metering pump shall have a flexible connection in the suction and discharge piping. Each tank shall have a flexible connection in all suction piping runs shown on the Drawings. The flexible connections for the hypochlorite tank and caustic soda tank shall be flanged.
- D. Calibration Cylinders: Provide one, clear plastic calibration chamber with vent for use in calibrating the metering pumps. The chamber shall be sized to give adequate capacity for a minimum 60 second draw down test. The scale shall give direct readings in GPH without the need for calculations. The calibration chamber shall be piped and valved so that each pump shall be able to utilize the calibration chamber without interfering with the operation of the other pumps. The top of the chamber shall have a threaded fitting to allow for piping to a common vent.

PART 3 - EXECUTION

3.01 INSTALLATION

A. General: The chemical feed system equipment shall be installed in strict conformance with the manufacturer's installation instructions and with favorably reviewed shop drawings. Check out of the final installation, startup, calibration and instruction of operating personnel shall be performed by an authorized representative of the manufacturer.

3.02 IDENTIFICATION

A. Identification of the health, flammability, and reactivity of each chemical shall be affixed above each chemical feed area.

3.03 FIELD TESTING

- A. Each chemical feed system shall be tested for four hours with potable water. Each chemical system shall be tested against a closed discharge solution pipeline to test pressure relief valve operation. This shall be performed for each metering pump and shall be witnessed by the Engineer. Only after satisfactory testing with water and complete draining and removal of water from the chemical system, and thorough drying, which may require blowing oil-free dry air through the pipelines, may the final test with chemical be allowed to proceed. After draining the test water, hand wipe, dry and blow dry air through chemical feed pipelines to leave the chemical pipelines clean, dry and ready for conveyance of the chemical; then test each chemical feed system in all operational and alarm modes to show conformance with these Specifications. Provide sufficient chemical (approximately 55 gallons each), for the test. The chemicals used for the field test shall be favorably reviewed by the Engineer prior to the test. Each chemical metering pump shall be (chemical solution) calibrated and tested throughout its pumping range. The SDS for each chemical shall be on hand during the testing of each chemical feed system.
- B. Dispose of water used for testing (and cleaning if applicable to the section).

3.04 FIELD SERVICES

- A. Provide an engineer or technician from the chemical feed equipment supplier(s) to make all adjustments and monitor the testing specified in paragraph 3.03 above.
- B. Not USED.

3.05 FINAL ACCEPTANCE AND WARRANTY

A. Final acceptance of all equipment furnished under these Specifications will be withheld until after the installation and satisfactory field testing. The manufacturer and the Contractor shall warranty the equipment against defects of any kind for a period of two years after Substantial Completion.

BASIC MECHANICAL MATERIALS AND METHODS

PART 1 - GENERAL

1.01 SUMMARY

- A. Section Includes: The general requirements for all of the Equipment and Mechanical work in the scope of the Project, included in Divisions 15, and elsewhere wherever specifically mentioned in these Specifications.
- B. Direct the attention of all subcontractors and suppliers of equipment and related appurtenances for the work to the applicable provisions in the Contract Documents wherever they may occur.

1.02 REFERENCES

- A. American Gear Manufacturers Association (AGMA).
- B. American Institute of Steel Construction (AISC).
- C. California Code of Regulations, Title 8 Industrial Relations (CAL/OSHA).
- D. Hydraulic Institute.
- E. National Electrical Manufacturers Association (NEMA).
- F. Occupational Safety and Health Act (OSHA).

1.03 STANDARDS FOR THE WORK

- A. Complete Systems: Provide pipe, fittings, wiring and supports to produce complete, operable systems with all elements properly interconnected. If a specific dimensioned location is not shown for interconnections or smaller system elements, select appropriate locations and show them on Shop Drawing submittals for review.
- B. Provide equipment and material new and without imperfections. Erect in a neat and workmanlike manner; aligned, leveled, cleaned and adjusted for satisfactory operation; installed in accordance with the recommendations of the manufacturers and the best standard practices for this type of work so that connecting and disconnecting of piping and accessories can be readily made and so that all parts are easily accessible for inspection, operation, maintenance and repair. Locate oil and lubrication fittings clear of and away from guards, base, and equipment and within reach from the operating floor. Coordinate location of all motor connections in order to properly orient encased electrical conduits. In order to meet these requirements with equipment as furnished, minor deviation from the Drawings may be made as favorably reviewed by the Engineer.

C. The recommendations and instructions of the manufacturers of products used in the work are hereby made part of these Specifications, except as they may be superseded by other requirements of these Specifications.

1.04 SUBMITTALS

- A. Submit in accordance with Section G-5.
- B. Shop Drawings: Submit Shop Drawings to the Engineer and receive favorable review prior to fabrication, construction, or delivery to the project site in accordance with Section G-5 of these Specifications. Show sizes and arrangement of equipment, foundations and anchor bolts required, performance characteristics, fan curves and pump curves, control diagrams, wiring diagrams, motor data sheets, methods of assembly, pipe hanging details, ductwork layouts and connections to other work. Date and sign drawings as certified for use in construction of this project. The arrangement of mechanical equipment and appurtenant piping shown on the Drawings may be varied as necessary to fit the favorably reviewed certified manufacturer's installation drawings. However, manufacturers' drawings shall not deviate in substance from the Contract Drawings and Specifications as to location, size, type and design of equipment.

The following minimum requirements shall accompany all equipment submissions:

- 1. Overall dimensions.
- 2. Mounting arrangement and dimensions.
- 3. Description of materials.
- 4. Connection sizes and orientation.
- 5. Capacity and location of lifting eyes.
- 6. Motor arrangement showing location of electrical connections.
- 7. Rating data Mechanical and Electrical as applicable.
- 8. Detail electrical wiring diagrams, showing component designation and rating.
- 9. Seismic design and calculations as required in Section 01040.
- 10. List of special tools and/or spare parts to be furnished, if any.
- C. Each piece of equipment, for which certified witnessed or non-witnessed performance tests are required, shall be accompanied by a completed form containing at least the following information:
 - 1. Owner's name and location of project.
 - 2. Contractor's name and subcontractor if applicable.
 - 3. Name of item being submitted.
 - 4. Specification reference by section, paragraph, and page.
 - 5. Data on item (manufacturer, general descriptive data, dimensions, size of connections, speeds, performance curves, serial number). A specific list of the test results plus a list, which shows the values that differ from Specifications.
 - 6. Motor data, type, voltage, frequency, phase, full load amperes, starting method, frame size, enclosure insulation type (NEMA Code letter), dimensions, service factor, serial number.
 - 7. Date and signature of person certifying the performance.
 - 8. For factory test, receive favorable review of factory test results prior to shipping the equipment.

- D. Instruction Manuals: Prepare and submit instruction manuals covering installation, operation and maintenance of all equipment and machinery specified in Divisions 15. Refer to Section G-5.
- E. Manufacturers' Affidavits: Where called for in the Specifications, each equipment manufacturer, or his authorized representative, shall submit an affidavit.

1.05 RESPONSIBILITY AND CARE OF EQUIPMENT

- A. The Contractor shall be responsible for the equipment included in this Contract until it has been finally inspected, tested, and accepted in accordance with the requirements of these Specifications.
- B. The Contractor shall make his own provisions for properly storing and protecting all material and equipment against theft, injury, or damage from any and all causes. Damaged material and equipment shall not be used in the work.

PART 2 - PRODUCTS

2.01 DESIGN

- A. General: Design all equipment for the service intended, of rugged construction, of ample strength for all stresses which may occur during fabrication, transportation, erection and during continuous or intermittent operation. Adequately stay, brace and anchor, and install equipment in a neat and workmanlike manner. Give consideration to appearance and safety, as well as utility, in the design of details. Use cathodically compatible materials of construction.
- B. Seismic: Refer to Section 01040 of the Specifications for the seismic design criteria.
- C. Controls: Unless noted otherwise, the design of the electric control of any equipment system and/or equipment package shall be the responsibility of the manufacturer of the equipment system and/or equipment package. The elementary control diagrams as shown on the Electrical Drawings and the diagrams shown on the Instrumentation Drawings are illustrative of control and monitoring requirements pertaining to various equipment of this project. The manufacturers shall design their own functional electric control devices and circuitry, in consultation with the specific elementary control diagrams and other project specifications, to meet the equipment control requirements. All such systems and package controls shall be furnished by the equipment manufacturer, except that controls shown in motor control centers and process controllers, remote control devices, and their interconnecting wiring shall be provided under Divisions 16 and 13, if present.

2.02 MATERIALS AND STANDARD SPECIFICATIONS

A. Materials: Design, fabricate and assemble equipment and systems with new materials and in accordance with acceptable modern engineering and shop practices. Manufacture individual parts to standard sizes and gauges so repair parts can be installed in the field.

B. Uniformity: Unless otherwise specified, equipment or material of the same type or classification used for the same purpose shall be the product of the same manufacturer and shall be the same model.

2.03 LUBRICATION

- A. Provide lubricants of types recommended by equipment manufacturers, in quantities sufficient for consumption prior to completion, testing and final acceptance.
- 2.04 NOT USED.

2.05 EQUIPMENT BASES AND BEDPLATES

A. Mount equipment assemblies on a single heavy cast iron or welded steel bedplate unless otherwise shown or specified. Provide bases and bedplates with machined support pads, tapered dowels for alignment or mating of adjacent items, adequate openings to facilitate grouting, and openings for electrical conduits. Round or chamfer and grind smooth all corners. Continuously weld seams and contact edges between steel plates and shapes, and grind welds smooth. Do not support machinery or piping on bedplates other than that which is factory installed. Provide jacking screws in equipment bases and bedplates to aid in leveling prior to grouting. Mount all equipment bases and baseplates on reinforced concrete pads at least 3 inches high.

2.06 ANCHORS

- A. Each equipment manufacturer shall furnish an anchor bolt pattern and the required anchor bolts, nuts and washers of adequate design for securing bases and bedplates to concrete bases. Provide anchor bolts of length to allow for 1-1/2-inch of grout under baseplates and adequate anchorage into structural concrete unless otherwise shown or specified.
- B. Provide anchor and assembly bolts and nuts of ample size and strength for the purpose intended. All bolts shall be standard machine bolts, with cold pressed hexagon nuts. Provide suitable degauling compounds for bronze and stainless-steel threaded components. Any space wholly or partially underground, or having a wall or ceiling forming part of a water channel, is classified as a moist location. Unless otherwise specified or noted on the Drawings, provide materials as follows:
 - 1. Bolts and nuts in submerged locations or submerged and embedded in concrete or buried in earth, in all exterior locations, and in moist locations: Type 316 stainless steel.
 - 2. Bolts and nuts for supports or equipment in dry locations: Galvanized steel (hot-dipped), with oversize nuts.
 - 3. Use other bolting materials where specifically called for in the Specifications or on the Drawings.
- C. Anchor all motor-driven equipment with cast-in-place anchor bolts or drilled-in anchors set with epoxy adhesive. Do not provide expansion type anchors for motor-driven equipment.

- D. Anchor all non-motor-driven equipment with cast-in-place anchor bolts or drilled-in anchors set with epoxy adhesive except that, where specifically allowed by note on the Drawing, expansion type anchors may be used.
- E. Refer to Section 05500 for technical specification requirements of drilled-in anchors set in epoxy adhesive and for expansion bolt anchors. Refer to Section 05500 for cast-in-place anchors.

2.07 SAFETY GUARDS

- A. Cover belt or chain drives, fan blades, couplings, nip points, exposed shafts and other moving or rotating parts on all sides with safety guards conforming to all Federal, State, and local codes and regulations pertaining; conform to the most restrictive requirement. Design guards for easy installation and removal, complete with necessary supports, accessories, and fasteners, all hot dip galvanized. Design guards in outdoor locations to prevent entrance of rain and dripping water. Provide tachometer test opening in line with ends of shafts. Typically, guards shall be expanded metal on a structural steel frame except that outdoor guards may be of solid material. Provide hinged doors with latch for service and lubrication access.
- B. Cover all pipes, manifolds, heaters, and other surfaces which have a surface temperature sufficient to burn human tissue with a thermal insulating material or otherwise guard against contact.
- C. Guards to comply with CAL/OSHA 3940 through 3944.

