SPECIFICATIONS

Waterworks District 38
Wastewater Treatment Facility Improvements

CLEAN WATER STATE REVOLVING FUND PROJECT NUMBER: C-06-7109-110

BUDGET / ACCOUNT: 0890 / 8400

Department of Public Works and Planning

CONTRACT NUMBER 18-08-C

County of Fresno

DEPARTMENT OF PUBLIC WORKS AND PLANNING
STEVEN E. WHITE, DIRECTOR

July 30, 2018 Contract No. **18-08-C**

ADDENDUM NO. 2 to the Bidding and Contract Documents for Waterworks District 38 Wastewater Treatment Facility Improvements, revising the Bidding and Contract Documents as follows:

SPECIAL PROVISIONS

DELETE the following paragraph in Section 4:

The Contractor shall perform the First Order of Work as described in Section 10-1.01, "Order of Work" in these special provisions and these special provisions and shall diligently prosecute the same to completion before the expiration of

THIRTY (30) WORKING DAYS

from the date shown in said Notice to Proceed – Submittals.

REPLACE with:

The Contractor shall perform the First Order of Work as described in Section 10-1.01, "Order of Work" in these special provisions and shall diligently prosecute the same to completion before the expiration of

SIXTY (60) WORKING DAYS

from the date shown in said Notice to Proceed – Submittals.

END OF ADDENDUM NO. 2

Please attach this Addendum to the inside cover of the Specifications booklet. If you have given the Bidding and Contract Documents to someone else, please forward this Addendum.



7/30/18
Date Signed

Supervising Engineer:

Dale Siemer, PE 59670
Lic. Expiration: 12/31/19

FRESNO COUNTY
Department of Public Works and Planning
m/a 2220 Tulare Street, Seventh Floor
Fresno, CA 93721-2106

July 26, 2018 Contract No. **18-08-C**

ADDENDUM NO. 1 to the Bidding and Contract Documents for Waterworks District 38 Wastewater Treatment Facility Improvements, revising the Bidding and Contract Documents as follows:

NOTICE TO BIDDERS

DELETE the following text:

The Federal minimum wage rates for this project as predetermined by the United States Secretary of Labor are set forth in **General Decision Number CA180029, Dated 6/1/2018**, which is incorporated in these special provisions by this reference as if fully set forth herein and which can be viewed at http://www.wdol.gov/wdol/scafiles/davisbacon/CA29.dvb. Said Federal wage rates, as well as project plans, special provisions, and bid forms, may also be examined at the County of Fresno office described in the preceding paragraph. Addenda to modify the reference to Federal minimum wage rates to reflect revisions thereto, if necessary, will be issued to planholders of record.

REPLACE with the following text:

The Federal minimum wage rates for this project as predetermined by the United States Secretary of Labor are set forth in **General Decision Number CA180029, Dated 7/20/2018**, which is incorporated in these special provisions by this reference as if fully set forth herein and which can be viewed at http://www.wdol.gov/wdol/scafiles/davisbacon/CA29.dvb. Said Federal wage rates, as well as project plans, special provisions, and bid forms, may also be examined at the County of Fresno office described in the preceding paragraph. Addenda to modify the reference to Federal minimum wage rates to reflect revisions thereto, if necessary, will be issued to planholders of record.

SPECIAL PROVISIONS

REPLACE Section 01011 with updated section, attached.

DELETE the following paragraphs in Section 13300:

1.02.A

1.02.B

1.03.A.8.a, b, c, d and f

1.03.C

1.03.E

1.03.F.1

1.03.F.4

1.05.A.1

DELETE the following paragraphs in Section 16710:

2.02 LEVEL TRANSMITTER/IMPEDANCE TYPE (RF) SENSOR

2.04 MAGNETIC FLOWMETER (FIT/FE)

2.05 PRESSURE GAUGES (PI)

2.07 CHART RECORDER

PROJECT DETAILS

INSERT attached "GATE VALVE AND BOX INSTALLATION"

PLANS

REPLACE Sheet C1

ADD the following note to Sheet E3.0:

The alarm dialer shall be PSTN style Barnett Protalk CV3 or equal with 10 inputs minimum, store 16 phone numbers and have 12 hours of standby power. The following alarms shall be connected from the MCC to dial out:

1. Wet Pit HI-HI level
2. Wet Pit LO-LO level
3. Effluent Pump #1 FAIL (CR-5)
4. Effluent Pump #2 FAIL (CR-5)
5. Clarifier FAIL (CR-5)
6. RAS Pump FAIL (CR-5)
7. Mixer FAIL (CR-5)
8. Aerator FAIL (CR-5)
9. Power FAIL (PFR)
10. Spare

Attached:
Wage Decision Number CA180029, 07/20/2018
Detail W4
Sheet C1-A

END OF ADDENDUM NO. 1

Please attach this Addendum to the inside cover of the Specifications booklet. If you have given the Bidding and Contract Documents to someone else, please forward this Addendum.



7/26/18
Date Signed

Supervising Engineer:

Dale Siemer, PE 59670
Lic. Expiration: 12/31/19

FRESNO COUNTY
Department of Public Works and Planning
m/a 2220 Tulare Street, Seventh Floor
Fresno, CA 93721-2106

Date Signed: _____

Consultant Engineer:

Zheng Teng, PE C68783
Lic. Expiration: 09/30/19

Provost & Pritchard Consulting Group
286 W. Cromwell Ave.
Fresno, CA 93711-6162



DATE SIGNED 7/26/18

The following list is comprised of paraphrased questions submitted by potential bidders or sub-bidders in writing via facsimile, email, or letter. These paraphrased questions and associated responses are not part of the contract documents and shall have no bearing whatsoever on the interpretation of the Standard Specifications, the Standard Plans, the Special Provisions, or the Plans. Nor shall they have any bearing whatsoever on the interpretation of other publications referenced therein.

1. **Question**: Regarding Specification Section 13300.1.02.B –

   This section states that a "Control System Architecture Block Diagram is included in the drawings." I couldn't find this drawing please point me to it or provide it?

   Response: See Addendum 1.

2. **Question:** Regarding Specification Section 13300.1.03.C.8 –
   This section refers to a "Redundant System" for the I/O modules. There is no PLC with redundant capabilities shown or specified. The only I/O is on a Pump Controller which does not include any redundancy, please clarify.

   Response: See Addendum 1.

3. **Question**: Regarding Specification Section 13300-1.02.A –

   This section states that there are "Process Flow Diagrams (PFD) included in the drawings" I did not find the PFD drawings. My assumption is that these drawings would be similar to P&ID (Process & Instrumentation Diagram) drawings. Please point me to them or provide these drawings?

   Response: See Addendum 1.

4. **Question**: Regarding Specification Section 13300-1.03.I.2.e.1 –

   This section states that the "originally licensed software" should be furnished. The type of controller specified is not programmable through software and the SCADA system is shown as (F) Future. Please specify the type of software that is required?

Response: See Addendum 1. As there is no software provided under this Contract, disks will not be necessary to provide.

5. **Question**: Regarding Specification Section 13300 –

   In this section there are several subsections that refer to a "PLC", "PLC Programming" and "I/O Lists" etc. Based on the drawings and the specification there is not a PLC in this project only a "Pump Controller"; please clarify.

   Response: See Addendum 1.

6. **Question**: Regarding Specification Section 13302-3.02.D.5 –

This section refers to a "PLC" and "PLC Programming Software". There is no PLC specified or shown on the Electrical plans; please clarify.

Response: See Addendum 1.

7. **Question**: Regarding Specification Section 16710 –

   This section lists and specifies several different types of instruments. The only instrument shown on the Electrical drawings is one PIT (PIT-1) pressure transmitter, please clarify and provide an instrument list?

   Response: See Addendum No. 1. To clarify, the proposed process instruments required for the project are:

   1. PIT-1 (pressure transducer Section 16710-2.03)
   2. LI-1 (float switch Section 16710-2.06)
   3. LI-2 (float switch Section 16710-2.06)

8. **Question**: Regarding Drawing E3.0 –

   The drawing shows an alarm dialer will it be PSTN (land line) or cellular? If it is to be cellular: 1. What Service Provider does the County use? (AT&T or Verizon etc.) and 2. Is there good signal strength in the area?

   Response: See Addendum 1. The County will be using a landline for the future system.

General Decision Number: CA180029 07/20/2018 CA29

Superseded General Decision Number: CA20170029

State: California

Construction Types: Building, Heavy (Heavy and Dredging) and Highway

Counties: Alameda, Calaveras, Contra Costa, Fresno, Kings, Madera, Mariposa, Merced, Monterey, San Benito, San Francisco, San Joaquin, San Mateo, Santa Clara, Santa Cruz, Stanislaus and Tuolumne Counties in California.

BUILDING CONSTRUCTION PROJECTS; DREDGING PROJECTS (does not include hopper dredge work); HEAVY CONSTRUCTION PROJECTS (does not include water well drilling); HIGHWAY CONSTRUCTION PROJECTS

Note: Under Executive Order (EO) 13658, an hourly minimum wage of $10.35 for calendar year 2018 applies to all contracts subject to the Davis-Bacon Act for which the contract is awarded (and any solicitation was issued) on or after January 1, 2015. If this contract is covered by the EO, the contractor must pay all workers in any classification listed on this wage determination at least $10.35 per hour (or the applicable wage rate listed on this wage determination, if it is higher) for all hours spent performing on the contract in calendar year 2018. The EO minimum wage rate will be adjusted annually. Please note that this EO applies to the above-mentioned types of contracts entered into by the federal government that are subject to the Davis-Bacon Act itself, but it does not apply to contracts subject only to the Davis-Bacon Related Acts, including those set forth at 29 CFR 5.1(a)(2)-(60). Additional information on contractor requirements and worker protections under the EO is available at www.dol.gov/whd/govcontracts.

Modification Number	Publication Date
0	01/05/2018
1	01/12/2018
2	01/19/2018
3	01/26/2018
4	02/09/2018
5	03/02/2018
6	04/06/2018
7	04/13/2018
8	05/04/2018
9	06/01/2018
10	06/15/2018
11	06/29/2018
12	07/06/2018
13	07/13/2018
14	07/20/2018

ASBE0016-004 06/25/2018

AREA 1: CALAVERAS, FRESNO, KINGS, MADERA, MARIPOSA, MERCED, MONTEREY, SAN BENITO, SAN JOAQUIN, SANTA CRUZ, STANISLAUS & TOULMNE COUNTIES

AREA 2: ALAMEDA, CONTRA COSTA, SAN FRANSICO, SAN MATEO & SANTA CLARA COUNTIES

	Rates	Fringes
Asbestos Removal worker/hazardous material handler (Includes preparation, wetting, stripping, removal, scrapping, vacuuming, bagging and disposing of all insulation materials from mechanical systems, whether they contain asbestos or not)		
Area 1	$ 30.81	22.71
Area 2	$ 31.81	22.71

ASBE0016-008 01/01/2018

AREA 1: ALAMEDA, CONTRA COSTA, MONTEREY, SAN BENITO, SAN FRANSICO, SAN MATEO, SANTA CLARA, & SANTA CRUZ

AREA 2: CALAVERAS, COLUSA, FRESNO, KINGS, MADERA, MARIPOSA, MERCED, SAN JOAQUIN, STANISLAU, & TUOLUMNE

	Rates	Fringes
Asbestos Workers/Insulator (Includes the application of all insulating materials, Protective Coverings, Coatings, and Finishes to all types of mechanical systems)		
Area 1	$ 35.36	22.98
Area 2	$ 49.46	22.98

BOIL0549-001 10/01/2016

AREA 1: ALAMEDA, CONTRA COSTA, SAN FRANCISCO, SAN MATEO & SANTA CLARA COUNTIES

AREA 2: REMAINING COUNTIES

	Rates	Fringes
BOILERMAKER		
Area 1	$ 43.28	37.91
Area 2	$ 39.68	35.71

BRCA0003-001 08/01/2017

	Rates	Fringes
MARBLE FINISHER	$ 32.60	15.31

BRCA0003-003 08/01/2017

	Rates	Fringes
MARBLE MASON	$ 44.60	26.83

BRCA0003-005 05/01/2017

	Rates	Fringes
BRICKLAYER		
(1) Fresno, Kings, Madera, Mariposa, Merced	$ 38.45	21.22
(7) San Francisco, San Mateo	$ 42.34	25.83
(8) Alameda, Contra Costa, San Benito, Santa Clara	$ 44.16	21.71
(9) Calaveras, San Joaquin, Stanislaus, Toulumne	$ 39.66	20.76
(16) Monterey, Santa Cruz	$ 39.51	23.49

BRCA0003-008 09/01/2017

	Rates	Fringes
TERRAZZO FINISHER	$ 35.14	16.87
TERRAZZO WORKER/SETTER	$ 44.11	26.36

BRCA0003-011 04/01/2018

AREA 1: Alameda, Contra Costa, Monterey, San Benito, San Francisco, San Mateo, Santa Clara, Santa Cruz

AREA 2: Calaveras, San Joaquin, Stanislaus, Tuolumne

AREA 3: Fresno, Kings, Madera, Mariposa, Merced

	Rates	Fringes
TILE FINISHER		
Area 1	$ 28.56	15.87
Area 2	$ 25.60	14.30
Area 3	$ 25.88	15.17
Tile Layer		
Area 1	$ 47.77	18.29
Area 2	$ 42.67	16.81
Area 3	$ 38.15	17.70

CARP0022-001 07/01/2018

San Francisco County

	Rates	Fringes
Carpenters		
Bridge Builder/Highway Carpenter	$ 48.40	29.32
Hardwood Floorlayer, Shingler, Power Saw Operator, Steel Scaffold & Steel Shoring Erector, Saw Filer	$ 48.55	29.32
Journeyman Carpenter	$ 48.40	29.32
Millwright	$ 48.50	30.91

CARP0034-001 07/01/2018

	Rates	Fringes
Diver		
Assistant Tender, ROV Tender/Technician	$ 47.65	32.52
Diver standby	$ 52.61	32.52
Diver Tender	$ 51.82	32.52
Diver wet	$ 97.17	32.52
Manifold Operator (mixed gas)	$ 56.82	32.52
Manifold Operator (Standby)	$ 51.82	32.52

DEPTH PAY (Surface Diving):
050 to 100 ft $2.00 per foot
101 to 150 ft $3.00 per foot
151 to 220 ft $4.00 per foot

SATURATION DIVING:
The standby rate shall apply until saturation starts. The saturation diving rate applies when divers are under pressure continuously until work task and decompression are complete. The diver rate shall be paid for all saturation hours.

DIVING IN ENCLOSURES:
Where it is necessary for Divers to enter pipes or tunnels, or other enclosures where there is no vertical ascent, the following premium shall be paid: Distance traveled from entrance 26 feet to 300 feet: $1.00 per foot. When it is necessary for a diver to enter any pipe, tunnel or other enclosure less than 48" in height, the premium will be $1.00 per foot.