2.08 LIFTING EYES

- A. Supply all equipment weighing over 100 pounds with lifting eyes. Parts of equipment assemblies which are normally serviced separately, such as motors, to have lifting eyes of their own.
- 2.09 NOT USED.

2.10 NAMEPLATES

- A. Manufacturer's Nameplate: Furnish each piece of equipment and its driver with a corrosion-resistant metal nameplate fastened to the item in a readily readable position. This nameplate to contain the manufacturer's name, equipment rating, capacity, size, model, serial number, and speed. All information written or printed to be in English.
- B. Direction of Rotation: Furnish each piece of rotating equipment with a direction of rotation arrow.

- C. Functional Identification: Label each piece of equipment using a Phenolic label, 3/32-inch thick, matte surface, with the functional name and number of the equipment.
 - 1. Fasten labels to the equipment, its base or other acceptable location:
 - a. Letters: 3/8-inch high with the border trim on all sides not less than 1/4-inch.
 - b. Color: Bold background with white letters. Owner to determine background color.
 - c. Fasteners: Brass or stainless steel screwed into inserts, anchor shields or tapped holes in equipment or base.

2.11 PROTECTION AGAINST ELECTROLYSIS

A. Where dissimilar metals are used in conjunction with each other, provide suitable insulation between adjacent surfaces so as to eliminate direct contact and any resultant electrolysis. Connections of dissimilar piping materials shall utilize dielectric unions, flanges, couplings, or bushings.

2.12 SPECIAL TOOLS

A. For each type of equipment to be furnished, provide a complete set of all special tools (including grease guns or other lubricating devices) which may be necessary for the adjustment, operation, and maintenance of such equipment.

2.13 FINISHES

- A. Conform to applicable requirements of Section 09960, if present.
- B. Factory Painting: On pumps, motors, drives, starters, control panels and other similar self-contained or enclosed components, apply a factory protective paint system unless otherwise noted. Paint or otherwise protect surfaces that are inaccessible after assembly by a method which provides protection for the life of the equipment.
- C. Shop Priming: Except where field sandblasting is required, apply one or more shop coats of metal primer on surfaces to be finish painted at the site, of sufficient thickness to protect surfaces until finished. Primer shall be compatible with finish coat.
- D. Rust Preventive: Coat machined, polished, other ferrous surfaces, and non-ferrous surfaces which are not to be painted with rust preventive compound.

2.14 NOISE AND VIBRATION

A. Mechanical and electrical equipment, as installed in this project, shall not create sound levels that are in excess of that permitted by CAL/OSHA for 8 hours per day worker exposure unless otherwise noted for the specific piece of equipment involved. If the required sound level cannot be achieved by bare equipment in its designated environment, provide sound attenuating enclosures. Sound attenuating enclosures shall have necessary ventilation to prevent equipment overheating and shall be constructed for easy removal to permit maintenance. Devices necessary for

- day-to-day operation shall pierce the enclosure or otherwise be accessible without need to remove the enclosure.
- B. Equipment which when operating has obvious excessive vibrations shall be repaired or replaced as directed by the Engineer. Baseline vibration measurements shall be made where specified.

2.15 FACTORY TESTS

- A. Perform factory tests for each piece of equipment where specifically called for in the section specifying that equipment. Note that factory tests are inherent in many reference standards. The requirement for a factory test in a referenced standard is hereby made a part of these Specifications. Conduct factory tests at the same speeds and other conditions at which the equipment will operate in the field, except as noted.
- B. Where specifically noted, performance tests may be witnessed by the Engineer or his representative. Inform the Engineer in sufficient time to allow arrangements to be made for witness of such tests. When non-witnessed tests are performed, supply certified results.
- C. Not Used
- D. Tests of other equipment shall conform to the requirements set forth in these Specifications.

PART 3 - EXECUTION

3.01 EXAMINATION

A. Inspect each item of equipment for damage, defects, completeness, and correct operation before installing.

3.02 PREPARATION

A. Prior to installing equipment, ensure that the areas are clean. Maintain the areas in a broom-clean condition during installation operations. Clean, condition, and service equipment in accordance with the approved Instruction Manuals and specific recommendations of the equipment manufacturer.

3.03 INSTALLATION

- A. Not Used.
- B. Equipment: Conform to approved Instruction Manuals. Employ skilled craftsmen experienced in installation of the types of equipment specified. Use specialized tools and equipment, such as precision machinist levels, dial indicators, gauges, and micrometers, as applicable. Produce acceptable installations free of vibration or other defects. Align and pin to common bedplate equipment and drivers connected by flexible couplings.

- C. Anchor Bolts: Deliver bolts with templates or setting drawings and verify that bolts are correctly located before structural concrete is placed.
- D. Base and Bedplate Grouting: Do not place grout until initial fitting and alignment of connected piping is completed. Level and align equipment on the concrete foundations, then entirely fill the space under base or bedplates with grout. Bevel exposed grout at 45 degree angle, except round exposed grout at horizontal surfaces for drainage. Trowel or point exposed grout to a smooth, dense finish and damp cure with burlap for three days. When grout is fully hardened, remove jacking screws and tighten nuts on anchor bolts. Check the installation for alignment and level, and perform approved corrective work as required to conform to the tolerances given in the applicable Instruction Manual.
 - 1. Make an allowance of at least 1-1/2 inches for grout under the equipment bases, whether or not shown on the Drawings. Use steel shims to level and adjust the bases. Shims may be left embedded in the grout, in which case they shall be installed neatly and so as to be as inconspicuous as possible in the completed work. Unless otherwise approved, all grout shall be a favorably reviewed non-shrink, non-metallic grout.
 - 2. Grout: Dimensionally stable, inorganic, premixed and resistant to acids, alkalies, and salt water, and unaffected by water and oil. It shall have high strength even when used as a pourable mixture, and shall bond well with steel and cured concrete or be compatible with a suitable bonding agent which shall then be used to effect the bond. Use in strict accordance with the manufacturer's recommendations. Provide Five Star Grout as manufactured by U.S. Grout Corporation, Bonsal Construction Grout as manufactured by Bonsal Company, or equal. Submit for favorable review by the Engineer prior to use.
 - 3. Where practicable, place the grout through the grout holes in the equipment base and work outward and under the edges of the base and across the rough top of the concrete foundation to a peripheral form so constructed as to provide a suitable chamfer around the top edge of the finished foundation.
- E. Not Used.

3.04 EQUIPMENT STARTUP AND ADJUSTMENT

- A. Arrange for an authorized factory-trained representative of the company or companies supplying the various items of equipment to check the installation and adjust and test the equipment furnished before the acceptance of the work by the Owner. Said representative shall be experienced and knowledgeable of the equipment being tested. Furthermore, he shall assist and instruct the operating staff in adjusting and operating the equipment during the initial plant operation period.
 - 1. Provide initial lubrication for all equipment.
 - 2. Test and demonstrate to the Owner's representative that all equipment operates properly, and specified performance has been attained. For pumps, include measurement of suction and discharge pressure at the pump and measurement of pumping rate by volumetric means or through a suitably calibrated meter for two points on the performance curve. For adjustable-speed pumps, conduct tests at a minimum of two speeds. Furnish any test equipment or measuring devices required which are not part of the permanent installation.

- 3. In addition, demonstrate that the entire facility is in full operating condition prior to the acceptance of the work. Should any equipment or part thereof fail to operate as intended, immediately remove and replace it, all at the Contractor's expense. Pay for all tests involved in this Section.
- 4. Pressure test equipment and connections thereto as required by these Specifications.

3.05 PERFORMANCE TESTS

A. Upon completion of the work, and after all systems are set and balanced, conduct performance tests in accordance with Division 1 and other applicable sections of these Specifications. Submit test conditions, test data and results to the Engineer for review.

3.06 SOUND LEVEL TESTING

A. Measure the sound level developed by all mechanical and electrical equipment provided. Perform testing in all rooms and spaces containing such equipment during the final operation test program with all equipment operating. Use OSHA approved instrument and record the highest sound level developed when measured according to Cal-OSHA standards in each room and space. Deliver a copy of records to the Owner.

3.07 TOOLS, LOOSE PARTS, AND LUBRICANTS

- A. Tools and Loose Parts Supplied: Provide an inventory of tools and loose parts required to be supplied under the project. Turn over inventory and parts to the Owner. The Owner's written acknowledgment of receipt is required for project completion. Loose parts are defined as items such as special tools, keys, safety equipment, and portable equipment. Refer to Section 01700 and relevant technical sections of these Specifications for additional instructions.
- B. Recommended Spare Parts: Furnish a complete list of recommended spare parts and supplies for each equipment furnished with current prices and a source of supply.
- C. Provide a list of all recommended lubricants not listed in the O&M Manuals.
- 3.08 NOT USED.
- 3.09 NOT USED.
- 3.10 NOT USED.

GENERAL VALVE REQUIREMENTS

PART 1 – GENERAL

1.1 SUMMARY

A. Section Includes: General requirements for valves, including features, accessories, materials, and installation.

1.2 REFERENCES

- A. American Society for Testing and Materials (ASTM).
- B. American Water Works Association (AWWA):
 - 1. AWWA C207 Steel Pipe Flanges for Waterworks Service Sizes 4-Inch Through 144-Inch.
 - 2. AWWA C500 Gate Valves for Water Systems.
 - 3. AWWA C509 Resilient-Seated Gate Valves for Water Systems.
 - 4. AWWA C540 Power-Actuating Devices for Valves and Sluice Gates.
 - 5. AWWA C550 Protective Interior Coatings for Valves and Hydrants.
- C. American National Standards Institute (ANSI):
 - 1. ANSI/NSF Standard 61 Drinking Water System Components Health Effects.
 - 2. ANSI B2.1 Specifications, Dimensions, Gauging for Taper and Straight Pipe Threads (except dry seals).
 - 3. ANSI B16.10 Face-to-Face and End-to-End Dimensions of Valves.
- D. Manufacturer's Standardization Society of the Valve and Fittings Industry (MSS):
 - 1. MSS-SP-60 Connecting Flange Joint Between Tapping Sleeves and Tapping Valves.

- 2. MSS-SP-61 Pressure Testing of Steel Valves.
- 3. MSS-SP-72 Ball Valves with Flanged or Butt-Welding Ends for General Services.
- 4. MSS-SP-80 Bronze Gate, Globe, Angle and Check Valves.
- 5. MSS-SP-82 Valve Pressure Testing Methods
- 6. MSS-SP-98 Protective Epoxy Coatings for the Interior of Valves and Hydrants.

1.3 SYSTEM DESCRIPTION

- A. All of the valves, devices, and materials specified herein are intended to be standard for its respective use in controlling the flow of potable water shall be certified as being compliant with ANSI/NSF Standard 61.
- B. Valves, appurtenances and miscellaneous items shall be installed as shown on the Drawings and as specified, so as to form complete workable systems.

1.4 SUBMITTALS

A. Shop Drawings

- 1. Submit complete product data and shop drawings required to establish compliance with these Specifications in accordance with Section G-5.
- 2. Submittals shall include as a minimum:
 - a. Certified drawings showing all important details of construction and dimensions.
 - b. Descriptive literature, bulletins and/or catalogs of the valve assemblies.
 - c. The total weight of each item.
 - d. A complete bill of materials.
 - e. Valve Cv data and head loss characteristics (maximum pressure drop) as a function of the entire flow range for both full open and
 - f. 10, 20, 30, 40, 50, 60, 70, 80, and 90 percent open.
 - g. Actuator torque requirements for normal and maximum

pressure operation.

h. Operations and Maintenance Manual.

B. Quality Control

Certificates

- a. For each valve specified to be manufactured, tested and/or installed in accordance with AWWA and other standards, submit an affidavit of compliance with the appropriate standards, including certified results of required hydrostatic tests and certification of proper installation.
- 2. Manufacturer's Installation and Application Data
- 3. Operation and Maintenance Data
 - a. Operation and maintenance instructions shall be furnished to the Engineer as provided in Section 01782. The instructions shall be prepared specifically for this installation and shall include all required product data, drawings, equipment lists, descriptions and other information required to instruct operating and maintenance personnel unfamiliar with such equipment.

1.5 QUALITY CONTROL

A. Qualifications

- 1. Valves and appurtenances shall be products of well-established firms who have a minimum of 10 years continuous current experience, are reputable, and qualified in the manufacture of the particular products to be furnished.
- 2. All units of the same type shall be the product of one manufacturer.

B. Certifications

1. The manufacturers shall furnish an affidavit of compliance with Standards for testing required for certain items in addition to that required by referenced standards.

C. Not Used

D. Inspection of the units may be made by the Engineer after delivery. The equipment shall be subject to rejection at any time due to failure to meet any of

the Specification requirements, even though submittal data may have been accepted previously. Equipment rejected after delivery shall be marked for identification and shall be removed from the job site within 5 working days.

1.6 DELIVERY, STORAGE AND HANDLING

A. Packing and Shipping

- Care shall be taken in loading, transporting and unloading to prevent injury to the valves, appurtenances, or coatings. Equipment shall not be dropped. All valves and appurtenances shall be examined before installation and no piece shall be installed which is found to be defective. Any damage to the coatings shall be repaired to a new condition.
- Prior to installation, the ends of all valves shall be acceptably covered to prevent entry of foreign material. Covers shall remain in place until installation. Oxygen-cleaned valves shall be suitably protected to preserve the integrity of the cleaning process. Uncovered or contaminated valves shall be re-cleaned for oxygen service.
 - All valves 3-in and larger shall be shipped and stored on site until time of use with wood or plywood covers on each valve end.
 - b. Valves smaller than 3-in shall be shipped and stored as above except that heavy cardboard covers or plastic plugs may be used on the openings.
 - c. Rising stems and exposed stem valves shall be coated with a protective oil film which shall be maintained until the valve is installed and put into use.
 - d. Any corrosion in evidence at the time of acceptance by the Owner shall be removed and repaired, or the valve shall be removed and replaced.

B. Storage and Protection

1. Special care shall be taken to prevent plastic and similar brittle items from being directly exposed to the sun, or exposed to extremes in temperature, to prevent deformation. See the individual piping specifications and manufacturer's information for further requirements.

1.7 MAINTENANCE

- A. Special tools and the manufacturer's standard spare parts, if required for normal operation and maintenance, shall be supplied with the equipment, as specified herein.
- B. Provide all special tools required for normal maintenance. Tools shall be packaged in a steel case, clearly and indelibly marked on the exterior to indicate equipment for which tools are intended.
- C. Provide to the Owner a list of all spare and replacement parts with current individual prices and location where they are available.

PART 2 - PRODUCTS

2.1 MATERIALS - GENERAL

- A. Valves and appurtenances shall have the name of the maker, nominal size, flow directional arrows, working pressure for which they are designed and standard referenced, cast in raised letters or indelibly marked upon some appropriate part of the body.
- B. Unless otherwise noted, items shall have a minimum working pressure of 150 psig or be of the same working pressure as the pipe they are connected to, whichever is higher and suitable for the pressures noted where they are installed.
- C. Joints, size and material unless otherwise noted or required by the Engineer:
 - 1. Except where noted, all joints referred to herein shall be of the same type, nominal diameter, material, and with a minimum rating equal to the design capacity of the pipe or fittings to which they are connected.
 - 2. Unless otherwise noted on the Drawings, valves and appurtenances shall be of the same nominal diameter as the pipe or fittings to which they are connected.
- D. Provide all special adapters as required to ensure compatibility between valves, appurtenances, and adjacent pipe.

2.2 EQUIPMENT

- A. The valve manufacturer shall supply, and rigidly mount all actuators, including any type of manual or powered actuators, on valves at the factory. The valves and their individual actuators shall be shipped as a unit.
- B. Unless otherwise noted, valves shall be manually actuated; non-buried valves shall have an operating wheel, handle or lever mounted on the operator; buried

- valves and those with operating nuts shall have a non-rising stem with an AWWA 2-in nut.
- C. All actuators shall be capable of moving the valve from the full open to full close position and in reverse and holding the valve at any position part way between full open or closed.
- D. All valves shall be left hand to open (counterclockwise), clockwise to close. Each operating device shall have cast on it the word "OPEN" and an arrow indicating the direction of operation.

E. Gear Actuators

- 1. Unless otherwise noted, gear actuators shall be provided for the following: all valves of larger than 8-in nominal diameter; all buried valves with operating shaft mounted horizontally (butterfly, plug, etc); where specified and/or indicated on the Drawings; where manual operator effort is greater than 40 ft-lbs rim pull.
- 2. Gear actuators shall be of the worm or helical gear type with output shaft perpendicular to valve shaft, having a removable hand wheel mounted on the output shaft. Unless noted they shall conform to AWWA C504, but except with butterfly valves, need not be certified.
- 3. Actuators shall be capable of being removed from the valve without dismantling the valve or removing the valve from the line.
- 4. Gearing shall be machine-cut steel designed for smooth operation. Bearings shall be permanently lubricated, with bronze bearing bushings provided to take all thrusts and seals and to contain lubricants. Housings shall be sealed to exclude moisture and dirt, allow the reduction mechanisms to operate in lubricant and be of the same material as the valve body.
- 5. Manual operator input effort to the handwheel shall be a maximum of 40 ft-lbs for operating the valve from full open to full close, under any conditions. Gear actuators shall indicate valve position and have adjustable stops. Maximum handwheel size shall be 24-in diameter.
- F. All position indication and direction of opening arrows shall be embossed, stamped, engraved, etched or raised decals.
- G. Unless otherwise noted, all valves larger than 3-in nominal diameter shall be provided with position indicators at the point of operation.
- H. Where required on the Drawings, furnish position indicating switches on valves. Switches shall be pilot duty double pole, double throw, at either limit of open or close or both limits as shown. Switches shall be enclosed in a NEMA 4X

enclosure and contacts shall be rated a minimum of 10 amperes at 120 volts A.C.

2.3 FABRICATION

- A. Assembly: All operator and valve assemblies shall be match marked during mounting with indelible markings to illustrate proper relative orientation and facilitate disassembly and reassembly in the field.
- B. Operators for valves shall be provided with support assemblies. Factory mounting of operator and valve shall include placement of 1/4" galvanized carbon steel operator support plate between operator and valve. Operator stem and coupling shall be of sufficient length to accommodate 1/4" plate.
- C. Ball valves that require the ball to be drilled to allow the venting of gas (e.g., sodium hypochlorite, hydrogen peroxide, etc.) shall have the drilling completed by the manufacturer in the factory and shall be fully guaranteed by the valve manufacturer.

2.4 FINISHES

- A. Notwithstanding any of these Specifications, all coatings and lubricants in contact with potable water shall be certified as acceptable for use and contact with potable water and compliant with Air Quality Management District.
- B. If not specified herein, exterior coatings shall comply with the requirements for industrial coatings per the manufacturer's recommendation, subject to approval by the Engineer.
- C. The exterior surface of various parts of valves, operators, floor-stands and miscellaneous piping shall be thoroughly cleaned of all scale, dirt, grease or other foreign matter and thereafter one shop coat of an approved rust-inhibitive primer shall be applied in accordance with the instructions of the paint manufacturer or other primer compatible with the finish coat provided.
- D. Special care shall be taken to protect uncoated items and plastic items, especially from environmental damage.

PART 3 - EXECUTION

3.1 INSTALLATION - GENERAL

A. The Contractor shall exercise due care in loading, unloading, and handling, and storage of the valves and actuators. The Contractor shall be solely responsible for any damage to the valves and actuators, and shall repair any valve or actuator damaged in handling or storage to the satisfaction of the Engineer at no additional cost to the Owner.

- B. All valves and appurtenances shall be installed per the manufacturer's instructions in the locations shown, true to alignment and rigidly supported. Any damage to the above items shall be repaired to a new condition before they are installed.
- C. Install all brackets, extension rods, guides, the various types of operators and appurtenances as shown on the Drawings, or otherwise required. Before setting these items, check all Drawings and figures which have a direct bearing on their location. The Contractor shall be responsible for the proper location of valves and appurtenances during the construction of the Work.
- D. All materials shall be carefully inspected for defects in construction and materials. All debris and foreign material shall be cleaned out of openings, etc. All valve flange covers shall remain in place until connected piping is in place. All operating mechanisms shall be operated to check their proper functioning and all nuts and bolts checked for tightness. Valves and other equipment which do not operate easily, or are otherwise defective, shall be repaired or replaced at no additional cost to the Owner.
- E. Unless otherwise noted, joints for valves and appurtenances shall be made up utilizing the same procedures as specified under the applicable type connecting pipe joint and all valves and other items shall be installed in the proper position as recommended by the manufacturer. Contractor shall be responsible for verifying **manufacturers'** torquing requirements for all valves.

3.2 INSTALLATION OF MANUAL OPERATIONAL DEVICES

- A. Unless otherwise noted, all operational devices shall be installed with the units of the factory, as shown on the Drawings or as acceptable to the Engineer to allow accessibility to operate and maintain the item and to prevent interference with other piping, valves and appurtenances.
- B. For manually operated valves 3-in in diameter and smaller, valve operators and indicators shall be rotated to display toward normal operation locations.
- C. Floor boxes, valve boxes, extension stems, and low floor stands shall be installed vertically centered over the operating nut, with couplings as required and the elevation of the box top shall be adjusted to conform to the elevation of the finished floor surface or grade at the completion of the Contract. Boxes and stem guides shall be adequately supported during concrete pouring to maintain vertical alignment.

3.3 FIELD QUALITY CONTROL

A. Take care not to over pressurize valves or appurtenances during pipe testing. If any unit proves to be defective, it shall be replaced or repaired to the satisfaction of the Engineer.

- B. No testing shall be performed until the manufacturer's service representative has provided written certification that the installed valves have been examined and found to be in complete accordance with the manufacturer's requirements.
- C. Functional Test: Prior to process and plant startup, all items shall be inspected for proper alignment, quite operation, proper connection and satisfactory performance. All units shall be operated continuously while connected to the attached piping, without vibration, jamming, leakage, or overheating and perform the specified function.
- D. The various pipelines in which the valves and appurtenances are to be installed are specified to be field tested. During these tests any defective valve or appurtenance shall be adjusted, removed and replaced, or otherwise made acceptable to the Engineer.
- E. Various regulating valves, strainers, or other appurtenances shall be tested to demonstrate their conformance with the specified operational capabilities and any deficiencies shall be corrected or the device replaced or otherwise made acceptable to the Engineer.

3.4 CLEANING

- A. All items (including valve interiors) shall be cleaned prior to installation, testing and final acceptance.
- B. Following installation, field clean all valves, etc., that will come in contact with the oxygen, ozone, ozone off gas, and supplemental nitrogen gas. Submit details of the procedure to be used to ensure hydrocarbon and welding residue decontamination of the piping system. The selected procedure used shall be one that is used in the oxygen manufacturing industry. The Contractor shall provide services of a qualified specialty cleaning and decontamination contractor for this work. The name and qualifications of this specialty contractor shall be submitted to the Engineer a minimum of 60 days prior to the start of cleaning procedures. Upon completion, the system shall be dried using dry nitrogen gas and inspected by the specialty cleaning contractor to ensure compliance with the cleaning procedure requirements. The Contractor shall pay for all cleaning and drying materials used for field cleaning.

GATE VALVES

PART 1 - GENERAL

1.01 SUMMARY

- A. The work of this section consists of furnishing and installing gate valves.
- B. See Section 15100 for additional requirements.