WORK IN COMBINATION OF CLASSIFICATIONS:
Employees working in any combination of classifications within the diving crew (except dive supervisor) in a shift are paid in the classification with the highest rate for that shift.

CARP0034-003 07/01/2017

	Rates	Fringes
Piledriver	$ 46.65	31.91

CARP0035-007 07/01/2017

AREA 1: Alameda, Contra Costa, San Francisco, San Mateo, Santa Clara counties

AREA 2: Monterey, San Benito, Santa Cruz Counties

AREA 3: Calaveras, Fresno, Kings, Madera, Mariposa, Merced, San Joaquin, Stanislaus, Tuolumne Counties

	Rates	Fringes
Modular Furniture Installer		
Area 1		
Installer I	$ 25.61	20.42
Installer II	$ 22.18	20.42
Lead Installer	$ 29.06	20.92
Master Installer	$ 33.28	20.92
Area 2		
Installer I	$ 22.96	20.42
Installer II	$ 20.01	20.42
Lead Installer	$ 25.93	20.92
Master Installer	$ 29.56	20.92
Area 3		
Installer I	$ 22.01	20.42
Installer II	$ 19.24	20.42
Lead Installer	$ 24.81	20.92
Master Installer	$ 31.83	20.92

CARP0035-008 07/01/2018

AREA 1: Alameda, Contra Costa, San Francisco, San Mateo, Santa Clara counties

AREA 2: Monterey, San Benito, Santa Cruz Counties

AREA 3: San Joaquin

AREA 4: Calaveras, Fresno, Kings, Madera, Mariposa, Merced, Stanislaus, Tuolumne Counties

	Rates	Fringes
Drywall Installers/Lathers:		
Area 1	$ 46.40	29.76
Area 2	$ 40.52	29.76
Area 3	$ 41.02	29.15
Area 4	$ 39.67	29.76
Drywall Stocker/Scrapper		
Area 1	$ 23.20	17.29

Area 2	$ 20.26	17.29
Area 3	$ 20.51	16.88
Area 4	$ 19.84	17.29

CARP0152-001 07/01/2018

Contra Costa County

	Rates	Fringes
Carpenters		
Bridge Builder/Highway Carpenter	$ 48.40	29.32
Hardwood Floorlayer, Shingler, Power Saw Operator, Steel Scaffold & Steel Shoring Erector, Saw Filer	$ 48.55	29.32
Journeyman Carpenter	$ 48.40	29.32
Millwright	$ 48.50	30.91

CARP0152-002 07/01/2018

San Joaquin County

	Rates	Fringes
Carpenters		
Bridge Builder/Highway Carpenter	$ 48.40	29.32
Hardwood Floorlayer, Shingler, Power Saw Operator, Steel Scaffold & Steel Shoring Erector, Saw Filer	$ 42.67	29.32
Journeyman Carpenter	$ 42.52	29.32
Millwright	$ 45.02	30.91

CARP0152-004 07/01/2018

Calaveras, Mariposa, Merced, Stanislaus and Tuolumne Counties

	Rates	Fringes
Carpenters		
Bridge Builder/Highway Carpenter	$ 48.40	29.32
Hardwood Floorlayer, Shingler, Power Saw Operator, Steel Scaffold & Steel Shoring Erector, Saw Filer	$ 41.32	29.32
Journeyman Carpenter	$ 41.17	29.32
Millwright	$ 43.67	30.91

CARP0217-001 07/01/2018

San Mateo County

	Rates	Fringes
Carpenters		
Bridge Builder/Highway Carpenter	$ 48.40	29.32
Hardwood Floorlayer, Shingler, Power Saw Operator, Steel Scaffold & Steel Shoring Erector, Saw Filer	$ 48.55	29.32
Journeyman Carpenter	$ 48.40	29.32
Millwright	$ 48.50	30.91

CARP0405-001 07/01/2018

Santa Clara County

	Rates	Fringes
Carpenters		
Bridge Builder/Highway Carpenter	$ 48.40	29.32
Hardwood Floorlayer, Shingler, Power Saw Operator, Steel Scaffold & Steel Shoring Erector, Saw Filer	$ 48.55	29.32
Journeyman Carpenter	$ 48.40	29.32
Millwright	$ 48.50	30.91

CARP0405-002 07/01/2018

San Benito County

	Rates	Fringes
Carpenters		
Bridge Builder/Highway Carpenter	$ 48.40	29.32
Hardwood Floorlayer, Shingler, Power Saw Operator, Steel Scaffold & Steel Shoring Erector, Saw Filer	$ 42.58	29.32
Journeyman Carpenter	$ 42.52	29.32
Millwright	$ 45.02	30.91

CARP0505-001 07/01/2018

Santa Cruz County

	Rates	Fringes
Carpenters		
Bridge Builder/Highway Carpenter	$ 48.40	29.32
Hardwood Floorlayer,		

Shingler, Power Saw		
Operator, Steel Scaffold &		
Steel Shoring Erector, Saw		
Filer	$ 42.67	29.32
Journeyman Carpenter	$ 42.52	29.32
Millwright	$ 45.02	30.91

CARP0605-001 07/01/2018

Monterey County

	Rates	Fringes
Carpenters		
Bridge Builder/Highway		
Carpenter	$ 48.40	29.32
Hardwood Floorlayer,		
Shingler, Power Saw		
Operator, Steel Scaffold &		
Steel Shoring Erector, Saw		
Filer	$ 42.67	29.32
Journeyman Carpenter	$ 42.52	29.32
Millwright	$ 45.02	30.91

CARP0701-001 07/01/2018

Fresno and Madera Counties

	Rates	Fringes
Carpenters		
Bridge Builder/Highway		
Carpenter	$ 48.40	29.32
Hardwood Floorlayer,		
Shingler, Power Saw		
Operator, Steel Scaffold &		
Steel Shoring Erector, Saw		
Filer	$ 41.32	29.32
Journeyman Carpenter	$ 41.17	29.32
Millwright	$ 43.67	30.91

CARP0713-001 07/01/2018

Alameda County

	Rates	Fringes
Carpenters		
Bridge Builder/Highway		
Carpenter	$ 48.40	29.32
Hardwood Floorlayer,		
Shingler, Power Saw		
Operator, Steel Scaffold &		
Steel Shoring Erector, Saw		
Filer	$ 48.55	29.32
Journeyman Carpenter	$ 48.40	29.32
Millwright	$ 48.50	30.91

CARP1109-001 07/01/2018

Kings County

	Rates	Fringes
Carpenters		
Bridge Builder/Highway Carpenter	$ 48.40	29.32
Hardwood Floorlayer, Shingler, Power Saw Operator, Steel Scaffold & Steel Shoring Erector, Saw Filer	$ 41.32	29.32
Journeyman Carpenter	$ 41.17	29.32
Millwright	$ 43.67	30.91

ELEC0006-004 12/01/2017

SAN FRANCISCO COUNTY

	Rates	Fringes
Sound & Communications		
Installer	$ 38.52	3%+18.05
Technician	$ 44.30	3%+18.05

SCOPE OF WORK: Including any data system whose only function is to transmit or receive information; excluding all other data systems or multiple systems which include control function or power supply; inclusion or exclusion of terminations and testings of conductors determined by their function; excluding fire alarm work when installed in raceways (including wire and cable pulling) and when performed on new or major remodel building projects or jobs for which the conductors for the fire alarm system are installed in conduit; excluding installation of raceway systems, line voltage work, industrial work, life-safety systems (all buildings having floors located more than 75' above the lowest floor level having building access); excluding energy management systems.

FOOTNOTE: Fire alarm work when installed in raceways (including wire and cable pulling), on projects which involve new or major remodel building construction, for which the conductors for the fire alarm system are installed in the conduit, shall be performed by the inside electrician.

ELEC0006-007 06/01/2017

SAN FRANCISCO COUNTY

	Rates	Fringes
ELECTRICIAN	$ 66.00	3%+43.40

ELEC0100-002 03/01/2018

FRESNO, KINGS, AND MADERA COUNTIES

	Rates	Fringes
ELECTRICIAN	$ 37.50	22.18

ELEC0100-005 12/01/2016

FRESNO, KINGS, MADERA

	Rates	Fringes
Communications System		
Installer	$ 30.64	3%+17.86
Technician	$ 34.89	3%+17.86

SCOPE OF WORK

Includes the installation testing, service and maintenance, of the following systems which utilize the transmission and/or transference of voice, sound, vision and digital for commercial, education, security and entertainment purposes for the following: TV monitoring and surveillance, background-foreground music, intercom and telephone interconnect, inventory control systems, microwave transmission, multi-media, multiplex, nurse call system, radio page, school intercom and sound, burglar alarms, and low voltage master clock systems.

A. SOUND AND VOICE TRANSMISSION/TRANSFERENCE SYSTEMS Background foreground music, Intercom and telephone interconnect systems, Telephone systems Nurse call systems, Radio page systems, School intercom and sound systems, Burglar alarm systems, Low voltage, master clock systems, Multi-media/multiplex systems, Sound and musical entertainment systems, RF systems, Antennas and Wave Guide,

B. FIRE ALARM SYSTEMS Installation, wire pulling and testing

C. TELEVISION AND VIDEO SYSTEMS Television monitoring and surveillance systems Video security systems, Video entertainment systems, Video educational systems, Microwave transmission systems, CATV and CCTV

D. SECURITY SYSTEMS Perimeter security systems Vibration sensor systems Card access systems Access control systems, Sonar/infrared monitoring equipment

E. COMMUNICATIONS SYSTEMS THAT TRANSMIT OR RECEIVE INFORMATION AND/OR CONTROL SYSTEMS THAT ARE INTRINSIC TO THE ABOVE LISTED SYSTEMS SCADA (Supervisory Control and Data Acquisition) PCM (Pulse Code Modulation) Inventory Control Systems, Digital Data Systems Broadband and Baseband and Carriers Point of Sale Systems, VSAT Data Systems Data Communication Systems RF and Remote Control Systems, Fiber Optic Data Systems

WORK EXCLUDED Raceway systems are not covered (excluding Ladder-Rack for the purpose of the above listed systems). Chases and/or nipples (not to exceed 10 feet) may be installed on open wiring systems. Energy management systems. SCADA (Supervisory Control and Data Acquisition) when not intrinsic to the above listed systems (in the scope). Fire alarm systems when installed in raceways (including wire and cable pulling) shall be performed at the electrician wage rate, when either of the following two (2) conditions apply:
1. The project involves new or major remodel building trades construction.
2. The conductors for the fire alarm system are installed in conduit.

ELEC0234-001 05/28/2018

MONTEREY, SAN BENITO AND SANTA CRUZ COUNTIES

	Rates	Fringes
ELECTRICIAN		
Zone A	$ 44.65	24.44
Zone B	$ 50.77	25.62

Zone A: All of Santa Cruz, Monterey, and San Benito Counties within 25 air miles of Highway 1 and Dolan Road in Moss Landing, and an area extending 5 miles east and west of Highway 101 South to the San Luis Obispo County Line

Zone B: Any area outside of Zone A

ELEC0234-003 12/01/2017

MONTEREY, SAN BENITO, AND SANTA CRUZ COUNTIES

	Rates	Fringes
Sound & Communications		
Installer	$ 38.02	18.69
Technician	$ 43.72	18.86

SCOPE OF WORK: Including any data system whose only function is to transmit or receive information; excluding all other data systems or multiple systems which include control function or power supply; inclusion or exclusion of terminations and testings of conductors determined by their function; excluding fire alarm work when installed in raceways (including wire and cable pulling) and when performed on new or major remodel building projects or jobs for which the conductors for the fire alarm system are installed in conduit; excluding installation of raceway systems, line voltage work, industrial work, life-safety systems (all buildings having floors located more than 75' above the lowest floor level having building access); excluding energy management systems.

FOOTNOTE: Fire alarm work when installed in raceways (including wire and cable pulling), on projects which involve new or major remodel building construction, for which the conductors for the fire alarm system are installed in the conduit, shall be performed by the inside electrician.

ELEC0302-001 01/01/2018

CONTRA COSTA COUNTY

	Rates	Fringes
CABLE SPLICER	$ 56.17	26.59
ELECTRICIAN	$ 49.76	26.59

ELEC0302-003 12/01/2017

CONTRA COSTA COUNTY

	Rates	Fringes
Sound & Communications		
Installer	$ 37.22	18.66
Technician	$ 42.80	18.83

SCOPE OF WORK: Including any data system whose only function is to transmit or receive information; excluding all other data systems or multiple systems which include control function or power supply; inclusion or exclusion of terminations and testings of conductors determined by their function; excluding fire alarm work when installed in raceways (including wire and cable pulling) and when performed on new or major remodel building projects or jobs for which the conductors for the fire alarm system are installed in conduit; excluding installation of raceway systems, line voltage work, industrial work, life-safety systems (all buildings having floors located more than 75' above the lowest floor level having building access); excluding energy management systems.

FOOTNOTE: Fire alarm work when installed in raceways (including wire and cable pulling), on projects which involve new or major remodel building construction, for which the conductors for the fire alarm system are installed in the conduit, shall be performed by the inside electrician.

ELEC0332-001 05/29/2017

SANTA CLARA COUNTY

	Rates	Fringes
CABLE SPLICER	$ 69.60	34.318

ELECTRICIAN.....................$ 60.52 34.046

FOOTNOTES: Work under compressed air or where gas masks are required, orwork on ladders, scaffolds, stacks, "Bosun's chairs," or other structures and where the workers are not protected by permanent guard rails at a distance of 40 to 60 ft. from the ground or supporting structures: to be paid one and one-half times the straight-time rate of pay. Work on structures of 60 ft. or over (as described above): to be paid twice the straight-time rate of pay.

ELEC0332-003 12/01/2017

SANTA CLARA COUNTY

	Rates	Fringes
Sound & Communications		
Installer	$ 38.02	18.69
Technician	$ 43.72	18.86

SCOPE OF WORK: Including any data system whose only function is to transmit or receive information; excluding all other data systems or multiple systems which include control function or power supply; inclusion or exclusion of terminations and testings of conductors determined by their function; excluding fire alarm work when installed in raceways (including wire and cable pulling) and when performed on new or major remodel building projects or jobs for which the conductors for the fire alarm system are installed in conduit; excluding installation of raceway systems, line voltage work, industrial work, life-safety systems (all buildings having floors located more than 75' above the lowest floor level having building access); excluding energy management systems.

FOOTNOTE: Fire alarm work when installed in raceways (including wire and cable pulling), on projects which involve new or major remodel building construction, for which the conductors for the fire alarm system are installed in the conduit, shall be performed by the inside electrician.

ELEC0595-001 06/01/2018

ALAMEDA COUNTY

	Rates	Fringes
CABLE SPLICER	$ 61.03	3%+35.72
ELECTRICIAN	$ 54.25	3%+35.72

ELEC0595-002 06/01/2018

CALAVERAS AND SAN JOAQUIN COUNTIES

	Rates	Fringes
CABLE SPLICER	$ 42.55	7.45%+24.58
ELECTRICIAN		
(1) Tunnel work	$ 38.85	7.45%+24.58
(2) All other work	$ 37.00	7.45%+24.58

ELEC0595-006 12/01/2017

ALAMEDA COUNTY

	Rates	Fringes
Sound & Communications		
Installer	$ 38.02	3%+17.96
Technician	$ 43.72	3%+17.96

SCOPE OF WORK: Including any data system whose only function is to transmit or receive information; excluding all other data systems or multiple systems which include control function or power supply; inclusion or exclusion of terminations and testings of conductors determined by their function; excluding fire alarm work when installed in raceways (including wire and cable pulling) and when performed on new or major remodel building projects or jobs for which the conductors for the fire alarm system are installed in conduit; excluding installation of raceway systems, line voltage work, industrial work, life-safety systems (all buildings having floors located more than 75' above the lowest floor level having building access); excluding energy management systems.

FOOTNOTE: Fire alarm work when installed in raceways (including wire and cable pulling), on projects which involve new or major remodel building construction, for which the conductors for the fire alarm system are installed in the conduit, shall be performed by the inside electrician.

ELEC0595-008 12/01/2017

CALAVERAS AND SAN JOAQUIN COUNTIES

	Rates	Fringes
Communications System		
Installer	$ 38.02	3%+17.96
Technician	$ 43.72	3%+17.96

SCOPE OF WORK: Including any data system whose only function is to transmit or receive information; excluding all other data systems or multiple systems which include control function or power supply; inclusion or exclusion of terminations and testings of conductors determined by their function; excluding fire alarm work when installed in raceways (including wire and cable pulling) and when performed on new or major remodel building projects or

jobs for which the conductors for the fire alarm system are installed in conduit; excluding installation of raceway systems, line voltage work, industrial work, life-safety systems (all buildings having floors located more than 75' above the lowest floor level having building access); excluding energy management systems.

FOOTNOTE: Fire alarm work when installed in raceways (including wire and cable pulling), on projects which involve new or major remodel building construction, for which the conductors for the fire alarm system are installed in the conduit, shall be performed by the inside electrician.

ELEC0617-001 06/01/2018

SAN MATEO COUNTY

	Rates	Fringes
ELECTRICIAN	$ 61.00	34.62

ELEC0617-003 12/01/2017

SAN MATEO COUNTY

	Rates	Fringes
Sound & Communications		
Installer	$ 38.02	19.27
Technician	$ 43.72	19.27

SCOPE OF WORK: Including any data system whose only function is to transmit or receive information; excluding all other data systems or multiple systems which include control function or power supply; inclusion or exclusion of terminations and testings of conductors determined by their function; excluding fire alarm work when installed in raceways (including wire and cable pulling) and when performed on new or major remodel building projects or jobs for which the conductors for the fire alarm system are installed in conduit; excluding installation of raceway systems, line voltage work, industrial work, life-safety systems (all buildings having floors located more than 75' above the lowest floor level having building access); excluding energy management systems.

FOOTNOTE: Fire alarm work when installed in raceways (including wire and cable pulling), on projects which involve new or major remodel building construction, for which the conductors for the fire alarm system are installed in the conduit, shall be performed by the inside electrician.

ELEC0684-001 06/01/2018

MARIPOSA, MERCED, STANISLAUS AND TUOLUMNE COUNTIES

	Rates	Fringes
ELECTRICIAN	$ 38.00	3%+21.33

CABLE SPLICER = 110% of Journeyman Electrician

ELEC0684-004 12/01/2016

MARIPOSA, MERCED, STANISLAUS AND TUOLUMNE COUNTIES

	Rates	Fringes
Communications System		
Installer	$ 30.64	3%+17.86
Technician	$ 34.89	3%+17.86

SCOPE OF WORK: Including any data system whose only function is to transmit or receive information; excluding all other data systems or multiple systems which include control function or power supply; inclusion or exclusion of terminations and testings of conductors determined by their function; excluding fire alarm work when installed in raceways (including wire and cable pulling) and when performed on new or major remodel building projects or jobs for which the conductors for the fire alarm system are installed in conduit; excluding installation of raceway systems, line voltage work, industrial work, life-safety systems (all buildings having floors located more than 75' above the lowest floor level having building access); excluding energy management systems.

FOOTNOTE: Fire alarm work when installed in raceways (including wire and cable pulling), on projects which involve new or major remodel building construction, for which the conductors for the fire alarm system are installed in the conduit, shall be performed by the inside electrician.

ELEC1245-001 06/01/2018

	Rates	Fringes
LINE CONSTRUCTION		
(1) Lineman; Cable splicer	$ 56.79	17.91
(2) Equipment specialist (operates crawler tractors, commercial motor vehicles, backhoes, trenchers, cranes (50 tons and below), overhead & underground distribution line equipment)	$ 45.36	16.74
(3) Groundman	$ 34.68	16.36
(4) Powderman	$ 49.55	3%+17.65

HOLIDAYS: New Year's Day, M.L. King Day, Memorial Day, Independence Day, Labor Day, Veterans Day, Thanksgiving Day and day after Thanksgiving, Christmas Day

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ELEV0008-001 01/01/2018

	Rates	Fringes
ELEVATOR MECHANIC	$ 65.45	32.645

FOOTNOTE:
PAID VACATION: Employer contributes 8% of regular hourly rate as vacation pay credit for employees with more than 5 years of service, and 6% for 6 months to 5 years of service.
PAID HOLIDAYS: New Years Day, Memorial Day, Independence Day, Labor Day, Veterans Day, Thanksgiving Day, Friday after Thanksgiving, and Christmas Day.

ENGI0003-001 06/26/2017

"AREA 1" WAGE RATES ARE LISTED BELOW

"AREA 2" RECEIVES AN ADDITIONAL $2.00 PER HOUR ABOVE AREA 1 RATES.

SEE AREA DEFINITIONS BELOW

	Rates	Fringes
OPERATOR: Power Equipment (AREA 1:)		
GROUP 1	$ 44.67	30.39
GROUP 2	$ 43.14	30.39
GROUP 3	$ 41.66	30.39
GROUP 4	$ 40.28	30.39
GROUP 5	$ 39.01	30.39
GROUP 6	$ 37.69	30.39
GROUP 7	$ 36.55	30.39
GROUP 8	$ 35.41	30.39
GROUP 8-A	$ 33.20	30.39
OPERATOR: Power Equipment (Cranes and Attachments - AREA 1:)		
GROUP 1		
Cranes	$ 46.30	30.39
Oiler	$ 36.63	30.39
Truck crane oiler	$ 39.20	30.39
GROUP 2		
Cranes	$ 43.79	30.39
Oiler	$ 36.36	30.39
Truck crane oiler	$ 38.98	30.39
GROUP 3		
Cranes	$ 42.05	30.39
Hydraulic	$ 38.32	30.39
Oiler	$ 36.14	30.39

Truck Crane Oiler.....$ 38.71 30.39
GROUP 4
Cranes.....$ 39.01 30.39
OPERATOR: Power Equipment
(Piledriving - AREA 1:)
GROUP 1
Lifting devices.....$ 45.89 30.39
Oiler.....$ 36.63 30.39
Truck crane oiler.....$ 39.20 30.39
GROUP 2
Lifting devices.....$ 44.07 30.39
Oiler.....$ 36.36 30.39
Truck Crane Oiler.....$ 38.98 30.39
GROUP 3
Lifting devices.....$ 42.39 30.39
Oiler.....$ 36.14 30.39
Truck Crane Oiler.....$ 38.71 30.39
GROUP 4
Lifting devices.....$ 40.62 30.39
GROUP 5
Lifting devices.....$ 39.32 30.39
GROUP 6
Lifting devices.....$ 37.98 30.39
OPERATOR: Power Equipment
(Steel Erection - AREA 1:)
GROUP 1
Cranes.....$ 46.30 30.39
Oiler.....$ 36.63 30.39
Truck Crane Oiler.....$ 39.20 30.39
GROUP 2
Cranes.....$ 43.79 30.39
Oiler.....$ 36.36 30.39
Truck Crane Oiler.....$ 38.98 30.39
GROUP 3
Cranes.....$ 42.05 30.39
Hydraulic.....$ 38.32 30.39
Oiler.....$ 36.14 30.39
Truck Crane Oiler.....$ 38.71 30.39
GROUP 4
Cranes.....$ 39.01 30.39
GROUP 5
Cranes.....$ 35.13 30.39
OPERATOR: Power Equipment
(Tunnel and Underground Work
- AREA 1:)
SHAFTS, STOPES, RAISES:
GROUP 1.....$ 40.77 30.39
GROUP 1-A.....$ 43.24 30.39
GROUP 2.....$ 39.51 30.39
GROUP 3.....$ 38.18 30.39
GROUP 4.....$ 37.04 30.39
GROUP 5.....$ 35.90 30.39
UNDERGROUND:
GROUP 1.....$ 40.67 30.39
GROUP 1-A.....$ 43.14 30.39
GROUP 2.....$ 39.41 30.39
GROUP 3.....$ 38.08 30.39
GROUP 4.....$ 36.94 30.39

GROUP 5.....$ 35.80 30.39

FOOTNOTE: Work suspended by ropes or cables, or work on a Yo-Yo Cat: $.60 per hour additional.

POWER EQUIPMENT OPERATOR CLASSIFICATIONS

GROUP 1: Operator of helicopter (when used in erection work); Hydraulic excavator, 7 cu. yds. and over; Power shovels, over 7 cu. yds.

GROUP 2: Highline cableway; Hydraulic excavator, 3-1/2 cu. yds. up to 7 cu. yds.; Licensed construction work boat operator, on site; Power blade operator (finish); Power shovels, over 1 cu. yd. up to and including 7 cu. yds. m.r.c.

GROUP 3: Asphalt milling machine; Cable backhoe; Combination backhoe and loader over 3/4 cu. yds.; Continuous flight tie back machine assistant to engineer or mechanic; Crane mounted continuous flight tie back machine, tonnage to apply; Crane mounted drill attachment, tonnage to apply; Dozer, slope brd; Gradall; Hydraulic excavator, up to 3 1/2 cu. yds.; Loader 4 cu. yds. and over; Long reach excavator; Multiple engine scraper (when used as push pull); Power shovels, up to and including 1 cu. yd.; Pre-stress wire wrapping machine; Side boom cat, 572 or larger; Track loader 4 cu. yds. and over; Wheel excavator (up to and including 750 cu. yds. per hour)

GROUP 4: Asphalt plant engineer/box person; Chicago boom; Combination backhoe and loader up to and including 3/4 cu. yd.; Concrete batch plant (wet or dry); Dozer and/or push cat; Pull- type elevating loader; Gradesetter, grade checker (GPS, mechanical or otherwise); Grooving and grinding machine; Heading shield operator; Heavy-duty drilling equipment, Hughes, LDH, Watson 3000 or similar; Heavy-duty repairperson and/or welder; Lime spreader; Loader under 4 cu. yds.; Lubrication and service engineer (mobile and grease rack); Mechanical finishers or spreader machine (asphalt, Barber-Greene and similar); Miller Formless M-9000 slope paver or similar; Portable crushing and screening plants; Power blade support; Roller operator, asphalt; Rubber-tired scraper, self-loading (paddle-wheels, etc.); Rubber- tired earthmoving equipment (scrapers); Slip form paver (concrete); Small tractor with drag; Soil stabilizer (P & H or equal); Spider plow and spider puller; Tubex pile rig; Unlicensed constuction work boat operator, on site; Timber skidder; Track loader up to 4 yds.; Tractor-drawn scraper; Tractor, compressor drill combination; Welder; Woods-Mixer (and other similar Pugmill equipment)

GROUP 5: Cast-in-place pipe laying machine; Combination slusher and motor operator; Concrete conveyor or concrete pump, truck or equipment mounted; Concrete conveyor, building site; Concrete pump or pumpcrete gun; Drilling

equipment, Watson 2000, Texoma 700 or similar; Drilling and boring machinery, horizontal (not to apply to waterliners, wagon drills or jackhammers); Concrete mixer/all; Person and/or material hoist; Mechanical finishers (concrete) (Clary, Johnson, Bidwell Bridge Deck or similar types); Mechanical burm, curb and/or curb and gutter machine, concrete or asphalt); Mine or shaft hoist; Portable crusher; Power jumbo operator (setting slip-forms, etc., in tunnels); Screed (automatic or manual); Self-propelled compactor with dozer; Tractor with boom D6 or smaller; Trenching machine, maximum digging capacity over 5 ft. depth; Vermeer T-600B rock cutter or similar

GROUP 6: Armor-Coater (or similar); Ballast jack tamper; Boom- type backfilling machine; Assistant plant engineer; Bridge and/or gantry crane; Chemical grouting machine, truck-mounted; Chip spreading machine operator; Concrete saw (self-propelled unit on streets, highways, airports and canals); Deck engineer; Drilling equipment Texoma 600, Hughes 200 Series or similar up to and including 30 ft. m.r.c.; Drill doctor; Helicopter radio operator; Hydro-hammer or similar; Line master; Skidsteer loader, Bobcat larger than 743 series or similar (with attachments); Locomotive; Lull hi-lift or similar; Oiler, truck mounted equipment; Pavement breaker, truck-mounted, with compressor combination; Paving fabric installation and/or laying machine; Pipe bending machine (pipelines only); Pipe wrapping machine (tractor propelled and supported); Screed (except asphaltic concrete paving); Self- propelled pipeline wrapping machine; Tractor; Self-loading chipper; Concrete barrier moving machine

GROUP 7: Ballast regulator; Boom truck or dual-purpose A-frame truck, non-rotating - under 15 tons; Cary lift or similar; Combination slurry mixer and/or cleaner; Drilling equipment, 20 ft. and under m.r.c.; Firetender (hot plant); Grouting machine operator; Highline cableway signalperson; Stationary belt loader (Kolman or similar); Lift slab machine (Vagtborg and similar types); Maginnes internal full slab vibrator; Material hoist (1 drum); Mechanical trench shield; Pavement breaker with or without compressor combination); Pipe cleaning machine (tractor propelled and supported); Post driver; Roller (except asphalt); Chip Seal; Self-propelled automatically applied concrete curing mahcine (on streets, highways, airports and canals); Self-propelled compactor (without dozer); Signalperson; Slip-form pumps (lifting device for concrete forms); Tie spacer; Tower mobile; Trenching machine, maximum digging capacity up to and including 5 ft. depth; Truck- type loader