1.02 REFERENCES

- A. American National Standards Institute (ANSI)
- B. American Society of Mechanical Engineers (ASME)
- C. American Society for Testing and Materials (ASTM)
- D. American Water Works Association (AWWA)
- E. National Science Foundation (NSF 61).

1.03 SUBMITTALS

A. As specified in Section G-5 and Section 15100.

PART 2 - PRODUCTS

2.01 STANDARDS

A. All products shall comply with the standards referenced in Part 1

2.02 GATE VALVES (2 /12 INCHES AND SMALLER)

- A. Rating: 200 psi WOG.
- B. Type: Rising stem, screw in bonnet, solid wedge disc, handwheel operated.
- C. Connections: Threaded.
- D. Materials: 304 or 316 Stainless steel.
- E. Manufacturers: Matco-Norca, or equal.

2.03 RESILIENT WEDGE VALVES 3 INCHES AND LARGER

- A. General: Comply with AWWA C509 or C515 except where otherwise specified herein. Valve shall be epoxy lined and coated.
- B. Rating: 200 psi.
- C. Type: Rising stem, OS&Y, handwheel operated except for buried service use non-rising stem with operating nut.
- D. Connections: Flanged.

E. Manufacturers: Mueller Company, American-Darling Valve Clow-Kennedy-M&H Valve Company, or approved equal.

2.04 SERVICE BOXES FOR VALVES 3 INCHES AND LARGER

A. Buffalo type cast iron box, with 5-1/4-inch shaft, and cover marked "WATER" or "W".

PART 3 - EXECUTION

3.01 GATE VALVE

A. Install to the lines as shown on the Drawings and set plumb on a firm base. All foreign matter shall be removed from the interior before installation.

3.02 SERVICE BOXES

A. Install over the gate valves as shown on the Drawings, with base section centered over valve and resting on well compacted backfill. Set top section to allow equal movement above and below finished grade. Final elevation shall be as shown on the Drawings. Top of base section shall be approximately on line with valve nut and the entire assembly shall be plumb.

CHECK VALVES

PART 1 GENERAL

1.01 SUMMARY

- A. Section Includes: silent and plastic ball check valves.
- B. Related Sections:
 - 1. Section 15100 General Valve Requirements.
- C. Inclusion of a specific manufacturer's name in the Specifications does not mean that the specific manufacturer's standard product will be acceptable. Specified manufacturer's or other manufacturer's standard product shall be modified as required to meet the specifications.

1.02 REFERENCES

- A. American Society for Testing and Materials (ASTM):
 - 1. A 48 Specification for Gray Iron Castings.
 - 2. A 126 Specification for Gray Iron Castings for Valves, Flanges, and Pipe Fittings.
 - 3. A 276 Specification for Stainless Steel Bars and Shapes.
 - 4. B 582 Specification for Nickel-Chromium-Iron-Molybdenum-Copper Alloy Plate, Sheet and Strip.
 - 5. B 584 Specification for Copper Alloy Sand Castings for General Applications.
- B. American Water Works Association (AWWA)

1.03 SUBMITTALS

A. As specified in Section G-5 and Section 15100.

1.04 SYSTEM DESCRIPTION

- A. Design Requirements:
 - 1. Check Valves: When not otherwise specified, as indicated on the Drawings, provide check valves suitable for service as follows:
 - a. In either horizontal or vertical position.
 - b. Under pressures equal and less than 150 pounds psi gauge (Psig).

PART 2 PRODUCTS

2.01 SWING CHECK VALVE (2-INCH AND SMALLER)

- A. Rating: 200 psi
- B. Connections: Threaded, NPT.

- C. Materials: 304 or 316 Stainless Steel
- D. Manufacturers: Matco-Norca 60SSTH, or equal.

2.02 GLOBE STYLE SILENT CHECK VALVE

- A. Rating: 200 psi through 12-inch, 150 psi above 12-inch size.
- B. Headloss: Not more than 1 ft. at 250 GPM.
- C. Type: Center guided plug with spring operated shut-off. Spring must be helical or conical.
- D. Connections: Flanged, 125-pound ANSI. If connecting flanges are not full-face metal flanges, provide intermediate flanges where required to retain valve seat.
- E. Materials:
 - 1. Body: Ductile iron
 - 2. Plug and Seat: Stainless Steel, ASTM A276 T304
 - 3. Spring: Stainless Steel, ASTM A276 T316
 - 4. Exterior paint: universal metal primer, FDA approved for potable water contact.
- F. Manufacturers: APCO Series 600; or equal.

2.03 PLASTIC BALL CHECK VALVES

- A. Manufacturers: One of the following or equal:
 - 1. Chemtrol Division of Nibco.
 - 2. R. G. Sloane Company, Inc.
- B. Valves: Ball type.
 - 1. Polyvinyl chloride.
 - 2. Double or single union-type end connections.
 - 3. Seals: Viton.
- C. Manufacturers: One of the following or equal:
 - 1. Crane Company, Crane Valve Group, Duo Chek Check Valves.
 - 2. Techno Corporation, equivalent product.
- D. Valve Design:
 - 1. Spring-assisted dual valve plates with metal hinge. Springs designed to close valve plates upon flow reversal.
 - 2. Replaceable elastomeric seal secured to valve plates with clamp plates and fasteners.
 - 3. Valve seats integral with valve body. Eliminate leakage when valve plates are fully closed with elastomeric seal in full contact with valve seat.
 - 4. Flanged ANSI Class 125 end connections.
 - 5. Stops on valve shaft which prevent valve plates from opening more than 90 degrees from closed position.
- E. Materials:
 - 1. Body: Cast iron.
 - 2. Valve Plates: Bronze.

- 3. Seal: Buna N EPDM Viton.
- 4. Trim: Type 316 stainless steel.
- 5. Spring: Type 316 stainless steel.

PART 3 EXECUTION

3.01 ADJUSTING

- A. Adjust cushioned swing check valves in the field by means of external adjustment devices to minimize pressure surges.
- B. Adjust weight on swing check valves to affect proper closing action on equipment shutdown.

VACUUM AND AIR RELEASE VALVES

PART 1 - GENERAL

1.01 SUMMARY

- A. The work of this section consists of furnishing and installing vacuum, combination air vacuum, and air release valves as shown on the Drawings.
- B. See Section 15100 for additional requirements.

1.02 REFERENCES

- A. American National Standards Institute (ANSI)
- B. American Society of Mechanical Engineers (ASME)
- C. American Society for Testing and Materials (ASTM)
- D. American Water Works Association (AWWA)
- E. National Science Foundation (NSF 61).

1.03 SUBMITTALS

A. As specified in Section G-5 and Section 15100.

PART 2 - PRODUCTS

2.01 STANDARDS

A. All products shall comply with the standards referenced in Part 1

2.02 COMBINATION AIR VACUUM VALVES

- A. Function: Exhausts large volumes of air during pipeline filling, releases accumulated air under pressure and allows air back in when pipeline pressure drops below atmospheric pressure.
- B. Provide slow closing Surge Check below air valve consisting of a globe style, sliding disc spring return valve.
- C. Materials: Cast or ductile iron body; stainless steel float.
- D. Pressure Rating: 150 psi.
- E. Manufacturers: Apco Series 140C or 150C; equivalent by Valmatic; or equal

2.03 WELL PUMP AIR/VACUUM RELIEF VALVES

A. Air/vacuum relief valves installed on well pump discharge piping shall vent large quantities of air through the discharge orifice when the pump starts, close tight when liquid enters, and permit large quantities of air to re-enter through the orifice when the pump stops to prevent vacuum formation. Throttling devices shall be

- provided to control the rate of air exhaust and establish back pressure on the rising suction column of water
- B. Air/vacuum relief valves shall have a separately attached air release valve for releasing small quantities of entrapped air.
- C. Valves 3-inch and smaller shall be fitted with a water diffuser to control the surge of water into the valve body.
- D. Manufacturers: APCO Valve & Primer Corporation, or equal.

PART 3 - EXECUTION

3.01 VALVE

A. Install to the lines as shown on the Drawings and set plumb on a firm base. All foreign matter shall be removed from the interior before installation.

3.02 SERVICE BOXES

A. Install over the valves as shown on the Drawings, with base section centered over valve and resting on well compacted backfill. Set top section to allow equal movement above and below finished grade. Final elevation shall be as shown on the Drawings.

FLOW CONTROL VALVES

PART 1 - GENERAL

1.01 SUMMARY OF SECTION

A. Principal items specified herein are:

- 1. An Aquifer Storage and Recovery (ASR) valve is utilized to alternately (not simultaneously) control the recharge flow rate into a well; or allow a submersible pump to pump water to the surface. Such ASR valve to include one of the following manufacturers:
 - a. Baski Flow Control Valve
 - b. an approved equal
- 2. The ASR valve is to be placed above the submersible pump and motor, to control recharge flow rate and/or water levels in the ASR well; and allow pumping to the surface. A check valve (see Specification Section 11210) will be placed between the ASR valve and the submersible pump and motor to prevent recharge water from going through the pump in reverse flow.
- 3. The ASR valve shall be designed to eliminate cavitation and aeration in the column pipe and through the ASR valve during recharge at the conditions specified. The ASR valve shall also be capable of keeping the pump column pipe full.
- 4. The ASR valve shall be capable of infinitely controlling the injection flow rate from 0 gpm to the maximum specified injection rate.

B. Related sections:

- 1. The Contract Documents are complementary; what is called for by one is as binding as if called for by all.
- It is the CONTRACTOR'S responsibility for scheduling and coordinating the Work of subcontractors, suppliers, and other individuals or entities performing or furnishing any of CONTRACTOR's Work.
- The following Sections are related to the Work described in this Section. This list of Related Sections is provided for convenience only and is not intended to excuse or otherwise diminish the duty of the CONTRACTOR to see that the completed Work complies accurately with the Contract Documents.
 - a. Section 15100 General Valve Requirements

1.02 REFERENCES AND DEFINITIONS

- A. The following references to a technical society, organization or body have been made:
 - 1. American Society for Testing and Materials (ASTM).
 - 2. American Water Works Association (AWWA)
 - 3. American National Standards Institute (ANSI)
 - 4. Manufacturer's Standardization Society of the Valve and Fittings Industry (MSS)
- B. The following definitions apply:
 - 1. Pumping or Production: water being pumped by a well pump from below ground to surface piping.
 - 2. Recharge: Water being injected into the pump column pipe for recharging an aquifer.
 - 3. Total dynamic recharge driving head: surface injection pressure plus depth to injection water level (as a pressure in feet of water) minus friction/pressure loss through the column piping.
 - 4. Cv value: the constant for a wide open ASR valve, associating the total dynamic recharge driving head with flow rate during recharge, as in the formula

$$Q = Cv \cdot \sqrt{H}$$

where Q is the flow rate in gallons per minute, and H is the friction/pressure loss through the valve in feet of water.

1.03 SUBMITTALS

- A. As specified in Section G-5 and Section 15100.
 - 1. Each item of this specification should be marked as accepted; or marked as not accepted, with appropriate justification for such exception.
 - 2. Show construction details, dimensions and materials of construction for the ASR valve.
 - 3. Submit an installation list with phone numbers and contact names for 5 installations of similar size ASR valves by manufacturer.
 - 4. Any manufacturer's warranty should be included with the submittal.

PART 2 - PRODUCTS

2.01 GENERAL

A. All valves shall be new and of current manufacture.

- B. All nuts, bolts, washers, and fittings for hose or tubing, shall be 316 stainless steel.
- C. ASR valve to have threads matching the column pipe. Contractor must coordinate thread type and form with ASR valve manufacturer.
- D. ASR valve shall have 316 stainless steel rails / bars to protect the submersible pump cable passing alongside the outside of the valve.
- E. The ASR valve must be designed to go inside the specified casing.