GROUP 8: Bit sharpener; Boiler tender; Box operator; Brakeperson; Combination mixer and compressor (shotcrete/gunite); Compressor operator; Deckhand; Fire tender; Forklift (under 20 ft.); Generator; Gunite/shotcrete equipment operator; Hydraulic monitor; Ken seal machine (or similar); Mixermobile; Oiler; Pump operator; Refrigeration plant; Reservoir-debris tug (self-propelled floating); Ross Carrier (construction site);

Rotomist operator; Self-propelled tape machine; Shuttlecar; Self-propelled power sweeper operator (includes vacuum sweeper); Slusher operator; Surface heater; Switchperson; Tar pot firetender; Tugger hoist, single drum; Vacuum cooling plant; Welding machine (powered other than by electricity)

GROUP 8-A: Elevator operator; Skidsteer loader-Bobcat 743 series or smaller, and similar (without attachments); Mini excavator under 25 H.P. (backhoe-trencher); Tub grinder wood chipper

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ALL CRANES AND ATTACHMENTS

GROUP 1: Clamshell and dragline over 7 cu. yds.; Crane, over 100 tons; Derrick, over 100 tons; Derrick barge pedestal-mounted, over 100 tons; Self-propelled boom-type lifting device, over 100 tons

GROUP 2: Clamshell and dragline over 1 cu. yd. up to and including 7 cu. yds.; Crane, over 45 tons up to and including 100 tons; Derrick barge, 100 tons and under; Self-propelled boom-type lifting device, over 45 tons; Tower crane

GROUP 3: Clamshell and dragline up to and including 1 cu. yd.; Cranes 45 tons and under; Self-propelled boom-type lifting device 45 tons and under;

GROUP 4: Boom Truck or dual purpose A-frame truck, non-rotating over 15 tons; Truck-mounted rotating telescopic boom type lifting device, Manitex or similar (boom truck) over 15 tons; Truck-mounted rotating telescopic boom type lifting device, Manitex or similar (boom truck) - under 15 tons;

PILEDRIVERS

GROUP 1: Derrick barge pedestal mounted over 100 tons; Clamshell over 7 cu. yds.; Self-propelled boom-type lifting device over 100 tons; Truck crane or crawler, land or barge mounted over 100 tons

GROUP 2: Derrick barge pedestal mounted 45 tons to and including 100 tons; Clamshell up to and including 7 cu. yds.; Self-propelled boom-type lifting device over 45 tons; Truck crane or crawler, land or barge mounted, over 45 tons up to and including 100 tons; Fundex F-12 hydraulic pile rig

GROUP 3: Derrick barge pedestal mounted under 45 tons; Self-propelled boom-type lifting device 45 tons and under; Skid/scow piledriver, any tonnage; Truck crane or crawler, land or barge mounted 45 tons and under

GROUP 4: Assistant operator in lieu of assistant to engineer; Forklift, 10 tons and over; Heavy-duty repairperson/welder

GROUP 5: Deck engineer

GROUP 6: Deckhand; Fire tender

STEEL ERECTORS

GROUP 1: Crane over 100 tons; Derrick over 100 tons; Self-propelled boom-type lifting device over 100 tons

GROUP 2: Crane over 45 tons to 100 tons; Derrick under 100 tons; Self-propelled boom-type lifting device over 45 tons to 100 tons; Tower crane

GROUP 3: Crane, 45 tons and under; Self-propelled boom-type lifting device, 45 tons and under

GROUP 4: Chicago boom; Forklift, 10 tons and over; Heavy-duty repair person/welder

GROUP 5: Boom cat

TUNNEL AND UNDERGROUND WORK

GROUP 1-A: Tunnel bore machine operator, 20' diameter or more

GROUP 1: Heading shield operator; Heavy-duty repairperson; Mucking machine (rubber tired, rail or track type); Raised bore operator (tunnels); Tunnel mole bore operator

GROUP 2: Combination slusher and motor operator; Concrete pump or pumpcrete gun; Power jumbo operator

GROUP 3: Drill doctor; Mine or shaft hoist

GROUP 4: Combination slurry mixer cleaner; Grouting Machine operator; Motorman

GROUP 5: Bit Sharpener; Brakeman; Combination mixer and compressor (gunite); Compressor operator; Oiler; Pump operator; Slusher operator

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AREA DESCRIPTIONS:

POWER EQUIPMENT OPERATORS, CRANES AND ATTACHMENTS,TUNNEL AND UNDERGROUND [These areas do not apply to Piledrivers and Steel Erectors]

AREA 1: ALAMEDA, CALAVERAS, CONTRA COSTA, FRESNO, KINGS,

MADERA, MARIPOSA, MERCED, MONTEREY, SAN BENITO, SAN FRANCISCO, SAN JOAQUIN, SAN MATEO, SANTA CLARA, SANTA CRUZ, STANISLAUS, TUOLUMNE
AREA 2 -NOTED BELOW

THE REMAINING COUNTIES ARE SPLIT BETWEEN AREA 1 AND AREA 2 AS NOTED BELOW:

CALAVERAS COUNTY:
Area 1: Remainder
Area 2: Eastern Part

FRESNO COUNTY:
Area 1: Remainder
Area 2: Eastern Part

MADERA COUNTY:
Area 1: Remainder
Area 2: Eastern Part

MARIPOSA COUNTY:
Area 1: Remainder
Area 2: Eastern Part

MONTEREY COUNTY:
Area 1: Remainder
Area 2: Southwestern part

TUOLUMNE COUNTY:
Area 1: Remainder
Area 2: Eastern Part

ENGI0003-008 07/01/2017

	Rates	Fringes
Dredging: (DREDGING: CLAMSHELL & DIPPER DREDGING; HYDRAULIC SUCTION DREDGING:)		
AREA 1:		
(1) Leverman	$ 44.77	31.25
(2) Dredge Dozer; Heavy duty repairman	$ 39.81	31.25
(3) Booster Pump Operator; Deck Engineer; Deck mate; Dredge Tender; Winch Operator	$ 38.69	31.25
(4) Bargeman; Deckhand; Fireman; Leveehand; Oiler	$ 35.39	31.25
AREA 2:		
(1) Leverman	$ 46.77	31.25
(2) Dredge Dozer; Heavy duty repairman	$ 41.81	31.25
(3) Booster Pump Operator; Deck Engineer; Deck mate;		

Dredge Tender; Winch Operator	$ 40.69	31.25
(4) Bargeman; Deckhand; Fireman; Leveehand; Oiler	$ 37.39	31.25

AREA DESCRIPTIONS

AREA 1: ALAMEDA,BUTTE, CONTRA COSTA, KINGS, MARIN, MERCED, NAPA, SACRAMENTO, SAN BENITO, SAN FRANCISCO, SAN JOAQUIN, SAN MATEO, SANTA CLARA, SANTA CRUZ, SOLANO, STANISLAUS, SUTTER, YOLO, AND YUBA COUNTIES

AREA 2: MODOC COUNTY

THE REMAINGING COUNTIES ARE SPLIT BETWEEN AREA 1 AND AREA 2 AS NOTED BELOW:

ALPINE COUNTY:
Area 1: Northernmost part
Area 2: Remainder

CALAVERAS COUNTY:
Area 1: Remainder
Area 2: Eastern part

COLUSA COUNTY:
Area 1: Eastern part
Area 2: Remainder

ELDORADO COUNTY:
Area 1: North Central part
Area 2: Remainder

FRESNO COUNTY:
Area 1: Remainder
Area 2: Eastern part

GLENN COUNTY:
Area 1: Eastern part
Area 2: Remainder

LASSEN COUNTY:
Area 1: Western part along the Southern portion of border with Shasta County
Area 2: Remainder

MADERA COUNTY:
Area 1: Except Eastern part
Area 2: Eastern part

MARIPOSA COUNTY
Area 1: Except Eastern part
Area 2: Eastern part

MONTERREY COUNTY
Area 1: Except Southwestern part
Area 2: Southwestern part

NEVADA COUNTY:
  Area 1: All but the Northern portion along the border of
  Sierra County
Area 2: Remainder

PLACER COUNTY:
Area 1: Al but the Central portion
Area 2: Remainder

PLUMAS COUNTY:
Area 1: Western portion
Area 2: Remainder

SHASTA COUNTY:
Area 1: All but the Northeastern corner
Area 2: Remainder

SIERRA COUNTY:
Area 1: Western part
Area 2: Remainder

SISKIYOU COUNTY:
Area 1: Central part
Area 2: Remainder

SONOMA COUNTY:
Area 1: All but the Northwestern corner
Area 2: Remainder

TEHAMA COUNTY:
  Area 1: All but the Western border with Mendocino & Trinity
  Counties
Area 2: Remainder

TRINITY COUNTY:
  Area 1: East Central part and the Northeastern border with
  Shasta County
Area 2: Remainder

TUOLUMNE COUNTY:
Area 1: Except Eastern part
Area 2: Eastern part

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SEE AREA DESCRIPTIONS BELOW

	Rates	Fringes
OPERATOR: Power Equipment (LANDSCAPE WORK ONLY)		
GROUP 1		
AREA 1	$ 34.05	28.73
AREA 2	$ 36.05	28.73
GROUP 2		
AREA 1	$ 30.45	28.73
AREA 2	$ 32.45	28.73

GROUP 3
AREA 1.....$ 25.84 28.73
AREA 2.....$ 27.84 28.73

GROUP DESCRIPTIONS:

GROUP 1: Landscape Finish Grade Operator: All finish grade work regardless of equipment used, and all equipment with a rating more than 65 HP.

GROUP 2: Landscape Operator up to 65 HP: All equipment with a manufacturer's rating of 65 HP or less except equipment covered by Group 1 or Group 3. The following equipment shall be included except when used for finish work as long as manufacturer's rating is 65 HP or less: A-Frame and Winch Truck, Backhoe, Forklift, Hydragraphic Seeder Machine, Roller, Rubber-Tired and Track Earthmoving Equipment, Skiploader, Straw Blowers, and Trencher 31 HP up to 65 HP.

GROUP 3: Landscae Utility Operator: Small Rubber-Tired Tractor, Trencher Under 31 HP.

AREA DESCRIPTIONS:

AREA 1: ALAMEDA, BUTTE, CONTRA COSTA, KINGS, MARIN, MERCED, NAPA, SACRAMENTO, SAN BENITO, SAN FRANCISCO, SAN JOAQUIN, SAN MATEO, SANTA CLARA, SANTA CRUZ, SOLANO, STANISLAUS, SUTTER, YOLO, AND YUBA COUNTIES

AREA 2 - MODOC COUNTY

THE REMAINING COUNTIES ARE SPLIT BETWEEN AREA 1 AND AREA 2 AS NOTED BELOW:

ALPINE COUNTY:
Area 1: Northernmost part
Area 2: Remainder

CALAVERAS COUNTY:
Area 1: Except Eastern part
Area 2: Eastern part

COLUSA COUNTY:
Area 1: Eastern part
Area 2: Remainder

DEL NORTE COUNTY:
Area 1: Extreme Southwestern corner
Area 2: Remainder

ELDORADO COUNTY:
Area 1: North Central part
Area 2: Remainder

FRESNO COUNTY
Area 1: Except Eastern part
Area 2: Eastern part

GLENN COUNTY:
Area 1: Eastern part
Area 2: Remainder

HUMBOLDT COUNTY:
Area 1: Except Eastern and Southwestern parts
Area 2: Remainder

LAKE COUNTY:
Area 1: Southern part
Area 2: Remainder

LASSEN COUNTY:
  Area 1: Western part along the Southern portion of border
  with Shasta County
Area 2: Remainder

MADERA COUNTY
Area 1: Remainder
Area 2: Eastern part

MARIPOSA COUNTY
Area 1: Remainder
Area 2: Eastern part

MENDOCINO COUNTY:
Area 1: Central and Southeastern parts
Area 2: Remainder

MONTEREY COUNTY
Area 1: Remainder
Area 2: Southwestern part

NEVADA COUNTY:
  Area 1: All but the Northern portion along the border of
  Sierra County
Area 2: Remainder

PLACER COUNTY:
Area 1: All but the Central portion
Area 2: Remainder

PLUMAS COUNTY:
Area 1: Western portion
Area 2: Remainder

SHASTA COUNTY:
Area 1: All but the Northeastern corner
Area 2: Remainder

SIERRA COUNTY:
Area 1: Western part
Area 2: Remainder

SISKIYOU COUNTY:
Area 1: Central part
Area 2: Remainder

SONOMA COUNTY:
Area 1: All but the Northwestern corner
Area 2: Reaminder

TEHAMA COUNTY:
  Area 1: All but the Western border with mendocino & Trinity
  Counties
Area 2: Remainder

TRINITY COUNTY:
  Area 1: East Central part and the Northeaster border with
  Shasta County
Area 2: Remainder

TULARE COUNTY;
Area 1: Remainder
Area 2: Eastern part

TUOLUMNE COUNTY:
Area 1: Remainder
Area 2: Eastern Part

IRON0377-002 01/01/2017

	Rates	Fringes
Ironworkers:		
Fence Erector	$ 29.58	21.59
Ornamental, Reinforcing and Structural	$ 36.00	30.15

PREMIUM PAY:

$6.00 additional per hour at the following locations:

China Lake Naval Test Station, Chocolate Mountains Naval Reserve-Niland,
Edwards AFB, Fort Irwin Military Station, Fort Irwin Training Center-Goldstone, San Clemente Island, San Nicholas Island, Susanville Federal Prison, 29 Palms - Marine Corps, U.S. Marine Base - Barstow, U.S. Naval Air Facility - Sealey, Vandenberg AFB

$4.00 additional per hour at the following locations:

Army Defense Language Institute - Monterey, Fallon Air Base, Naval Post Graduate School - Monterey, Yermo Marine Corps Logistics Center

$2.00 additional per hour at the following locations:

Port Hueneme, Port Mugu, U.S. Coast Guard Station - Two Rock

LABO0067-002 12/01/2017

AREA "A" - ALAMEDA, CONTRA COSTA, SAN FRANCISCO, SAN MATEO AND SANTA CLARA COUNTIES

AREA "B" - CALAVERAS, FRESNO, KINGS, MADERA, MARIPOSA, MERCED, MONTEREY, SAN BENITO, SAN JOAQUIN, STANISLAUS, AND TUOLUMNE COUNTIES

	Rates	Fringes
Asbestos Removal Laborer		
All Counties	$ 23.00	11.31
LABORER (Lead Removal)		
Area A	$ 30.70	22.17
Area B	$ 29.70	22.17

ASBESTOS REMOVAL-SCOPE OF WORK: Site mobilization; initial site clean-up; site preparation; removal of asbestos-containing materials from walls and ceilings; or from pipes, boilers and mechanical systems only if they are being scrapped; encapsulation, enclosure and disposal of asbestos-containing materials by hand or with equipment or machinery; scaffolding; fabrication of temporary wooden barriers; and assembly of decontamination stations.