2.02 ACCEPTABLE MATERIALS OF CONSTRUCTION FOR WETTED PARTS

- A. Stainless steel 316 in standard or L grades, or Duplex 2205
- B. Reinforced natural rubber
- C. Other materials as approved by engineer
 - 1. Avoid high chlorine concentration in well for more than 4 hours; flush with potable water until the residual chlorine does not exceed 1-1/2 ppm. Do this to avoid chloride corrosion.

2.03 PERFORMANCE REQUIREMENTS

A. Park Well:

- 1. For submersible pump sizing, see Specification Section 11210.
- 2. Well Information:
 - a. Casing Inner Diameter: 10 inches
 - b. Screen Inner Diameter: 10 inches
 - c. Top of Screen: 180 feet below ground surface
 - d. Pump Set Depth (bottom of pump and motor): 115 feet below ground surface
- 3. Static water level: 60 feet below ground surface
- 4. ASR Valve Setting Depth (bottom of valve): 108 feet below ground surface
- 5. Maximum Surface Injection Pressure: 65 psi
- 6. Design Recharge Water Level: 15 feet below ground surface at 100 gpm injection
- 7. Design Pumping Water Level: 90-95 feet below ground surface at 150 gpm
- 8. Maximum Pump Shutoff Pressure at the Surface: 90 psi

B. For Verano Well

1. Submersible Pump:

- a. Geometry and dimensions of power cable, or other tubes or cables going alongside of ASR valve, is to be supplied to ASR valve manufacturer by Contractor
- b. Pump OD is 6 inches
- c. Column pipe OD is 4 inches
- d. Pump Set Depth (bottom of pump and motor): 525 feet below ground surface

2. Well Information:

a. Casing Inner Diameter: 12 inches

b. Screen Inner Diameter: 12 inches

c. Top of Screen: 544 feet below ground surface

- 3. Static water level is 160 feet
- 4. ASR Valve Setting Depth (bottom of valve): 515 feet below ground surface
- 5. Maximum surface injection pressure is 80 psi
- 6. Design recharge water level is 85 feet below ground surface at 100 gpm injection
- 7. Design Pumping water level: 250 feet below ground surface at 250 gpm
- 8. Maximum pump shutoff pressure at the surface is 120 psi

2.04 QUALITY ASSURANCE

- A. The unit shall be inspected and tested at the factory to insure proper operation. Testing shall include pressure testing the ASR valve, data collection for "Cv" calculation, and flow testing at different rates by adjusting the ASR valve.
- B. The manufacturer shall have manufactured deep well, injection ASR valves for a minimum of five years. A minimum of five ASR valves of similar injection capacity successfully operating shall be considered acceptable. All valves shall be from the same manufacturer. Manufacturers shall include.
 - 1. Baski, Inc.
 - Approved equal

2.05 EQUIPMENT

A. The ASR valve package shall include necessary actuating / operating equipment to permit throttling control over the entire range from zero to 100 percent recharge flow. Such equipment will be located at the surface, and be capable of being operated from the well head manually; or automatically. Automatic control logic hardware and software are not supplied by ASR valve manufacturer.

- B. The ASR valve shall be wear and "lock up" resistant to cloudy or sandy water during pumping and injection modes.
- C. ASR manufacturer's controls for automatic operation shall be designed to operate on 115VAC, or other voltage approved by the engineer.
- D. All control lines shall be secured at every coupling joint of the column pipe. Control lines shall be 1/4 inch OD Duplex 2205 stainless steel, tested to 10,000 psi, or approved equal.

PART 3 - EXECUTION

3.01 INSTALLATION

- A. Installation of the ASR valve shall be specified in accordance with manufacturer's recommendations.
- B. The ASR valve manufacturer shall supply a trained and authorized field service representative for up to two (2) consecutive 8 hour days to act in an advisory capacity during installation of its equipment.
- C. The ASR valve manufacturer shall supply a trained and authorized field service representative for one 8 hour day for start-up, testing, and training.

MISCELLANEOUS VALVES

PART 1 GENERAL

1.01 SUMMARY

- A. Section Includes:
 - 1. Cocks.
 - 2. Corporation stops.
 - 3. Curb stops.
- B. Related Sections:
 - 1. Section 15100 General Valve Requirements.
- C. Inclusion of a specific manufacturer's name in the Specifications does not mean that the specific manufacturer's standard product will be acceptable. Specified manufacturer's or other manufacturer's standard product shall be modified as required to meet the Specifications.

PART 2 PRODUCTS

2.01 CORPORATION STOPS

- A. In Accordance with AWWA C 800: Manufacturers: One of the following or equal:
 - 1. Ford.
 - 2. Mueller Company.

2.02 CURB STOPS

- A. Manufacturers: One of the following or equal:
 - 1. Ford.
 - 2. Mueller Company.
- B. Description: Round way solid tee head stops.

2.03 COCKS

- A. Gauge Cock: Manufacturers: One of the following or equal:
 - 1. Lunkenheimer Company, Figure 1178 or Figure 1180.
- B. Air Cock: Manufacturers: One of the following or equal:
 - 1. Whitey Research Tool Company, Model B-42S4.
 - 2. Hoke Inc., 7122G4B.
- C. Plug Cock Manufacturers: One of the following or equal:
 - 1. Lunkenheimer Company, Figure 454.
- D. Design: Plug cocks: Bronze, straightway pattern complete with lever.

Valley of the Moon Water District Aquifer Storage and Recovery Project, Equipping Phase

2.04 BALL VALVES

A. Material: 304 or 316 stainless steel

B. Requirements: Full port, threaded NPT

C. Manufacturer: Apollo 76F-100-A

D. Actuator: Hayward EAU1 Series electric actuator, or equal

PART 3 EXECUTION

3.01 INSTALLATION

A. Install as specified in Section 15100.

PIPING SPECIALTIES

PART 1 GENERAL

1.01 SUMMARY

- A. Section Includes: Piping specialties
- B. Inclusion of a specific manufacturer's name in the specifications does not mean that the specific manufacturer's standard product will be acceptable. Specified manufacturer's or other manufacturer's standard product shall be modified as required to meet the specifications.

1.02 REFERENCES

- A. American National Standards Institute/American Society of Mechanical Engineers (ANSI/ASME).
- B. American National Standards Institute/American Water Works Association (ANSI/AWWA):
 - 1. ANSI/AWWA C153/A21.53 Ductile-iron compact fittings.
 - 2. ANSI/AWWA C111/A21.11 Rubber gasket joints for ductile-iron and gray-iron pressure pipe and fittings.
 - 3. ANSI/AWWA C110/A21.10 Ductile-iron and gray-iron fittings.
 - 4. ANSI/AWWA C213 Fusion-bonded epoxy coatings and linings for steel water pipelines.
 - 5. ANSI/AWWA C151/A21.51 Ductile-iron pipe, centrifugally cast.
- C. American Society for Testing and Materials (ASTM).
 - ASTM A148 Specification for steel castings, high-strength, for structural purposes.
 - 2. ASTM A536 Specification for ductile iron castings.
- D. Society of Automotive Engineers (SAE).

1.03 DELIVERY, STORAGE, AND HANDLING

A. See Section 15100

PART 2 PRODUCTS

2.01 PIPE SADDLES

- A. Manufacturers: One of the following or equal:
 - 1. BTR Inc./Smith-Blair, Inc., Style 317.
 - 2. Romac Industries, Inc., Style 202S.
- B. Materials:

- 1. Pipe Saddles: Ductile iron.
 - a. Straps, Bolts, and Nuts: Type 304 stainless steel with Teflon coating on nuts.
 - b. Gaskets: Rubber.

2.02 TAPPING SLEEVES

- A. Manufacturers: One of the following or equal:
 - 1. BTR Inc./Smith-Blair, Inc., Style 622.
 - 2. Romac Industries, Inc., Style FTS 420.
- B. Materials:
 - 1. Tapping Sleeves: Steel construction.
 - 2. Bolts and Nuts: Type 304 stainless steel.
 - 3. Nuts: Teflon coated.
 - 4. Gaskets: Rubber.
 - a. Size of Tapped Boss: As indicated on the Drawings.

PART 3 EXECUTION

3.01 INSTALLATION

- A. Pipe Saddles:
 - 1. Coat threads on bolts with anti-gall coating prior to installation.
- B. Tapping Sleeves:
 - 1. Coat threads on bolts with anti-gall coating prior to installation.

3.02 FIELD QUALITY CONTROL

A. Testing: Field test gauges with a calibrated test gauge, in the presence of ENGINEER.

APPENDIX A DEPARTMENT OF WATER RESOURCES URBAN AND MULTIBENEFIT DROUGHT RELIEF GRANT REQUIREMENTS

This project is funded in part by a grant administered by the California Department of Water Resources (DWR) under the Urban and Multibenefit Drought Relief Grant Program. The contractor is required to comply with all applicable requirements associated with Urban and Multibenefit Drought Relief grants.

Appendix A.1 includes materials to be reviewed related to Urban and Multibenefit Drought Relief grant requirements and forms that must be completed and submitted with the bid documents. Appendix A.2 includes supplemental special conditions associated with the Urban and Multibenefit Drought Relief grant program. Appendix A.3 includes the standard conditions associated with the Urban and Multibenefit Drought Relief grant program

Enclosed please find:

- APPENDIX A.1 MATERIALS AND FORMS RELATED TO URBAN AND MULTIBENEFIT DROUGHT RELIEF GRANT REQUIREMENTS
- APPENDIX A.2 SPECIAL SUPPLEMENTAL CONDITIONS RELATED TO URBAN AND MULTIBENEFIT DROUGHT RELIEF GRANTS
- APPENDIX A.3 STANDARD CONDITIONS RELATED TO URBAN AND MULTIBENEFIT DROUGHT RELIEF GRANTS

APPENDIX A.1 – MATERIALS AND FORMS RELATED TO URBAN AND MULTIBENEFIT DROUGHT RELIEF GRANT REQUIREMENTS

The bidder is required to review the information related to Urban and Multibenefit Drought Relief grant requirements that is attached as part of this appendix section. The starred attachments indicate forms that must be completed and submitted the as part of the bid document.

Attachment 1 Drug-Free Workplace Certification*
Attachment 2 Nondiscrimination Certification*

STATE OF CALIFORNIA

DRUG-FREE WORKPLACE CERTIFICATION

STD. 21 (REV. 12-93)

CERTIFICATION

I, the official named below, hereby swear that I am duly authorized legally to bind the contractor or grant recipient to the certification described below. I am fully aware that this certification, executed on the date below, is made under penalty of perjury under the laws of the State of California.

CONTRACTOR/BIDDER FIRM NAME	FEDERAL ID NUMBER
DV(4.4.1.10)	
BY (Authorized Signature)	DATE EXECUTED
PRINTED NAME AND TITLE OF PERSON SIGNING	TELEPHONE NUMBER (Include Area Code)
TITLE	
CONTRACTOR/BIDDER FIRM'S MAILING ADDRESS	

The contractor or grant recipient named above hereby certifies compliance with Government Code Section 8355 in matters relating to providing a drug-free workplace. The above named contractor or grant recipient will:

- 1. Publish a statement notifying employees that unlawful manufacture, distribution, dispensation, possession, or use of a controlled substance is prohibited and specifying actions to be taken against employees for violations, as required by Government Code Section 8355(a).
- 2. Establish a Drug-Free Awareness Program as required by Government Code Section 8355(b), to inform employees about all of the following:
 - (a) The dangers of drug abuse in the workplace,
 - (b) The person's or organization's policy of maintaining a drug-free workplace,
 - (c) Any available counseling, rehabilitation and employee assistance programs, and
 - (d) Penalties that may be imposed upon employees for drug abuse violations.
- 3. Provide as required by Government Code Section 8355(c), that every employee who works on the proposed contract or grant:
 - (a) Will receive a copy of the company's drug-free workplace policy statement, and
 - (b) Will agree to abide by the terms of the company's statement as a condition of employment on the contract or grant.
- 4. At the election of the contractor or grantee, from and after the "Date Executed" and until (NOT TO EXCEED 36 MONTHS), the state will regard this certificate as valid for all contracts or grants entered into between the contractor or grantee and this state agency without requiring the contractor or grantee to provide a new and individual certificate for each contract or grant. If the contractor or grantee elects to fill in the blank date, then the terms and conditions of this certificate shall have the same force, meaning, effect and enforceability as if a certificate were separately, specifically, and individually provided for each contract or grant between the contractor or grantee and this state agency.

ATTACHMENT A

California Department of Public Health Safe Drinking Water State Revolving Fund PROJECT INFORMATION Water System Name: **Project Name: Project Number: Principal Contact:** Firm Name/ Contact/ Title Firm Address/ Phone Number/ Email Address NONDISCRIMINATION CLAUSE During the performance of this contract, contractor and its subcontractors shall not unlawfully discriminate against any 1. employee or applicant for employment because of race, religion, color, national origin, ancestry, physical handicap, medical condition, marital status, age (over 40) or sex. Contractors and subcontractors shall insure that the evaluation and treatment of their employees and applicants for employment are free of such discrimination. Contractors and subcontractors shall comply with the provisions of the Fair Employment and Housing Act (Government Code Section 12900 et seg.) and the applicable regulations promulgated thereunder (California Administrative Code, Title 2, Section 7285.0 et seg.). The applicable regulations of the Fair Employment and Housing Commission implementing Government Code. Section 12900, set forth in Chapter 5 of Division 4 of Title 2 or the California Administrative Code are incorporated into this contract by reference and made a part hereof as if set forth in full. Contractor and its subcontractor shall give written notice of their obligations under this clause to labor organizations with which they have a collective bargaining or other agreement. This contractor shall include the nondiscrimination and compliance provisions of this clause in all subcontracts to perform 2. work under the contract. THE UNDERSIGNED CERTIFIES THAT THE CONTRACTOR WILL COMPLY WITH THE ABOVE REQUIREMENTS. CONTRACTOR OR SUBCONTRACTOR NAME: **CERTIFIED BY:** NAME: _____TITLE: ____ SIGNATURE: _____DATE: ____

APPENDIX A.2 – SPECIAL SUPPLEMENTARY CONDITIONS RELATED TO URBAN AND MULTIBENEFIT DROUGHT RELIEF GRANTS

SSC-A.01 ACKNOWLEDGEMENT OF CREDIT

Prior to the start of construction at each site, the contractor shall place project sign(s) at a prominent location at the site(s) or at District headquarters, which shall include the Department of Water Resources color logo and the following disclosure statement: "Funding for this project has been provided in full or in part from the Budget Act of 2021 and through an agreement with the State Department of Water Resources." The sign may need to be elevated and/or located close to District-designated areas for visibility. The contractor shall submit a prototype of the construction sign to the District for review and approval before posting the signs at the construction sites. A construction project sign template will be provided to the awarded contractor.

The sign shall be prepared in a professional manner, be at least four feet tall by eight feet wide, made of 3/4-inch thick exterior grade plywood or other approved material.

At a minimum, the following shall be included on the project signs:

- Project Title
- Purpose of Project
- Estimated Construction Duration
- Project Cost (if provided)
- Public Affairs contact
- District's color logo
- District's Mission Statement

In addition to the above, the signs shall include other agencies logos, disclosure statements, or additional information as requested by the District, so long as the above requirements are equally prominent. The Contractor shall be responsible to maintain the signs in good condition for the duration of the project.

SSC-A.02 AMERICANS WITH DISABILITIES ACT

The contractor shall comply with the Americans with Disabilities Act (ADA) of 1990, (42 U.S.C., 12101 et seq.), which prohibits discrimination on the basis of disability, as well as all applicable regulations and quidelines issued pursuant to the ADA.

SSC-A.03 CHILD SUPPORT COMPLIANCE ACT

The contractor acknowledges in accordance with Public Contract Code §7110, that:

- a) The contractor recognizes the importance of child and family support obligations and shall fully comply with all applicable state and federal laws relating to child and family support enforcement, including, but not limited to, disclosure of information and compliance with earnings assignment orders, as provided in Chapter 8 (commencing with §5200) of Part 5 of Division 9 of the Family Code; and
- b) The contractor, to the best of its knowledge is fully complying with the earnings assignment orders of all employees and is providing the names of all new employees to the New Hire Registry maintained by the California Employment Development Department.

SSC-A.04 CONFLICT OF INTEREST

The contractor is subject to State and Federal conflict of interest laws. Failure to comply with these laws, including business and financial disclosure provisions, will result in the application being rejected and any subsequent contract being declared void. Other legal action may also be taken. Applicable statutes include, but are not limited to, Government Code, §1090 and Public Contract Code, §10410 and §10411, for State conflict of interest requirements.

- a) Current State Employees: No State officer or employee shall engage in any employment, activity, or enterprise from which the officer or employee receives compensation or has a financial interest and which is sponsored or funded by any State agency, unless the employment, activity, or enterprise is required as a condition of regular State employment. No State officer or employee shall contract on his or her own behalf as an independent contractor with any State agency to provide goods or services.
- b) Former State Employees: For the two-year period from the date he or she left State employment, no former State officer or employee may enter into a contract in which he or she engaged in any of the negotiations, transactions, planning, arrangements, or any part of the decision-making process relevant to the contract while employed in any capacity by any State agency. For the twelve-month period from the date he or she left State employment, no former State officer or employee may enter into a contract with any State agency if he or she was employed by that State agency in a policy-making position in the same general subject area as the proposed contract within the twelve-month period prior to his or her leaving State service.
- c) Employees of the Contractor: Employees of the contractor shall comply with all applicable provisions of law pertaining to conflicts of interest, including but not limited to any applicable conflict of interest provisions of the California Political Reform Act, Government Code §87100 et seq.
- d) Employees and Consultants to the Contractor: Individuals working on behalf of the contractor may be required by the Department to file a Statement of Economic Interests (Fair Political Practices Commission Form 700) if it is determined that an individual is a consultant for Political Reform Act purposes.

SSC-A.05 DRUG-FREE WORKPLACE CERTIFICATION

Certification of Compliance: By signing this proposal, the contractor hereby certifies, under penalty of perjury under the laws of State of California, compliance with the requirements of the Drug-Free Workplace Act of 1990 (Government Code §8350 et seq.) and have or will provide a drug-free workplace by taking the following actions:

- a) Publish a statement notifying employees and subcontractors that unlawful manufacture, distribution, dispensation, possession, or use of a controlled substance is prohibited and specifying actions to be taken against employees, contractors, or subcontractors for violations, as required by Government Code §8355(a)(1).
- b) Establish a Drug-Free Awareness Program, as required by Government Code §8355(a)(2) to inform employees or subcontractors about all of the following:
 - i. The dangers of drug abuse in the workplace,
 - ii. Grantee's policy of maintaining a drug-free workplace,
 - iii. Any available counseling, rehabilitation, and employee assistance programs, and
 - iv. Penalties that may be imposed upon employees and subcontractors for drug abuse violations.

- c) Provide, as required by Government Code §8355(a)(3), that every employee and/or subcontractor who works under this project:
 - i. Will receive a copy of the contractor's drug-free policy statement, and
 - ii. Will agree to abide by terms of contractor's condition of employment, contract or subcontract.

SSC-A.06 CALIFORNIA LABOR CODE COMPLIANCE

The contractor will be required to keep informed of and take all measures necessary to ensure compliance with applicable Labor Code requirements, including, but not limited to, §1720 et seq. of the Labor Code regarding public works, limitations on use of volunteer labor (Labor Code §1720.4), labor compliance programs (Labor Code §1771.5) and payment of prevailing wages for work done and funded pursuant to this project, including any payments to the Department of Industrial Relations under Labor Code §1771.3

SSC-A.07 NONDISCRIMINATION

During the performance of this project, the contractor and its subcontractors shall not unlawfully discriminate, harass, or allow harassment against any employee or applicant for employment because of sex (gender), sexual orientation, race, color, ancestry, religion, creed, national origin (including language use restriction), pregnancy, physical disability (including HIV and AIDS), mental disability, medical condition (cancer/genetic characteristics), age (over 40), marital status, and denial of medial and family care leave or pregnancy disability leave. The contractor and its subcontractors shall ensure that the evaluation and treatment of their employees and applicants for employment are free from such discrimination and harassment. The contractor and its subcontractors shall comply with the provisions of the Fair Employment and Housing Act (Government Code §12990 (a-f) et seq.) and the applicable regulations promulgated there under (California Code of Regulations, Title 2, §7285 et seq.). The applicable regulations of the Fair Employment and Housing Commission implementing Government Code §12990 (a-f), set forth in Chapter 5 of Division 4 of Title 2 of the California Code of Regulations, are incorporated into this Agreement by reference and made a part hereof as if set forth in full. The contractor and its subcontractors give written notice of their obligations under this clause to labor organizations with which they have a collective bargaining or other agreement.

The contractor shall include the nondiscrimination and compliance provisions of this clause in all subcontracts to perform work under this project.

SSC-A.08 TRAVEL COSTS

The contractor acknowledges that only ground transportation and lodging costs are eligible for reimbursement. Per diem costs shall not be eligible for reimbursement. Travel includes the costs of transportation, subsistence, and other associated costs incurred by personnel.

SSC-A.09 WORKER'S COMPENSATION

The contractor affirms that it is aware of the provisions of §3700 of the Labor Code, which requires every employer to be insured against liability for workers' compensation or to undertake self-insurance in accordance with the provisions of that code, and the contractor affirms that it will comply with such provisions before commencing the performance of the work under this project and will make its subcontractors aware of this provision.

APPENDIX A.3 – STANDARD CONDITIONS RELATED TO URBAN AND MULTIBENEFIT DROUGHT RELIEF GRANTS

The contractor is required to comply with all applicable conditions of the District's agreement with DWR for the Urban and Multibenefit Drought Relief grant. Note that many of these conditions have been included in the special supplementary conditions listed in Appendix A.2.

EXHIBIT D

STANDARD CONDITIONS

D.1. ACCOUNTING AND DEPOSIT OF FUNDING DISBURSEMENT:

- A. Separate Accounting of Funding Disbursements: Grantee shall account for the money disbursed pursuant to this Grant agreement separately from all other Grantee funds. Grantee shall maintain audit and accounting procedures that are in accordance with generally accepted accounting principles and practices, consistently applied. Grantee shall keep complete and accurate records of all receipts and disbursements on expenditures of such funds. Grantee shall require its contractors or subcontractors to maintain books, records, and other documents pertinent to their work in accordance with generally accepted accounting principles and practices. Records are subject to inspection by State at any and all reasonable times.
- B. Disposition of Money Disbursed: All money disbursed pursuant to this Grant agreement shall be deposited in a non-interest bearing account, administered, and accounted for pursuant to the provisions of applicable law.
- C. Remittance of Unexpended Funds: Grantee shall remit to State any unexpended funds that were disbursed to Grantee under this Grant agreement and were not used to pay Eligible Project Costs within a period of sixty (60) calendar days from the final disbursement from State to Grantee of funds or, within thirty (30) calendar days of the expiration of the Grant agreement, whichever comes first.
- D.2. ACKNOWLEDGEMENT OF CREDIT AND SIGNAGE: Grantee shall include appropriate acknowledgement of credit to the State for its support when promoting the Project or using any data and/or information developed under this Grant agreement. Signage shall be posted in a prominent location at Project site(s) (if applicable) or at the Grantee's headquarters and shall include the Department of Water Resources color logo and the following disclosure statement: "Funding for this project has been provided in full or in part from the Budget Act of 2021 and through an agreement with the State Department of Water Resources." The Grantee shall also include in each of its contracts for work under this Agreement a provision that incorporates the requirements stated within this Paragraph.
- D.3. <u>AMENDMENT:</u> This Grant agreement may be amended at any time by mutual agreement of the Parties, except insofar as any proposed amendments are in any way contrary to applicable law. Requests by the Grantee for amendments must be in writing stating the amendment request and the reason for the request. Requests solely for a time extension must be submitted at least 90 days prior to the work completion date set forth in Paragraph 2. Any other request for an amendment must be submitted at least 180 days prior to the work completion date set forth in Paragraph 2. State shall have no obligation to agree to an amendment.
- D.4. <u>AMERICANS WITH DISABILITIES ACT:</u> By signing this Grant agreement, Grantee assures State that it complies with the Americans with Disabilities Act (ADA) of 1990, (42 U.S.C. § 12101 et seq.), which prohibits discrimination on the basis of disability, as well as all applicable regulations and guidelines issued pursuant to the ADA.
- D.5. <u>AUDITS:</u> State reserves the right to conduct an audit at any time between the execution of this Grant agreement and the completion of the Project, with the costs of such audit borne by State. After completion of the Project, State may require Grantee to conduct a final audit to State's specifications, at Grantee's expense, such audit to be conducted by and a report prepared by an independent Certified Public Accountant. Failure or refusal by Grantee to comply with this provision shall be considered a breach of this Grant agreement, and State may elect to pursue any remedies provided in Paragraph 10 or take any other action it deems necessary to protect its interests. The Grantee agrees it shall return any audit disallowances to the State.