LABO0073-002 06/26/2017

CALAVERAS AND SAN JOAQUIN COUNTIES

	Rates	Fringes
LABORER (TRAFFIC CONTROL/LANE CLOSURE)		
Escort Driver, Flag Person	$ 28.54	22.17
Traffic Control Person I	$ 28.84	22.17
Traffic Control Person II	$ 26.34	22.17

TRAFFIC CONTROL PERSON I: Layout of traffic control, crash cushions, construction area and roadside signage.

TRAFFIC CONTROL PERSON II: Installation and removal of temporary/permanent signs, markers, delineators and crash cushions.

LABO0073-003 07/01/2017

SAN JOAQUIN COUNTY

	Rates	Fringes
LABORER		
Mason Tender-Brick	$ 30.45	21.04

LABO0073-005 06/26/2017

	Rates	Fringes

Tunnel and Shaft Laborers:

GROUP 1	$ 36.60	21.72
GROUP 2	$ 36.37	21.72
GROUP 3	$ 36.12	21.72
GROUP 4	$ 35.67	21.72
GROUP 5	$ 35.13	21.72
Shotcrete Specialist	$ 37.12	21.72

TUNNEL AND SHAFT CLASSIFICATIONS

GROUP 1: Diamond driller; Groundmen; Gunite and shotcrete nozzlemen

GROUP 2: Rodmen; Shaft work & raise (below actual or excavated ground level)

GROUP 3: Bit grinder; Blaster, driller, powdermen, heading; Cherry pickermen - where car is lifted; Concrete finisher in tunnel; Concrete screedman; Grout pumpman and potman; Gunite & shotcrete gunman & potman; Headermen; High pressure nozzleman; Miner - tunnel, including top and bottom man on shaft and raise work; Nipper; Nozzleman on slick line; Sandblaster - potman, Robotic Shotcrete Placer, Segment Erector, Tunnel Muck Hauler, Steel Form raiser and setter; Timberman, retimberman (wood or steel or substitute materials therefore); Tugger (for tunnel laborer work); Cable tender; Chuck tender; Powderman - primer house

GROUP 4: Vibrator operator, pavement breaker; Bull gang - muckers, trackmen; Concrete crew - includes rodding and spreading, Dumpmen (any method)

GROUP 5: Grout crew; Reboundman; Swamper/ Brakeman

LABO0073-007 06/27/2017

CALAVERAS AND SAN JOAQUIN COUNTIES

	Rates	Fringes
LABORER (CONSTRUCTION CRAFT LABORERS)		
Construction Specialist Group	$ 29.49	22.38
GROUP 1	$ 28.79	22.38
GROUP 1-a	$ 29.01	22.38
GROUP 1-c	$ 28.84	22.38
GROUP 1-e	$ 29.34	22.38
GROUP 1-f	$ 29.37	22.38
GROUP 2	$ 28.64	22.38
GROUP 3	$ 28.54	22.38
GROUP 4	$ 22.23	22.38

See groups 1-b and 1-d under laborer classifications.

LABORER (GARDENERS, HORTICULTURAL & LANDSCAPE LABORERS)

(1) New Construction	$ 28.54	22.31
(2) Establishment Warranty Period	$ 22.23	22.31
LABORER (GUNITE)		
GROUP 1	$ 29.75	22.31
GROUP 2	$ 29.25	22.31
GROUP 3	$ 28.66	22.31
GROUP 4	$ 28.54	22.31
LABORER (WRECKING)		
GROUP 1	$ 28.79	22.31
GROUP 2	$ 28.64	22.31

FOOTNOTES:
Laborers working off or with or from bos'n chairs, swinging scaffolds, belts shall receive $0.25 per hour above the applicable wage rate. This shall not apply to workers entitled to receive the wage rate set forth in Group 1-a below.

LABORER CLASSIFICATIONS

CONSTRUCTION SPECIALIST GROUP: Asphalt ironer and raker; Chainsaw; Laser beam in connection with laborers' work; Cast-in- place manhole form setter; Pressure pipelayer; Davis trencher - 300 or similar type (and all small trenchers); Blaster; Diamond driller; Multiple unit drill; Hydraulic drill

GROUP 1: Asphalt spreader boxes (all types); Barko, Wacker and similar type tampers; Buggymobile; Caulker, bander, pipewrapper, conduit layer, plastic pipelayer; Certified hazardous waste worker including Leade Abatement; Compactors of all types; Concrete and magnesite mixer, 1/2 yd. and under; Concrete pan work; Concrete sander; Concrete saw; Cribber and/or shoring; Cut granite curb setter; Dri-pak-it machine; Faller, logloader and bucker; Form raiser, slip forms; Green cutter; Headerboard, Hubsetter, aligner, by any method; High pressure blow pipe (1-1/2" or over, 100 lbs. pressure/over); Hydro seeder and similar type; Jackhammer operator; Jacking of pipe over 12 inches; Jackson and similar type compactor; Kettle tender, pot and worker applying asphalt, lay-kold, creosote, lime, caustic and similar type materials (applying means applying, dipping or handling of such materials); Lagging, sheeting, whaling, bracing, trenchjacking, lagging hammer; Magnesite, epoxyresin, fiberglass, mastic worker (wet or dry); No joint pipe and stripping of same, including repair of voids; Pavement breaker and spader, including tool grinder; Perma curb; Pipelayer (including grade checking in connection with pipelaying); Precast-manhole setter; Pressure pipe tester; Post hole digger, air, gas and electric; Power broom sweeper; Power tampers of all types (except as shown in Group 2); Ram set gun and stud gun; Riprap stonepaver and rock-slinger, including placing of sacked concrete and/or sand (wet or dry) and gabions and

similar type; Rotary scarifier or multiple head concrete chipping scarifier; Roto and Ditch Witch; Rototiller; Sandblaster, pot, gun, nozzle operators; Signalling and rigging; Tank cleaner; Tree climber; Turbo blaster; Vibrascreed, bull float in connection with laborers' work; Vibrator; Hazardous waste worker (lead removal); Asbestos and mold removal worker

GROUP 1-a: Joy drill model TWM-2A; Gardner-Denver model DH143 and similar type drills; Track driller; Jack leg driller; Wagon driller; Mechanical drillers, all types regardless of type or method of power; Mechanical pipe layers, all types regardless of type or method of power; Blaster and powder; All work of loading, placing and blasting of all powder and explosives of whatever type regardless of method used for such loading and placing; High scalers (including drilling of same); Tree topper; Bit grinder

GROUP 1-b: Sewer cleaners shall receive $4.00 per day above Group 1 wage rates. "Sewer cleaner" means any worker who handles or comes in contact with raw sewage in small diameter sewers. Those who work inside recently active, large diameter sewers, and all recently active sewer manholes shal receive $5.00 per day above Group 1 wage rates.

GROUP 1-c: Burning and welding in connection with laborers' work; Synthetic thermoplastics and similar type welding

GROUP 1-d: Maintenance and repair track and road beds. All employees performing work covered herein shall receive $ .25 per hour above their regular rate for all work performed on underground structures not specifically covered herein. This paragraph shall not be construed to apply to work below ground level in open cut. It shall apply to cut and cover work of subway construction after the temporary cover has been placed.

GROUP 1-e: Work on and/or in bell hole footings and shafts thereof, and work on and in deep footings. (A deep footing is a hole 15 feet or more in depth.) In the event the depth of the footing is unknown at the commencement of excavation, and the final depth exceeds 15 feet, the deep footing wage rate would apply to all employees for each and every day worked on or in the excavation of the footing from the date of inception.

GROUP 1-f: Wire winding machine in connection with guniting or shot crete

GROUP 2: Asphalt shoveler; Cement dumper and handling dry cement or gypsum; Choke-setter and rigger (clearing work); Concrete bucket dumper and chute; Concrete chipping and grinding; Concrete laborer (wet or dry); Driller tender, chuck tender, nipper; Guinea chaser (stake), grout crew; High pressure nozzle, adductor; Hydraulic monitor (over 100 lbs. pressure); Loading and unloading, carrying and hauling of all rods and materials for use in reinforcing concrete

construction; Pittsburgh chipper and similar type brush shredders; Sloper; Single foot, hand-held, pneumatic tamper; All pneumatic, air, gas and electric tools not listed in Groups 1 through 1-f; Jacking of pipe - under 12 inches

GROUP 3: Construction laborers, including bridge and general laborer; Dump, load spotter; Flag person; Fire watcher; Fence erector; Guardrail erector; Gardener, horticultural and landscape laborer; Jetting; Limber, brush loader and piler; Pavement marker (button setter); Maintenance, repair track and road beds; Streetcar and railroad construction track laborer; Temporary air and water lines, Victaulic or similar; Tool room attendant (jobsite only)

GROUP 4: Final clean-up work of debris, grounds and building including but not limited to: street cleaner; cleaning and washing windows; brick cleaner (jobsite only); material cleaner (jobsite only). The classification "material cleaner" is to be utilized under the following conditions:
A: at demolition site for the salvage of the material.
B: at the conclusion of a job where the material is to be salvaged and stocked to be reused on another job.
C: for the cleaning of salvage material at the jobsite or temporary jobsite yard.

The material cleaner classification should not be used in the performance of "form stripping, cleaning and oiling and moving to the next point of erection".

GUNITE LABORER CLASSIFICATIONS

GROUP 1: Structural Nozzleman

GROUP 2: Nozzleman, Gunman, Potman, Groundman

GROUP 3: Reboundman

GROUP 4: Gunite laborer

WRECKING WORK LABORER CLASSIFICATIONS

GROUP 1: Skilled wrecker (removing and salvaging of sash, windows and materials)

GROUP 2: Semi-skilled wrecker (salvaging of other building materials)

LABO0073-009 07/01/2017

CALAVERAS AND SAN JOAQUIN COUNTIES

	Rates	Fringes

LABORER (Plaster Tender).....$ 31.02 22.52

Work on a swing stage scaffold: $1.00 per hour additional.

LABO0261-003 06/26/2017

SAN FRANCISCO AND SAN MATEO COUNTIES

	Rates	Fringes
LABORER (TRAFFIC CONTROL/LANE CLOSURE)		
Escort Driver, Flag Person	$ 29.54	22.17
Traffic Control Person I	$ 29.84	22.17
Traffic Control Person II	$ 27.34	22.17

TRAFFIC CONTROL PERSON I: Layout of traffic control, crash cushions, construction area and roadside signage.

TRAFFIC CONTROL PERSON II: Installation and removal of temporary/permanent signs, markers, delineators and crash cushions.

LABO0261-005 06/26/2017

SAN FRANCISCO AND SAN MATEO COUNTIES

	Rates	Fringes
Tunnel and Shaft Laborers:		
GROUP 1	$ 36.60	21.72
GROUP 2	$ 36.37	21.72
GROUP 3	$ 36.12	21.72
GROUP 4	$ 35.67	21.72
GROUP 5	$ 35.13	21.72
Shotcrete Specialist	$ 37.12	21.72

TUNNEL AND SHAFT CLASSIFICATIONS

GROUP 1: Diamond driller; Groundmen; Gunite and shotcrete nozzlemen

GROUP 2: Rodmen; Shaft work & raise (below actual or excavated ground level)

GROUP 3: Bit grinder; Blaster, driller, powdermen, heading; Cherry pickermen - where car is lifted; Concrete finisher in tunnel; Concrete screedman; Grout pumpman and potman; Gunite & shotcrete gunman & potman; Headermen; High pressure nozzleman; Miner - tunnel, including top and bottom man on shaft and raise work; Nipper; Nozzleman on slick line; Sandblaster - potman, Robotic Shotcrete Placer, Segment Erector, Tunnel Muck Hauler, Steel Form raiser and setter; Timberman, retimberman (wood or steel or substitute materials therefore); Tugger (for tunnel laborer work); Cable tender; Chuck tender; Powderman - primer house

GROUP 4: Vibrator operator, pavement breaker; Bull gang - muckers, trackmen; Concrete crew - includes rodding and spreading, Dumpmen (any method)

GROUP 5: Grout crew; Reboundman; Swamper/ Brakeman

LABO0261-009 06/26/2017

SAN FRANCISCO, AND SAN MATEO COUNTIES

	Rates	Fringes
LABORER (CONSTRUCTION CRAFT LABORERS - AREA A:)		
Construction Specialist Group	$ 30.49	22.38
GROUP 1	$ 29.79	22.38
GROUP 1-a	$ 30.01	22.38
GROUP 1-c	$ 29.84	22.38
GROUP 1-e	$ 30.34	22.38
GROUP 1-f	$ 30.37	22.38
GROUP 2	$ 29.64	22.38
GROUP 3	$ 29.54	22.38
GROUP 4	$ 23.23	22.38
See groups 1-b and 1-d under laborer classifications.		
LABORER (GARDENERS, HORTICULTURAL & LANDSCAPE LABORERS - AREA A:)		
(1) New Construction	$ 29.54	22.31
(2) Establishment Warranty Period	$ 23.23	22.31
LABORER (WRECKING - AREA A:)		
GROUP 1	$ 29.79	22.31
GROUP 2	$ 29.64	22.31
Laborers: (GUNITE - AREA A:)		
GROUP 1	$ 30.75	22.31
GROUP 2	$ 30.25	22.31
GROUP 3	$ 29.66	22.31
GROUP 4	$ 29.54	22.31

FOOTNOTES:

Laborers working off or with or from bos'n chairs, swinging scaffolds, belts shall receive $0.25 per hour above the applicable wage rate. This shall not apply to workers entitled to receive the wage rate set forth in Group 1-a below.