Pursuant to Government Code section 8546.7, the Grantee shall be subject to the examination and audit by the State for a period of three (3) years after final payment under this Grant agreement with respect of all matters connected with this Grant agreement, including but not limited to, the cost of administering this Grant agreement. All records of Grantee or its contractor or subcontractors shall be preserved for this purpose for at least three (3) years after receipt of the final disbursement under this Agreement.

- D.6. <u>BUDGET CONTINGENCY:</u> If the Budget Act of the current year covered under this Grant agreement does not appropriate sufficient funds for this program, this Grant agreement shall be of no force and effect. This provision shall be construed as a condition precedent to the obligation of State to make any payments under this Grant agreement. In this event, State shall have no liability to pay any funds whatsoever to Grantee or to furnish any other considerations under this Grant agreement and Grantee shall not be obligated to perform any provisions of this Grant agreement. Nothing in this Grant agreement shall be construed to provide Grantee with a right of priority for payment over any other Grantee. If funding for any fiscal year after the current year covered by this Grant agreement is reduced or deleted by the Budget Act, by Executive Order, or by order of the Department of Finance, the State shall have the option to either cancel this Grant agreement with no liability occurring to State, or offer a Grant agreement amendment to Grantee to reflect the reduced amount.
- D.7. CEQA: Activities funded under this Grant agreement, regardless of funding source, must be in compliance with the California Environmental Quality Act (CEQA). (Pub. Resources Code, § 21000 et seq.) Any work that is subject to CEQA and funded under this Agreement shall not proceed until documents that satisfy the CEQA process are received by the State's Project Manager and the State has completed its CEQA compliance. Work funded under this Agreement that is subject to a CEQA document shall not proceed until and unless approved by the Department of Water Resources. Such approval is fully discretionary and shall constitute a condition precedent to any work for which it is required. If CEQA compliance by the Grantee is not complete at the time the State signs this Agreement, once State has considered the environmental documents, it may decide to require changes, alterations, or other mitigation to the Project; or to not fund the Project. Should the State decide to not fund the Project, this Agreement shall be terminated in accordance with Paragraph 10, "Default Provisions."
- D.8. <u>CHILD SUPPORT COMPLIANCE ACT:</u> The Grantee acknowledges in accordance with Public Contract Code section 7110, that:
 - A. The Grantee recognizes the importance of child and family support obligations and shall fully comply with all applicable state and federal laws relating to child and family support enforcement, including, but not limited to, disclosure of information and compliance with earnings assignment orders, as provided in Family Code section 5200 et seg.; and
 - B. The Grantee, to the best of its knowledge is fully complying with the earnings assignment orders of all employees and is providing the names of all new employees to the New Hire Registry maintained by the California Employment Development Department.
- D.9. <u>CLAIMS DISPUTE:</u> Any claim that the Grantee may have regarding performance of this Agreement including, but not limited to, claims for additional compensation or extension of time, shall be submitted to the DWR Project Representative, within thirty (30) days of the Grantee's knowledge of the claim. State and Grantee shall then attempt to negotiate a resolution of such claim and process an amendment to this Agreement to implement the terms of any such resolution.
- D.10. COMPETITIVE BIDDING AND PROCUREMENTS: Grantee's contracts with other entities for the acquisition of goods and services and construction of public works with funds provided by State under this Grant agreement must be in writing and shall comply with all applicable laws and regulations regarding the securing of competitive bids and undertaking competitive negotiations. If the Grantee does not have a written policy to award contracts through a competitive bidding or sole source process, the Department of General Services' State Contracting Manual rules must be followed and

- are available at: https://www.dgs.ca.gov/OLS/Resources/Page-Content/Office-of-Legal-Services-Resources-List-Folder/State-Contracting.
- D.11. <u>COMPUTER SOFTWARE:</u> Grantee certifies that it has appropriate systems and controls in place to ensure that state funds will not be used in the performance of this Grant agreement for the acquisition, operation, or maintenance of computer software in violation of copyright laws.
- D.12. <u>CONFLICT OF INTEREST:</u> All participants are subject to State and Federal conflict of interest laws. Failure to comply with these laws, including business and financial disclosure provisions, will result in the application being rejected and any subsequent contract being declared void. Other legal action may also be taken. Applicable statutes include, but are not limited to, Government Code section 1090 and Public Contract Code sections 10410 and 10411, for State conflict of interest requirements.
 - A. Current State Employees: No State officer or employee shall engage in any employment, activity, or enterprise from which the officer or employee receives compensation or has a financial interest and which is sponsored or funded by any State agency, unless the employment, activity, or enterprise is required as a condition of regular State employment. No State officer or employee shall contract on his or her own behalf as an independent contractor with any State agency to provide goods or services.
 - B. Former State Employees: For the two-year period from the date he or she left State employment, no former State officer or employee may enter into a contract in which he or she engaged in any of the negotiations, transactions, planning, arrangements, or any part of the decision-making process relevant to the contract while employed in any capacity by any State agency. For the twelve-month period from the date he or she left State employment, no former State officer or employee may enter into a contract with any State agency if he or she was employed by that State agency in a policy-making position in the same general subject area as the proposed contract within the twelve-month period prior to his or her leaving State service.
 - C. Employees of the Grantee: Employees of the Grantee shall comply with all applicable provisions of law pertaining to conflicts of interest, including but not limited to any applicable conflict of interest provisions of the California Political Reform Act. (Gov. Code, § 87100 et seq.)
 - D. Employees and Consultants to the Grantee: Individuals working on behalf of a Grantee may be required by the Department to file a Statement of Economic Interests (Fair Political Practices Commission Form 700) if it is determined that an individual is a consultant for Political Reform Act purposes.
- D.13. <u>DELIVERY OF INFORMATION, REPORTS, AND DATA:</u> Grantee agrees to expeditiously provide throughout the term of this Grant agreement, such reports, data, information, and certifications as may be reasonably required by State.
- D.14. <u>DISPOSITION OF EQUIPMENT:</u> Grantee shall provide to State, not less than thirty (30) calendar days prior to submission of the final invoice, an itemized inventory of equipment purchased with funds provided by State. The inventory shall include all items with a current estimated fair market value of more than \$5,000.00 per item. Within sixty (60) calendar days of receipt of such inventory State shall provide Grantee with a list of the items on the inventory that State will take title to. All other items shall become the property of Grantee. State shall arrange for delivery from Grantee of items that it takes title to. Cost of transportation, if any, shall be borne by State.
- D.15. <u>DRUG-FREE WORKPLACE CERTIFICATION:</u> Certification of Compliance: By signing this Grant agreement, Grantee, its contractors or subcontractors hereby certify, under penalty of perjury under the laws of State of California, compliance with the requirements of the Drug-Free Workplace Act of 1990 (Gov. Code, § 8350 et seq.) and have or will provide a drug-free workplace by taking the following actions:
 - A. Publish a statement notifying employees, contractors, and subcontractors that unlawful manufacture, distribution, dispensation, possession, or use of a controlled substance is prohibited

- and specifying actions to be taken against employees, contractors, or subcontractors for violations, as required by Government Code section 8355.
- B. Establish a Drug-Free Awareness Program, as required by Government Code section 8355 to inform employees, contractors, or subcontractors about all of the following:
 - i. The dangers of drug abuse in the workplace,
 - ii. Grantee's policy of maintaining a drug-free workplace,
 - iii. Any available counseling, rehabilitation, and employee assistance programs, and
 - iv. Penalties that may be imposed upon employees, contractors, and subcontractors for drug abuse violations.
- C. Provide, as required by Government Code section 8355, that every employee, contractor, and/or subcontractor who works under this Grant agreement:
 - i. Will receive a copy of Grantee's drug-free policy statement, and
 - ii. Will agree to abide by terms of Grantee's condition of employment, contract or subcontract.
- D.16. <u>EASEMENTS:</u> Where the Grantee acquires property in fee title or funds improvements to real property already owned in fee by the Grantee using State funds provided through this Grant agreement, an appropriate easement or other title restriction providing for floodplain preservation and agricultural and/or wildlife habitat conservation for the subject property in perpetuity, approved by the State, shall be conveyed to a regulatory or trustee agency or conservation group acceptable to the State. The easement or other title restriction must be in first position ahead of any recorded mortgage or lien on the property unless this requirement is waived by the State.

 Where the Grantee acquires an easement under this Agreement, the Grantee agrees to monitor and enforce the terms of the easement, unless the easement is subsequently transferred to another land management or conservation organization or entity with State permission, at which time monitoring and enforcement responsibilities will transfer to the new easement owner.

 Failure to provide an easement acceptable to the State may result in termination of this Agreement.
- D.17. <u>FINAL INSPECTIONS AND CERTIFICATION OF REGISTERED PROFESSIONAL:</u> Upon completion of the Project, Grantee shall provide for a final inspection and certification by a California Registered Professional (i.e., Professional Civil Engineer, Engineering Geologist), that the Project has been completed in accordance with submitted final plans and specifications and any modifications thereto and in accordance with this Grant Agreement.
- D.18. <u>GOVERNING LAW:</u> This Grant agreement is governed by and shall be interpreted in accordance with the laws of the State of California.
- D.19. GRANTEE'S RESPONSIBILITIES: Grantee and its representatives shall:
 - A. Faithfully and expeditiously perform or cause to be performed all project work as described in Exhibit A and in accordance with Exhibits B and C.
 - B. Accept and agree to comply with all terms, provisions, conditions, and written commitments of this Grant agreement, including all incorporated documents, and to fulfill all assurances, declarations, representations, and statements made by Grantee in the application, documents, amendments, and communications filed in support of its request for funding.
 - C. Comply with all applicable California, federal, and local laws and regulations.
 - D. Implement the Project in accordance with applicable provisions of the law.
 - E. Fulfill its obligations under the Grant agreement and be responsible for the performance of the Project.
 - F. Obtain any and all permits, licenses, and approvals required for performing any work under this Grant agreement, including those necessary to perform design, construction, or operation and maintenance of the Project. Grantee shall provide copies of permits and approvals to State.
 - G. Be solely responsible for design, construction, and operation and maintenance of projects within the work plan. Review or approval of plans, specifications, bid documents, or other construction documents by State is solely for the purpose of proper administration of funds by State and shall not be deemed to relieve or restrict responsibilities of Grantee under this Agreement.

- H. Be solely responsible for all work and for persons or entities engaged in work performed pursuant to this Agreement, including, but not limited to, contractors, subcontractors, suppliers, and providers of services. The Grantee shall be responsible for any and all disputes arising out of its contracts for work on the Project, including but not limited to payment disputes with contractors and subcontractors. The State will not mediate disputes between the Grantee and any other entity concerning responsibility for performance of work.
- D.20. <u>INDEMNIFICATION:</u> Grantee shall indemnify and hold and save the State, its officers, agents, and employees, free and harmless from any and all liabilities for any claims and damages (including inverse condemnation) that may arise out of the Project and this Agreement, including, but not limited to any claims or damages arising from planning, design, construction, maintenance and/or operation of levee rehabilitation measures for this Project and any breach of this Agreement. Grantee shall require its contractors or subcontractors to name the State, its officers, agents and employees as additional insureds on their liability insurance for activities undertaken pursuant to this Agreement.
- D.21. <u>INDEPENDENT CAPACITY:</u> Grantee, and the agents and employees of Grantees, in the performance of the Grant agreement, shall act in an independent capacity and not as officers, employees, or agents of the State.
- D.22. INSPECTION OF BOOKS, RECORDS, AND REPORTS: During regular office hours, each of the parties hereto and their duly authorized representatives shall have the right to inspect and to make copies of any books, records, or reports of either party pertaining to this Grant agreement or matters related hereto. Each of the parties hereto shall maintain and shall make available at all times for such inspection accurate records of all its costs, disbursements, and receipts with respect to its activities under this Grant agreement. Failure or refusal by Grantee to comply with this provision shall be considered a breach of this Grant agreement, and State may withhold disbursements to Grantee or take any other action it deems necessary to protect its interests.
- D.23. <u>INSPECTIONS OF PROJECT BY STATE:</u> State shall have the right to inspect the work being performed at any and all reasonable times during the term of the Grant agreement. This right shall extend to any subcontracts, and Grantee shall include provisions ensuring such access in all its contracts or subcontracts entered into pursuant to its Grant agreement with State.
- D.24. <u>LABOR CODE COMPLIANCE:</u> The Grantee agrees to be bound by all the provisions of the Labor Code regarding prevailing wages and shall monitor all contracts subject to reimbursement from this Agreement to assure that the prevailing wage provisions of the Labor Code are being met. Current Department of Industrial Relations (DIR) requirements may be found at: http://www.dir.ca.gov/lcp.asp. For more information, please refer to DIR's *Public Works Manual* at: https://www.dir.ca.gov/lcp.asp. The Grantee affirms that it is aware of the provisions of section 3700 of the Labor Code, which requires every employer to be insured against liability for workers' compensation or to undertake self-insurance, and the Grantee affirms that it will comply with such provisions before commencing the performance of the work under this Agreement and will make its contractors and subcontractors aware of this provision.
- D.25. MODIFICATION OF OVERALL WORK PLAN: At the request of the Grantee, the State may at its sole discretion approve non-material changes to the portions of Exhibits A, B, and C which concern the budget and schedule without formally amending this Grant agreement. Non-material changes with respect to the budget are changes that only result in reallocation of the budget and will not result in an increase in the amount of the State Grant agreement. Non-material changes with respect to the Project schedule are changes that will not extend the term of this Grant agreement. Requests for non-material changes to the budget and schedule must be submitted by the Grantee to the State in writing and are not effective unless and until specifically approved by the State's Program Manager in writing.
- D.26. <u>NONDISCRIMINATION:</u> During the performance of this Grant agreement, Grantee and its contractors or subcontractors shall not unlawfully discriminate, harass, or allow harassment against any employee

or applicant for employment because of sex (gender), sexual orientation, gender identity, race, color, ancestry, religion, creed, national origin (including language use restriction), pregnancy, physical disability (including HIV and AIDS), mental disability, medical condition (cancer/genetic characteristics), age (over 40), marital/domestic partner status, and denial of medical and family care leave or pregnancy disability leave. Grantee and its contractors or subcontractors shall ensure that the evaluation and treatment of their employees and applicants for employment are free from such discrimination and harassment. Grantee and its contractors or subcontractors shall comply with the provisions of the California Fair Employment and Housing Act (Gov. Code, § 12990.) and the applicable regulations promulgated there under (Cal. Code Regs., tit. 2, § 11000 et seq.). The applicable regulations of the Fair Employment and Housing are incorporated into this Agreement by reference. Grantee and its contractors or subcontractors shall give written notice of their obligations under this clause to labor organizations with which they have a collective bargaining or other agreement.

Grantee shall include the nondiscrimination and compliance provisions of this clause in all subcontracts to perform work under the Grant agreement.

- D.27. <u>OPINIONS AND DETERMINATIONS:</u> Where the terms of this Grant agreement provide for action to be based upon, judgment, approval, review, or determination of either party hereto, such terms are not intended to be and shall never be construed as permitting such opinion, judgment, approval, review, or determination to be arbitrary, capricious, or unreasonable.
- D.28. <u>PERFORMANCE BOND:</u> Where contractors are used, the Grantee shall not authorize construction to begin until each contractor has furnished a performance bond in favor of the Grantee in the following amounts: faithful performance (100%) of contract value, and labor and materials (100%) of contract value. This requirement shall not apply to any contract for less than \$25,000.00. Any bond issued pursuant to this paragraph must be issued by a California-admitted surety. (Pub. Contract Code, § 7103; Code Civ. Proc., § 995.311.)
- D.29. PRIORITY HIRING CONSIDERATIONS: If this Grant agreement includes services in excess of \$200,000, the Grantee shall give priority consideration in filling vacancies in positions funded by the Grant agreement to qualified recipients of aid under Welfare and Institutions Code section 11200 in accordance with Public Contract Code section 10353.
- D.30. PROHIBITION AGAINST DISPOSAL OF PROJECT WITHOUT STATE PERMISSION: The Grantee shall not sell, abandon, lease, transfer, exchange, mortgage, hypothecate, or encumber in any manner whatsoever all or any portion of any real or other property necessarily connected or used in conjunction with the Project, or with Grantee's service of water, without prior permission of State. Grantee shall not take any action, including but not limited to actions relating to user fees, charges, and assessments that could adversely affect the ability of Grantee meet its obligations under this Grant agreement, without prior written permission of State. State may require that the proceeds from the disposition of any real or personal property be remitted to State.
- D.31. <u>PROJECT ACCESS:</u> The Grantee shall ensure that the State, the Governor of the State, or any authorized representative of the foregoing, will have safe and suitable access to the Project site at all reasonable times during Project construction and thereafter for the term of this Agreement.
- D.32. <u>REMAINING BALANCE:</u> In the event the Grantee does not submit invoices requesting all of the funds encumbered under this Grant Agreement, any remaining funds revert to the State. The State will notify the Grantee stating that the Project file is closed and any remaining balance will be disencumbered and unavailable for further use under this Grant Agreement.
- D.33. <u>REMEDIES NOT EXCLUSIVE:</u> The use by either party of any remedy specified herein for the enforcement of this Grant agreement is not exclusive and shall not deprive the party using such remedy of, or limit the application of, any other remedy provided by law.

- D.34. <u>RETENTION:</u> The State shall withhold ten percent (10%) of the funds, for each project, until the project is complete, and a Final Project Report is approved and accepted by DWR. If a project has multiple Components (within a project), at the State's discretion and upon a written request by the Grantee, any retained amount attributable to a single component may be released when that component is complete and the Final Component Completion Report is approved. Upon approval of the Final Project Report and/or Final Component Completion Report, any retained amounts due to the Grantee will be promptly disbursed to the Grantee, without interest.
- D.35. RIGHTS IN DATA: Grantee agrees that all data, plans, drawings, specifications, reports, computer programs, operating manuals, notes and other written or graphic work produced in the performance of this Grant agreement shall be made available to the State and shall be in the public domain to the extent to which release of such materials is required under the California Public Records Act. (Gov. Code, § 6250 et seq.) Grantee may disclose, disseminate and use in whole or in part, any final form data and information received, collected and developed under this Grant agreement, subject to appropriate acknowledgement of credit to State for financial support. Grantee shall not utilize the materials for any profit-making venture or sell or grant rights to a third party who intends to do so. The State shall have the right to use any data described in this paragraph for any public purpose.
- D.36. <u>SEVERABILITY:</u> Should any portion of this Grant agreement be determined to be void or unenforceable, such shall be severed from the whole and the Grant agreement shall continue as modified.
- D.37. <u>SUSPENSION OF PAYMENTS:</u> This Grant agreement may be subject to suspension of payments or termination, or both if the State determines that:
 - A. Grantee, its contractors, or subcontractors have made a false certification, or
 - B. Grantee, its contractors, or subcontractors violates the certification by failing to carry out the requirements noted in this Grant agreement.
- D.38. <u>SUCCESSORS AND ASSIGNS:</u> This Grant agreement and all of its provisions shall apply to and bind the successors and assigns of the parties. No assignment or transfer of this Grant agreement or any part thereof, rights hereunder, or interest herein by the Grantee shall be valid unless and until it is approved by State and made subject to such reasonable terms and conditions as State may impose.
- D.39. <u>TERMINATION BY GRANTEE:</u> Subject to State approval which may be reasonably withheld, Grantee may terminate this Agreement and be relieved of contractual obligations. In doing so, Grantee must provide a reason(s) for termination. Grantee must submit all progress reports summarizing accomplishments up until termination date.
- D.40. <u>TERMINATION FOR CAUSE:</u> Subject to the right to cure under Paragraph 10, "Default Provisions," the State may terminate this Grant agreement and be relieved of any payments should Grantee fail to perform the requirements of this Grant agreement at the time and in the manner herein, provided including but not limited to reasons of default under Paragraph 10, "Default Provisions."
- D.41. <u>TERMINATION WITHOUT CAUSE:</u> The State may terminate this Agreement without cause on 30 days' advance written notice. The Grantee shall be reimbursed for all reasonable expenses incurred up to the date of termination.
- D.42. <u>THIRD PARTY BENEFICIARIES:</u> The parties to this Agreement do not intend to create rights in, or grant remedies to, any third party as a beneficiary of this Agreement, or any duty, covenant, obligation or understanding established herein.
- D.43. TIMELINESS: Time is of the essence in this Grant Agreement.

- D.44. <u>TRAVEL</u>: Only ground transportation and lodging are eligible for grant reimbursement. Per diem costs will not be eligible for grant reimbursement. Any reimbursement for necessary travel shall be at rates not to exceed those set by the California Department of Human Resources. These rates may be found at: http://www.calhr.ca.gov/employees/Pages/travel-reimbursements.aspx. Reimbursement will be at the State travel amounts that are current as of the date costs are incurred. No travel outside of the project sponsor's service area shall be reimbursed unless prior written authorization is obtained from the State.
- D.45. <u>UNION ORGANIZING:</u> Grantee, by signing this Grant agreement, hereby acknowledges the applicability of Government Code sections 16645 through 16649 to this Grant Agreement. Furthermore, Grantee, by signing this Grant Agreement, hereby certifies that:
 - A. No State funds disbursed by this Grant agreement will be used to assist, promote, or deter union organizing.
 - B. Grantee shall account for State funds disbursed for a specific expenditure by this Grant agreement to show those funds were allocated to that expenditure.
 - C. Grantee shall, where State funds are not designated as described in (b) above, allocate, on a pro rata basis, all disbursements that support the program.
 - D. If Grantee makes expenditures to assist, promote, or deter union organizing, Grantee will maintain records sufficient to show that no State funds were used for those expenditures and that Grantee shall provide those records to the Attorney General upon request.
- D.46. <u>VENUE</u>: The State and the Grantee hereby agree that any action arising out of this Agreement shall be filed and maintained in the Superior Court in and for the County of Sacramento, California, or in the United States District Court in and for the Eastern District of California. The Grantee hereby waives any existing sovereign immunity for the purposes of this Agreement.
- D.47. WAIVER OF RIGHTS: None of the provisions of this Grant Agreement shall be deemed waived unless expressly waived in writing. It is the intention of the parties here to that from time to time either party may waive any of its rights under this Grant agreement unless contrary to law. Any waiver by either party of rights arising in connection with the Grant agreement shall not be deemed to be a waiver with respect to any other rights or matters, and such provisions shall continue in full force and effect.