LABORER CLASSIFICATIONS

CONSTRUCTION SPECIALIST GROUP: Asphalt ironer and raker; Chainsaw; Laser beam in connection with laborers' work; Cast-in- place manhole form setter; Pressure pipelayer; Davis trencher - 300 or similar type (and all small

trenchers); Blaster; Diamond driller; Multiple unit drill; Hydraulic drill

GROUP 1: Asphalt spreader boxes (all types); Barko, Wacker and similar type tampers; Buggymobile; Caulker, bander, pipewrapper, conduit layer, plastic pipelayer; Certified hazardous waste worker including Leade Abatement; Compactors of all types; Concrete and magnesite mixer, 1/2 yd. and under; Concrete pan work; Concrete sander; Concrete saw; Cribber and/or shoring; Cut granite curb setter; Dri-pak-it machine; Faller, logloader and bucker; Form raiser, slip forms; Green cutter; Headerboard, Hubsetter, aligner, by any method; High pressure blow pipe (1-1/2" or over, 100 lbs. pressure/over); Hydro seeder and similar type; Jackhammer operator; Jacking of pipe over 12 inches; Jackson and similar type compactor; Kettle tender, pot and worker applying asphalt, lay-kold, creosote, lime, caustic and similar type materials (applying means applying, dipping or handling of such materials); Lagging, sheeting, whaling, bracing, trenchjacking, lagging hammer; Magnesite, epoxyresin, fiberglass, mastic worker (wet or dry); No joint pipe and stripping of same, including repair of voids; Pavement breaker and spader, including tool grinder; Perma curb; Pipelayer (including grade checking in connection with pipelaying); Precast-manhole setter; Pressure pipe tester; Post hole digger, air, gas and electric; Power broom sweeper; Power tampers of all types (except as shown in Group 2); Ram set gun and stud gun; Riprap stonepaver and rock-slinger, including placing of sacked concrete and/or sand (wet or dry) and gabions and similar type; Rotary scarifier or multiple head concrete chipping scarifier; Roto and Ditch Witch; Rototiller; Sandblaster, pot, gun, nozzle operators; Signalling and rigging; Tank cleaner; Tree climber; Turbo blaster; Vibrascreed, bull float in connection with laborers' work; Vibrator; Hazardous waste worker (lead removal); Asbestos and mold removal worker

GROUP 1-a: Joy drill model TWM-2A; Gardner-Denver model DH143 and similar type drills; Track driller; Jack leg driller; Wagon driller; Mechanical drillers, all types regardless of type or method of power; Mechanical pipe layers, all types regardless of type or method of power; Blaster and powder; All work of loading, placing and blasting of all powder and explosives of whatever type regardless of method used for such loading and placing; High scalers (including drilling of same); Tree topper; Bit grinder

GROUP 1-b: Sewer cleaners shall receive $4.00 per day above Group 1 wage rates. "Sewer cleaner" means any worker who handles or comes in contact with raw sewage in small diameter sewers. Those who work inside recently active, large diameter sewers, and all recently active sewer manholes shal receive $5.00 per day above Group 1 wage rates.

GROUP 1-c: Burning and welding in connection with laborers' work; Synthetic thermoplastics and similar type welding

GROUP 1-d: Maintenance and repair track and road beds. All employees performing work covered herein shall receive $ .25 per hour above their regular rate for all work performed on underground structures not specifically covered herein. This paragraph shall not be construed to apply to work below ground level in open cut. It shall apply to cut and cover work of subway construction after the temporary cover has been placed.

GROUP 1-e: Work on and/or in bell hole footings and shafts thereof, and work on and in deep footings. (A deep footing is a hole 15 feet or more in depth.) In the event the depth of the footing is unknown at the commencement of excavation, and the final depth exceeds 15 feet, the deep footing wage rate would apply to all employees for each and every day worked on or in the excavation of the footing from the date of inception.

GROUP 1-f: Wire winding machine in connection with guniting or shot crete

GROUP 2: Asphalt shoveler; Cement dumper and handling dry cement or gypsum; Choke-setter and rigger (clearing work); Concrete bucket dumper and chute; Concrete chipping and grinding; Concrete laborer (wet or dry); Driller tender, chuck tender, nipper; Guinea chaser (stake), grout crew; High pressure nozzle, adductor; Hydraulic monitor (over 100 lbs. pressure); Loading and unloading, carrying and hauling of all rods and materials for use in reinforcing concrete construction; Pittsburgh chipper and similar type brush shredders; Sloper; Single foot, hand-held, pneumatic tamper; All pneumatic, air, gas and electric tools not listed in Groups 1 through 1-f; Jacking of pipe - under 12 inches

GROUP 3: Construction laborers, including bridge and general laborer; Dump, load spotter; Flag person; Fire watcher; Fence erector; Guardrail erector; Gardener, horticultural and landscape laborer; Jetting; Limber, brush loader and piler; Pavement marker (button setter); Maintenance, repair track and road beds; Streetcar and railroad construction track laborer; Temporary air and water lines, Victaulic or similar; Tool room attendant (jobsite only)

GROUP 4: Final clean-up work of debris, grounds and building including but not limited to: street cleaner; cleaning and washing windows; brick cleaner (jobsite only); material cleaner (jobsite only). The classification "material cleaner" is to be utilized under the following conditions:
A: at demolition site for the salvage of the material.
B: at the conclusion of a job where the material is to be salvaged and stocked to be reused on another job.
C: for the cleaning of salvage material at the jobsite or temporary jobsite yard.

The material cleaner classification should not be used in the performance of "form stripping, cleaning and oiling

and moving to the next point of erection".

GUNITE LABORER CLASSIFICATIONS

GROUP 1: Structural Nozzleman

GROUP 2: Nozzleman, Gunman, Potman, Groundman

GROUP 3: Reboundman

GROUP 4: Gunite laborer

WRECKING WORK LABORER CLASSIFICATIONS

GROUP 1: Skilled wrecker (removing and salvaging of sash, windows and materials)

GROUP 2: Semi-skilled wrecker (salvaging of other building materials)

LABO0261-011 05/01/2017

SAN FRANCISCO AND SAN MATEO COUNTIES:

	Rates	Fringes
MASON TENDER, BRICK	$ 33.18	21.49

FOOTNOTES: Underground work such as sewers, manholes, catch basins, sewer pipes, telephone conduits, tunnels and cut trenches: $5.00 per day additional. Work in live sewage: $2.50 per day additional.

LABO0261-014 07/01/2017

SAN FRANCISCO AND SAN MATEO COUNTIES:

	Rates	Fringes
PLASTER TENDER	$ 34.70	23.11

Work on a swing stage scaffold: $1.00 per hour additional.

LABO0270-003 06/26/2017

AREA A: SANTA CLARA

AREA B: MONTEREY, SAN BENITO AND SANTA CRUZ COUNTIES

	Rates	Fringes

LABORER (TRAFFIC CONTROL/LANE CLOSURE)

Escort Driver, Flag Person		
Area A	$ 29.54	22.17
Area B	$ 28.54	22.17
Traffic Control Person I		
Area A	$ 29.84	22.17
Area B	$ 28.84	22.17
Traffic Control Person II		
Area A	$ 27.34	22.17
Area B	$ 26.34	22.17

TRAFFIC CONTROL PERSON I: Layout of traffic control, crash cushions, construction area and roadside signage.

TRAFFIC CONTROL PERSON II: Installation and removal of temporary/permanent signs, markers, delineators and crash cushions.

LABO0270-004 06/26/2017

MONTEREY, SAN BENITO, SANTA CLARA, AND SANTA CRUZ COUNTIES

	Rates	Fringes
Tunnel and Shaft Laborers:		
GROUP 1	$ 36.60	24.83
GROUP 2	$ 36.37	24.83
GROUP 3	$ 36.12	24.83
GROUP 4	$ 35.67	24.83
GROUP 5	$ 35.13	24.83
Shotcrete Specialist	$ 37.12	24.83

TUNNEL AND SHAFT CLASSIFICATIONS

GROUP 1: Diamond driller; Groundmen; Gunite and shotcrete nozzlemen

GROUP 2: Rodmen; Shaft work & raise (below actual or excavated ground level)

GROUP 3: Bit grinder; Blaster, driller, powdermen, heading; Cherry pickermen - where car is lifted; Concrete finisher in tunnel; Concrete screedman; Grout pumpman and potman; Gunite & shotcrete gunman & potman; Headermen; High pressure nozzleman; Miner - tunnel, including top and bottom man on shaft and raise work; Nipper; Nozzleman on slick line; Sandblaster - potman, Robotic Shotcrete Placer, Segment Erector, Tunnel Muck Hauler, Steel Form raiser and setter; Timberman, retimberman (wood or steel or substitute materials therefore); Tugger (for tunnel laborer work); Cable tender; Chuck tender; Powderman - primer house

GROUP 4: Vibrator operator, pavement breaker; Bull gang - muckers, trackmen; Concrete crew - includes rodding and spreading, Dumpmen (any method)

GROUP 5: Grout crew; Reboundman; Swamper/ Brakeman

LABO0270-005 07/01/2017

MONTEREY AND SAN BENITO COUNTIES

	Rates	Fringes
LABORER		
Mason Tender-Brick	$ 30.45	21.04

LABO0270-007 06/27/2017

MONTEREY, SAN BENITO, AND SANTA CRUZ, COUNTIES

	Rates	Fringes
LABORER (CONSTRUCTION CRAFT LABORERS - AREA B)		
Construction Specialist Group	$ 29.49	22.38
GROUP 1	$ 28.79	22.38
GROUP 1-a	$ 29.01	22.38
GROUP 1-c	$ 28.84	22.38
GROUP 1-e	$ 29.34	22.38
GROUP 1-f	$ 29.37	22.38
GROUP 2	$ 28.64	22.38
GROUP 3	$ 28.54	22.38
GROUP 4	$ 22.23	22.38
See groups 1-b and 1-d under laborer classifications.		
LABORER (GARDENERS, HORTICULTURAL & LANDSCAPE LABORERS - AREA B)		
(1) New Construction	$ 28.54	22.31
(2) Establishment Warranty Period	$ 22.23	22.31
LABORER (GUNITE - AREA B)		
GROUP 1	$ 29.75	22.31
GROUP 2	$ 29.25	22.31
GROUP 3	$ 28.66	22.31
GROUP 4	$ 28.54	22.31
LABORER (WRECKING - AREA B)		
GROUP 1	$ 28.79	22.31
GROUP 2	$ 28.64	22.31

FOOTNOTES:

Laborers working off or with or from bos'n chairs, swinging scaffolds, belts shall receive $0.25 per hour above the applicable wage rate. This shall not apply to workers entitled to receive the wage rate set forth in Group 1-a below.

LABORER CLASSIFICATIONS

CONSTRUCTION SPECIALIST GROUP: Asphalt ironer and raker; Chainsaw; Laser beam in connection with laborers' work; Cast-in- place manhole form setter; Pressure pipelayer; Davis trencher - 300 or similar type (and all small trenchers); Blaster; Diamond driller; Multiple unit drill; Hydraulic drill

GROUP 1: Asphalt spreader boxes (all types); Barko, Wacker and similar type tampers; Buggymobile; Caulker, bander, pipewrapper, conduit layer, plastic pipelayer; Certified hazardous waste worker including Leade Abatement; Compactors of all types; Concrete and magnesite mixer, 1/2 yd. and under; Concrete pan work; Concrete sander; Concrete saw; Cribber and/or shoring; Cut granite curb setter; Dri-pak-it machine; Faller, logloader and bucker; Form raiser, slip forms; Green cutter; Headerboard, Hubsetter, aligner, by any method; High pressure blow pipe (1-1/2" or over, 100 lbs. pressure/over); Hydro seeder and similar type; Jackhammer operator; Jacking of pipe over 12 inches; Jackson and similar type compactor; Kettle tender, pot and worker applying asphalt, lay-kold, creosote, lime, caustic and similar type materials (applying means applying, dipping or handling of such materials); Lagging, sheeting, whaling, bracing, trenchjacking, lagging hammer; Magnesite, epoxyresin, fiberglass, mastic worker (wet or dry); No joint pipe and stripping of same, including repair of voids; Pavement breaker and spader, including tool grinder; Perma curb; Pipelayer (including grade checking in connection with pipelaying); Precast-manhole setter; Pressure pipe tester; Post hole digger, air, gas and electric; Power broom sweeper; Power tampers of all types (except as shown in Group 2); Ram set gun and stud gun; Riprap stonepaver and rock-slinger, including placing of sacked concrete and/or sand (wet or dry) and gabions and similar type; Rotary scarifier or multiple head concrete chipping scarifier; Roto and Ditch Witch; Rototiller; Sandblaster, pot, gun, nozzle operators; Signalling and rigging; Tank cleaner; Tree climber; Turbo blaster; Vibrascreed, bull float in connection with laborers' work; Vibrator; Hazardous waste worker (lead removal); Asbestos and mold removal worker

GROUP 1-a: Joy drill model TWM-2A; Gardner-Denver model DH143 and similar type drills; Track driller; Jack leg driller; Wagon driller; Mechanical drillers, all types regardless of type or method of power; Mechanical pipe layers, all types regardless of type or method of power; Blaster and powder; All work of loading, placing and blasting of all powder and explosives of whatever type regardless of method used for such loading and placing; High scalers (including drilling of same); Tree topper; Bit grinder

GROUP 1-b: Sewer cleaners shall receive $4.00 per day above Group 1 wage rates. "Sewer cleaner" means any worker who handles or comes in contact with raw sewage in small diameter sewers. Those who work inside recently active, large diameter sewers, and all recently active sewer manholes shal receive $5.00 per day above Group 1 wage

rates.

GROUP 1-c: Burning and welding in connection with laborers' work; Synthetic thermoplastics and similar type welding

GROUP 1-d: Maintenance and repair track and road beds. All employees performing work covered herein shall receive $ .25 per hour above their regular rate for all work performed on underground structures not specifically covered herein. This paragraph shall not be construed to apply to work below ground level in open cut. It shall apply to cut and cover work of subway construction after the temporary cover has been placed.

GROUP 1-e: Work on and/or in bell hole footings and shafts thereof, and work on and in deep footings. (A deep footing is a hole 15 feet or more in depth.) In the event the depth of the footing is unknown at the commencement of excavation, and the final depth exceeds 15 feet, the deep footing wage rate would apply to all employees for each and every day worked on or in the excavation of the footing from the date of inception.

GROUP 1-f: Wire winding machine in connection with guniting or shot crete

GROUP 2: Asphalt shoveler; Cement dumper and handling dry cement or gypsum; Choke-setter and rigger (clearing work); Concrete bucket dumper and chute; Concrete chipping and grinding; Concrete laborer (wet or dry); Driller tender, chuck tender, nipper; Guinea chaser (stake), grout crew; High pressure nozzle, adductor; Hydraulic monitor (over 100 lbs. pressure); Loading and unloading, carrying and hauling of all rods and materials for use in reinforcing concrete construction; Pittsburgh chipper and similar type brush shredders; Sloper; Single foot, hand-held, pneumatic tamper; All pneumatic, air, gas and electric tools not listed in Groups 1 through 1-f; Jacking of pipe - under 12 inches

GROUP 3: Construction laborers, including bridge and general laborer; Dump, load spotter; Flag person; Fire watcher; Fence erector; Guardrail erector; Gardener, horticultural and landscape laborer; Jetting; Limber, brush loader and piler; Pavement marker (button setter); Maintenance, repair track and road beds; Streetcar and railroad construction track laborer; Temporary air and water lines, Victaulic or similar; Tool room attendant (jobsite only)

GROUP 4: Final clean-up work of debris, grounds and building including but not limited to: street cleaner; cleaning and washing windows; brick cleaner (jobsite only); material cleaner (jobsite only). The classification "material cleaner" is to be utilized under the following conditions:
A: at demolition site for the salvage of the material.
B: at the conclusion of a job where the material is to be salvaged and stocked to be reused on another job.
C: for the cleaning of salvage material at the jobsite or

temporary jobsite yard.

The material cleaner classification should not be used in the performance of "form stripping, cleaning and oiling and moving to the next point of erection".

GUNITE LABORER CLASSIFICATIONS

GROUP 1: Structural Nozzleman

GROUP 2: Nozzleman, Gunman, Potman, Groundman

GROUP 3: Reboundman

GROUP 4: Gunite laborer

WRECKING WORK LABORER CLASSIFICATIONS

GROUP 1: Skilled wrecker (removing and salvaging of sash, windows and materials)

GROUP 2: Semi-skilled wrecker (salvaging of other building materials)

LABO0270-010 06/26/2017

SANTA CLARA COUNTY

	Rates	Fringes
LABORER (CONSTRUCTION CRAFT LABORERS - AREA A:)		
Construction Specialist Group	$ 30.49	22.38
GROUP 1	$ 29.79	22.38
GROUP 1-a	$ 30.01	22.38
GROUP 1-c	$ 29.84	22.38
GROUP 1-e	$ 30.34	22.38
GROUP 1-f	$ 30.37	22.38
GROUP 2	$ 29.64	22.38
GROUP 3	$ 29.54	22.38
GROUP 4	$ 23.23	22.38
See groups 1-b and 1-d under laborer classifications.		
LABORER (GARDENERS, HORTICULTURAL & LANDSCAPE LABORERS - AREA A:)		
(1) New Construction	$ 29.54	22.31
(2) Establishment Warranty Period	$ 23.23	22.31
LABORER (GUNITE - AREA A:)		
GROUP 1	$ 30.75	22.31
GROUP 2	$ 30.25	22.31
GROUP 3	$ 29.66	22.31

GROUP 4.....$ 29.54 22.31
LABORER (WRECKING - AREA A:)
GROUP 1.....$ 29.79 22.31
GROUP 2.....$ 29.64 22.31

FOOTNOTES:
Laborers working off or with or from bos'n chairs, swinging scaffolds, belts shall receive $0.25 per hour above the applicable wage rate. This shall not apply to workers entitled to receive the wage rate set forth in Group 1-a below.

LABORER CLASSIFICATIONS

CONSTRUCTION SPECIALIST GROUP: Asphalt ironer and raker; Chainsaw; Laser beam in connection with laborers' work; Cast-in- place manhole form setter; Pressure pipelayer; Davis trencher - 300 or similar type (and all small trenchers); Blaster; Diamond driller; Multiple unit drill; Hydraulic drill

GROUP 1: Asphalt spreader boxes (all types); Barko, Wacker and similar type tampers; Buggymobile; Caulker, bander, pipewrapper, conduit layer, plastic pipelayer; Certified hazardous waste worker including Leade Abatement; Compactors of all types; Concrete and magnesite mixer, 1/2 yd. and under; Concrete pan work; Concrete sander; Concrete saw; Cribber and/or shoring; Cut granite curb setter; Dri-pak-it machine; Faller, logloader and bucker; Form raiser, slip forms; Green cutter; Headerboard, Hubsetter, aligner, by any method; High pressure blow pipe (1-1/2" or over, 100 lbs. pressure/over); Hydro seeder and similar type; Jackhammer operator; Jacking of pipe over 12 inches; Jackson and similar type compactor; Kettle tender, pot and worker applying asphalt, lay-kold, creosote, lime, caustic and similar type materials (applying means applying, dipping or handling of such materials); Lagging, sheeting, whaling, bracing, trenchjacking, lagging hammer; Magnesite, epoxyresin, fiberglass, mastic worker (wet or dry); No joint pipe and stripping of same, including repair of voids; Pavement breaker and spader, including tool grinder; Perma curb; Pipelayer (including grade checking in connection with pipelaying); Precast-manhole setter; Pressure pipe tester; Post hole digger, air, gas and electric; Power broom sweeper; Power tampers of all types (except as shown in Group 2); Ram set gun and stud gun; Riprap stonepaver and rock-slinger, including placing of sacked concrete and/or sand (wet or dry) and gabions and similar type; Rotary scarifier or multiple head concrete chipping scarifier; Roto and Ditch Witch; Rototiller; Sandblaster, pot, gun, nozzle operators; Signalling and rigging; Tank cleaner; Tree climber; Turbo blaster; Vibrascreed, bull float in connection with laborers' work; Vibrator; Hazardous waste worker (lead removal); Asbestos and mold removal worker

GROUP 1-a: Joy drill model TWM-2A; Gardner-Denver model DH143 and similar type drills; Track driller; Jack leg driller; Wagon driller; Mechanical drillers, all types regardless of type or method of power; Mechanical pipe layers, all types regardless of type or method of power; Blaster and powder; All work of loading, placing and blasting of all powder and explosives of whatever type regardless of method used for such loading and placing; High scalers (including drilling of same); Tree topper; Bit grinder

GROUP 1-b: Sewer cleaners shall receive $4.00 per day above Group 1 wage rates. "Sewer cleaner" means any worker who handles or comes in contact with raw sewage in small diameter sewers. Those who work inside recently active, large diameter sewers, and all recently active sewer manholes shal receive $5.00 per day above Group 1 wage rates.

GROUP 1-c: Burning and welding in connection with laborers' work; Synthetic thermoplastics and similar type welding

GROUP 1-d: Maintenance and repair track and road beds. All employees performing work covered herein shall receive $ .25 per hour above their regular rate for all work performed on underground structures not specifically covered herein. This paragraph shall not be construed to apply to work below ground level in open cut. It shall apply to cut and cover work of subway construction after the temporary cover has been placed.

GROUP 1-e: Work on and/or in bell hole footings and shafts thereof, and work on and in deep footings. (A deep footing is a hole 15 feet or more in depth.) In the event the depth of the footing is unknown at the commencement of excavation, and the final depth exceeds 15 feet, the deep footing wage rate would apply to all employees for each and every day worked on or in the excavation of the footing from the date of inception.

GROUP 1-f: Wire winding machine in connection with guniting or shot crete

GROUP 2: Asphalt shoveler; Cement dumper and handling dry cement or gypsum; Choke-setter and rigger (clearing work); Concrete bucket dumper and chute; Concrete chipping and grinding; Concrete laborer (wet or dry); Driller tender, chuck tender, nipper; Guinea chaser (stake), grout crew; High pressure nozzle, adductor; Hydraulic monitor (over 100 lbs. pressure); Loading and unloading, carrying and hauling of all rods and materials for use in reinforcing concrete construction; Pittsburgh chipper and similar type brush shredders; Sloper; Single foot, hand-held, pneumatic tamper; All pneumatic, air, gas and electric tools not listed in Groups 1 through 1-f; Jacking of pipe - under 12 inches

GROUP 3: Construction laborers, including bridge and general

laborer; Dump, load spotter; Flag person; Fire watcher; Fence erector; Guardrail erector; Gardener, horticultural and landscape laborer; Jetting; Limber, brush loader and piler; Pavement marker (button setter); Maintenance, repair track and road beds; Streetcar and railroad construction track laborer; Temporary air and water lines, Victaulic or similar; Tool room attendant (jobsite only)

GROUP 4: Final clean-up work of debris, grounds and building including but not limited to: street cleaner; cleaning and washing windows; brick cleaner (jobsite only); material cleaner (jobsite only). The classification "material cleaner" is to be utilized under the following conditions:
A: at demolition site for the salvage of the material.
B: at the conclusion of a job where the material is to be salvaged and stocked to be reused on another job.
C: for the cleaning of salvage material at the jobsite or temporary jobsite yard.

The material cleaner classification should not be used in the performance of "form stripping, cleaning and oiling and moving to the next point of erection".

GUNITE LABORER CLASSIFICATIONS

GROUP 1: Structural Nozzleman

GROUP 2: Nozzleman, Gunman, Potman, Groundman

GROUP 3: Reboundman

GROUP 4: Gunite laborer

WRECKING WORK LABORER CLASSIFICATIONS

GROUP 1: Skilled wrecker (removing and salvaging of sash, windows and materials)

GROUP 2: Semi-skilled wrecker (salvaging of other building materials)

LABO0270-011 07/01/2017

MONTEREY, SAN BENITO, SANTA CRUZ, SANTA CLARA COUNTIES

	Rates	Fringes
LABORER (Plaster Tender).....	$ 34.70	21.22

Work on a swing stage scaffold: $1.00 per hour additional.

LABO0294-001 07/01/2017

FRESNO, KINGS AND MADERA COUNTIES

	Rates	Fringes
LABORER (Brick)		
Mason Tender-Brick	$ 30.45	21.04

LABO0294-002 06/26/2017

FRESNO, KINGS, AND MADERA COUNTIES

	Rates	Fringes
LABORER (TRAFFIC CONTROL/LANE CLOSURE)		
Escort Driver, Flag Person	$ 28.54	22.17
Traffic Control Person I	$ 28.84	22.17
Traffic Control Person II	$ 26.34	22.17

TRAFFIC CONTROL PERSON I: Layout of traffic control, crash cushions, construction area and roadside signage.

TRAFFIC CONTROL PERSON II: Installation and removal of temporary/permanent signs, markers, delineators and crash cushions.

LABO0294-005 06/26/2017

FRESNO, KINGS, AND MADERA COUNTIES

	Rates	Fringes
Tunnel and Shaft Laborers:		
GROUP 1	$ 36.60	24.83
GROUP 2	$ 36.37	24.83
GROUP 3	$ 36.12	24.83
GROUP 4	$ 35.67	24.83
GROUP 5	$ 35.13	24.83
Shotcrete Specialist	$ 37.12	24.83

TUNNEL AND SHAFT CLASSIFICATIONS

GROUP 1: Diamond driller; Groundmen; Gunite and shotcrete nozzlemen

GROUP 2: Rodmen; Shaft work & raise (below actual or excavated ground level)

GROUP 3: Bit grinder; Blaster, driller, powdermen, heading; Cherry pickermen - where car is lifted; Concrete finisher in tunnel; Concrete screedman; Grout pumpman and potman; Gunite & shotcrete gunman & potman; Headermen; High pressure nozzleman; Miner - tunnel, including top and bottom man on shaft and raise work; Nipper; Nozzleman on slick line; Sandblaster - potman, Robotic Shotcrete Placer, Segment Erector, Tunnel Muck Hauler, Steel Form raiser and setter; Timberman, retimberman (wood or steel or substitute

materials therefore); Tugger (for tunnel laborer work); Cable tender; Chuck tender; Powderman - primer house

GROUP 4: Vibrator operator, pavement breaker; Bull gang - muckers, trackmen; Concrete crew - includes rodding and spreading, Dumpmen (any method)

GROUP 5: Grout crew; Reboundman; Swamper/ Brakeman

LABO0294-008 06/30/2017

FRESNO, KINGS, AND MADERA COUNTIES

	Rates	Fringes
LABORER (CONSTRUCTION CRAFT LABORERS - AREA B:)		
Construction Specialist Group	$ 29.49	22.38
GROUP 1	$ 28.79	22.38
GROUP 1-a	$ 29.01	22.38
GROUP 1-c	$ 28.84	22.38
GROUP 1-e	$ 29.34	22.38
GROUP 1-f	$ 29.37	22.38
GROUP 2	$ 28.64	22.38
GROUP 3	$ 28.54	22.38
GROUP 4	$ 22.23	22.38
See groups 1-b and 1-d under laborer classifications.		
LABORER (GARDENERS, HORTICULTURAL & LANDSCAPE LABORERS - AREA B:)		
(1) New Construction	$ 28.54	22.31
(2) Establishment Warranty Period	$ 22.23	22.31
LABORER (GUNITE - AREA B:)		
GROUP 1	$ 29.75	22.31
GROUP 2	$ 29.25	22.31
GROUP 3	$ 28.66	22.31
GROUP 4	$ 28.54	22.31
LABORER (WRECKING - AREA B:)		
GROUP 1	$ 28.79	22.31
GROUP 2	$ 28.64	22.31

FOOTNOTES:

Laborers working off or with or from bos'n chairs, swinging scaffolds, belts shall receive $0.25 per hour above the applicable wage rate. This shall not apply to workers entitled to receive the wage rate set forth in Group 1-a below.

LABORER CLASSIFICATIONS

CONSTRUCTION SPECIALIST GROUP: Asphalt ironer and raker; Chainsaw; Laser beam in connection with laborers' work;

Cast-in- place manhole form setter; Pressure pipelayer; Davis trencher - 300 or similar type (and all small trenchers); Blaster; Diamond driller; Multiple unit drill; Hydraulic drill

GROUP 1: Asphalt spreader boxes (all types); Barko, Wacker and similar type tampers; Buggymobile; Caulker, bander, pipewrapper, conduit layer, plastic pipelayer; Certified hazardous waste worker including Leade Abatement; Compactors of all types; Concrete and magnesite mixer, 1/2 yd. and under; Concrete pan work; Concrete sander; Concrete saw; Cribber and/or shoring; Cut granite curb setter; Dri-pak-it machine; Faller, logloader and bucker; Form raiser, slip forms; Green cutter; Headerboard, Hubsetter, aligner, by any method; High pressure blow pipe (1-1/2" or over, 100 lbs. pressure/over); Hydro seeder and similar type; Jackhammer operator; Jacking of pipe over 12 inches; Jackson and similar type compactor; Kettle tender, pot and worker applying asphalt, lay-kold, creosote, lime, caustic and similar type materials (applying means applying, dipping or handling of such materials); Lagging, sheeting, whaling, bracing, trenchjacking, lagging hammer; Magnesite, epoxyresin, fiberglass, mastic worker (wet or dry); No joint pipe and stripping of same, including repair of voids; Pavement breaker and spader, including tool grinder; Perma curb; Pipelayer (including grade checking in connection with pipelaying); Precast-manhole setter; Pressure pipe tester; Post hole digger, air, gas and electric; Power broom sweeper; Power tampers of all types (except as shown in Group 2); Ram set gun and stud gun; Riprap stonepaver and rock-slinger, including placing of sacked concrete and/or sand (wet or dry) and gabions and similar type; Rotary scarifier or multiple head concrete chipping scarifier; Roto and Ditch Witch; Rototiller; Sandblaster, pot, gun, nozzle operators; Signalling and rigging; Tank cleaner; Tree climber; Turbo blaster; Vibrascreed, bull float in connection with laborers' work; Vibrator; Hazardous waste worker (lead removal); Asbestos and mold removal worker

GROUP 1-a: Joy drill model TWM-2A; Gardner-Denver model DH143 and similar type drills; Track driller; Jack leg driller; Wagon driller; Mechanical drillers, all types regardless of type or method of power; Mechanical pipe layers, all types regardless of type or method of power; Blaster and powder; All work of loading, placing and blasting of all powder and explosives of whatever type regardless of method used for such loading and placing; High scalers (including drilling of same); Tree topper; Bit grinder

GROUP 1-b: Sewer cleaners shall receive $4.00 per day above Group 1 wage rates. "Sewer cleaner" means any worker who handles or comes in contact with raw sewage in small diameter sewers. Those who work inside recently active, large diameter sewers, and all recently active sewer manholes shal receive $5.00 per day above Group 1 wage rates.

GROUP 1-c: Burning and welding in connection with laborers' work; Synthetic thermoplastics and similar type welding

GROUP 1-d: Maintenance and repair track and road beds. All employees performing work covered herein shall receive $ .25 per hour above their regular rate for all work performed on underground structures not specifically covered herein. This paragraph shall not be construed to apply to work below ground level in open cut. It shall apply to cut and cover work of subway construction after the temporary cover has been placed.

GROUP 1-e: Work on and/or in bell hole footings and shafts thereof, and work on and in deep footings. (A deep footing is a hole 15 feet or more in depth.) In the event the depth of the footing is unknown at the commencement of excavation, and the final depth exceeds 15 feet, the deep footing wage rate would apply to all employees for each and every day worked on or in the excavation of the footing from the date of inception.

GROUP 1-f: Wire winding machine in connection with guniting or shot crete

GROUP 2: Asphalt shoveler; Cement dumper and handling dry cement or gypsum; Choke-setter and rigger (clearing work); Concrete bucket dumper and chute; Concrete chipping and grinding; Concrete laborer (wet or dry); Driller tender, chuck tender, nipper; Guinea chaser (stake), grout crew; High pressure nozzle, adductor; Hydraulic monitor (over 100 lbs. pressure); Loading and unloading, carrying and hauling of all rods and materials for use in reinforcing concrete construction; Pittsburgh chipper and similar type brush shredders; Sloper; Single foot, hand-held, pneumatic tamper; All pneumatic, air, gas and electric tools not listed in Groups 1 through 1-f; Jacking of pipe - under 12 inches

GROUP 3: Construction laborers, including bridge and general laborer; Dump, load spotter; Flag person; Fire watcher; Fence erector; Guardrail erector; Gardener, horticultural and landscape laborer; Jetting; Limber, brush loader and piler; Pavement marker (button setter); Maintenance, repair track and road beds; Streetcar and railroad construction track laborer; Temporary air and water lines, Victaulic or similar; Tool room attendant (jobsite only)

GROUP 4: Final clean-up work of debris, grounds and building including but not limited to: street cleaner; cleaning and washing windows; brick cleaner (jobsite only); material cleaner (jobsite only). The classification "material cleaner" is to be utilized under the following conditions:
A: at demolition site for the salvage of the material.
B: at the conclusion of a job where the material is to be salvaged and stocked to be reused on another job.
C: for the cleaning of salvage material at the jobsite or temporary jobsite yard.

The material cleaner classification should not be used in the performance of "form stripping, cleaning and oiling and moving to the next point of erection".

GUNITE LABORER CLASSIFICATIONS

GROUP 1: Structural Nozzleman

GROUP 2: Nozzleman, Gunman, Potman, Groundman

GROUP 3: Reboundman

GROUP 4: Gunite laborer

WRECKING WORK LABORER CLASSIFICATIONS

GROUP 1: Skilled wrecker (removing and salvaging of sash, windows and materials)

GROUP 2: Semi-skilled wrecker (salvaging of other building materials)

LABO0294-010 07/01/2017

CALAVERAS, FRESNO, KINGS, MADERA, MARIPOSA, MERCED, SAN JOAQUIN, STANISLAUS & TUOLUMNE

	Rates	Fringes
Plasterer tender	$ 31.02	22.52

Work on a swing stage scaffold: $1.00 per hour additional.

LABO0294-011 07/01/2017

FRESNO, KINGS, AND MADERA COUNTIES

	Rates	Fringes
LABORER (Plaster Tender)	$ 31.02	22.52

Work on a swing stage scaffold: $1.00 per hour additional.

LABO0304-002 06/26/2017

ALAMEDA COUNTY

	Rates	Fringes
LABORER (TRAFFIC CONTROL/LANE CLOSURE)		
Escort Driver, Flag Person	$ 29.54	22.17

Traffic Control Person I	$ 29.84	22.17
Traffic Control Person II	$ 27.34	22.17

TRAFFIC CONTROL PERSON I: Layout of traffic control, crash cushions, construction area and roadside signage.

TRAFFIC CONTROL PERSON II: Installation and removal of temporary/permanent signs, markers, delineators and crash cushions.

LABO0304-003 06/26/2017

ALAMEDA COUNTY

	Rates	Fringes
Tunnel and Shaft Laborers:		
GROUP 1	$ 36.60	24.83
GROUP 2	$ 36.37	24.83
GROUP 3	$ 36.12	24.83
GROUP 4	$ 35.67	24.83
GROUP 5	$ 35.13	24.83
Shotcrete Specialist	$ 37.12	24.83

TUNNEL AND SHAFT CLASSIFICATIONS

GROUP 1: Diamond driller; Groundmen; Gunite and shotcrete nozzlemen

GROUP 2: Rodmen; Shaft work & raise (below actual or excavated ground level)

GROUP 3: Bit grinder; Blaster, driller, powdermen, heading; Cherry pickermen - where car is lifted; Concrete finisher in tunnel; Concrete screedman; Grout pumpman and potman; Gunite & shotcrete gunman & potman; Headermen; High pressure nozzleman; Miner - tunnel, including top and bottom man on shaft and raise work; Nipper; Nozzleman on slick line; Sandblaster - potman, Robotic Shotcrete Placer, Segment Erector, Tunnel Muck Hauler, Steel Form raiser and setter; Timberman, retimberman (wood or steel or substitute materials therefore); Tugger (for tunnel laborer work); Cable tender; Chuck tender; Powderman - primer house

GROUP 4: Vibrator operator, pavement breaker; Bull gang - muckers, trackmen; Concrete crew - includes rodding and spreading, Dumpmen (any method)

GROUP 5: Grout crew; Reboundman; Swamper/ Brakeman

LABO0304-004 06/27/2017

ALAMEDA COUNTY

	Rates	Fringes

LABORER (CONSTRUCTION CRAFT
LABORERS - AREA A:)

Construction Specialist Group	$ 30.49	22.38
GROUP 1	$ 29.79	22.38
GROUP 1-a	$ 30.01	22.38
GROUP 1-c	$ 29.84	22.38
GROUP 1-e	$ 30.34	22.38
GROUP 1-f	$ 30.37	22.38
GROUP 2	$ 29.64	22.38
GROUP 3	$ 29.54	22.38
GROUP 4	$ 23.23	22.38

See groups 1-b and 1-d under laborer classifications.

LABORER (GARDENERS, HORTICULTURAL & LANDSCAPE LABORERS - AREA A:)

(1) New Construction	$ 29.54	22.31
(2) Establishment Warranty Period	$ 23.23	22.31

LABORER (GUNITE - AREA A:)

GROUP 1	$ 30.75	22.31
GROUP 2	$ 30.25	22.31
GROUP 3	$ 29.66	22.31
GROUP 4	$ 29.54	22.31

LABORER (WRECKING - AREA A:)

GROUP 1	$ 29.79	22.31
GROUP 2	$ 29.64	22.31

FOOTNOTES:

Laborers working off or with or from bos'n chairs, swinging scaffolds, belts shall receive $0.25 per hour above the applicable wage rate. This shall not apply to workers entitled to receive the wage rate set forth in Group 1-a below.

LABORER CLASSIFICATIONS

CONSTRUCTION SPECIALIST GROUP: Asphalt ironer and raker; Chainsaw; Laser beam in connection with laborers' work; Cast-in- place manhole form setter; Pressure pipelayer; Davis trencher - 300 or similar type (and all small trenchers); Blaster; Diamond driller; Multiple unit drill; Hydraulic drill

GROUP 1: Asphalt spreader boxes (all types); Barko, Wacker and similar type tampers; Buggymobile; Caulker, bander, pipewrapper, conduit layer, plastic pipelayer; Certified hazardous waste worker including Leade Abatement; Compactors of all types; Concrete and magnesite mixer, 1/2 yd. and under; Concrete pan work; Concrete sander; Concrete saw; Cribber and/or shoring; Cut granite curb setter; Dri-pak-it machine; Faller, logloader and bucker; Form raiser, slip forms; Green cutter; Headerboard, Hubsetter, aligner, by any method; High pressure blow pipe (1-1/2" or over, 100 lbs. pressure/over); Hydro seeder and similar

type; Jackhammer operator; Jacking of pipe over 12 inches; Jackson and similar type compactor; Kettle tender, pot and worker applying asphalt, lay-kold, creosote, lime, caustic and similar type materials (applying means applying, dipping or handling of such materials); Lagging, sheeting, whaling, bracing, trenchjacking, lagging hammer; Magnesite, epoxyresin, fiberglass, mastic worker (wet or dry); No joint pipe and stripping of same, including repair of voids; Pavement breaker and spader, including tool grinder; Perma curb; Pipelayer (including grade checking in connection with pipelaying); Precast-manhole setter; Pressure pipe tester; Post hole digger, air, gas and electric; Power broom sweeper; Power tampers of all types (except as shown in Group 2); Ram set gun and stud gun; Riprap stonepaver and rock-slinger, including placing of sacked concrete and/or sand (wet or dry) and gabions and similar type; Rotary scarifier or multiple head concrete chipping scarifier; Roto and Ditch Witch; Rototiller; Sandblaster, pot, gun, nozzle operators; Signalling and rigging; Tank cleaner; Tree climber; Turbo blaster; Vibrascreed, bull float in connection with laborers' work; Vibrator; Hazardous waste worker (lead removal); Asbestos and mold removal worker

GROUP 1-a: Joy drill model TWM-2A; Gardner-Denver model DH143 and similar type drills; Track driller; Jack leg driller; Wagon driller; Mechanical drillers, all types regardless of type or method of power; Mechanical pipe layers, all types regardless of type or method of power; Blaster and powder; All work of loading, placing and blasting of all powder and explosives of whatever type regardless of method used for such loading and placing; High scalers (including drilling of same); Tree topper; Bit grinder

GROUP 1-b: Sewer cleaners shall receive $4.00 per day above Group 1 wage rates. "Sewer cleaner" means any worker who handles or comes in contact with raw sewage in small diameter sewers. Those who work inside recently active, large diameter sewers, and all recently active sewer manholes shal receive $5.00 per day above Group 1 wage rates.

GROUP 1-c: Burning and welding in connection with laborers' work; Synthetic thermoplastics and similar type welding

GROUP 1-d: Maintenance and repair track and road beds. All employees performing work covered herein shall receive $ .25 per hour above their regular rate for all work performed on underground structures not specifically covered herein. This paragraph shall not be construed to apply to work below ground level in open cut. It shall apply to cut and cover work of subway construction after the temporary cover has been placed.

GROUP 1-e: Work on and/or in bell hole footings and shafts thereof, and work on and in deep footings. (A deep footing is a hole 15 feet or more in depth.) In the event the depth of the footing is unknown at the commencement of

excavation, and the final depth exceeds 15 feet, the deep footing wage rate would apply to all employees for each and every day worked on or in the excavation of the footing from the date of inception.

GROUP 1-f: Wire winding machine in connection with guniting or shot crete

GROUP 2: Asphalt shoveler; Cement dumper and handling dry cement or gypsum; Choke-setter and rigger (clearing work); Concrete bucket dumper and chute; Concrete chipping and grinding; Concrete laborer (wet or dry); Driller tender, chuck tender, nipper; Guinea chaser (stake), grout crew; High pressure nozzle, adductor; Hydraulic monitor (over 100 lbs. pressure); Loading and unloading, carrying and hauling of all rods and materials for use in reinforcing concrete construction; Pittsburgh chipper and similar type brush shredders; Sloper; Single foot, hand-held, pneumatic tamper; All pneumatic, air, gas and electric tools not listed in Groups 1 through 1-f; Jacking of pipe - under 12 inches

GROUP 3: Construction laborers, including bridge and general laborer; Dump, load spotter; Flag person; Fire watcher; Fence erector; Guardrail erector; Gardener, horticultural and landscape laborer; Jetting; Limber, brush loader and piler; Pavement marker (button setter); Maintenance, repair track and road beds; Streetcar and railroad construction track laborer; Temporary air and water lines, Victaulic or similar; Tool room attendant (jobsite only)

GROUP 4: Final clean-up work of debris, grounds and building including but not limited to: street cleaner; cleaning and washing windows; brick cleaner (jobsite only); material cleaner (jobsite only). The classification "material cleaner" is to be utilized under the following conditions:
A: at demolition site for the salvage of the material.
B: at the conclusion of a job where the material is to be salvaged and stocked to be reused on another job.
C: for the cleaning of salvage material at the jobsite or temporary jobsite yard.

The material cleaner classification should not be used in the performance of "form stripping, cleaning and oiling and moving to the next point of erection".

GUNITE LABORER CLASSIFICATIONS

GROUP 1: Structural Nozzleman

GROUP 2: Nozzleman, Gunman, Potman, Groundman

GROUP 3: Reboundman

GROUP 4: Gunite laborer

WRECKING WORK LABORER CLASSIFICATIONS

GROUP 1: Skilled wrecker (removing and salvaging of sash, windows and materials)

GROUP 2: Semi-skilled wrecker (salvaging of other building materials)

LABO0304-005 05/01/2017

ALAMEDA COUNTY

	Rates	Fringes
Brick Tender	$ 33.18	21.49

FOOTNOTES: Work on jobs where heat-protective clothing is required: $2.00 per hour additional. Work at grinders: $.25 per hour additional. Manhole work: $2.00 per day additional.

LABO0304-008 07/01/2017

ALAMEDA AND CONTRA COSTA COUNTIES:

	Rates	Fringes
Plasterer tender	$ 34.70	23.11

Work on a swing stage scaffold: $1.00 per hour additional.

LABO0324-002 06/26/2017

CONTRA COSTA COUNTY

	Rates	Fringes
LABORER (TRAFFIC CONTROL/LANE CLOSURE)		
Escort Driver, Flag Person	$ 29.54	22.17
Traffic Control Person I	$ 29.84	22.17
Traffic Control Person II	$ 27.34	22.17

TRAFFIC CONTROL PERSON I: Layout of traffic control, crash cushions, construction area and roadside signage.

TRAFFIC CONTROL PERSON II: Installation and removal of temporary/permanent signs, markers, delineators and crash cushions.

LABO0324-006 06/26/2017

CONTRA COSTA COUNTY

	Rates	Fringes
Tunnel and Shaft Laborers:		
GROUP 1	$ 36.60	21.72
GROUP 2	$ 36.37	21.72
GROUP 3	$ 36.12	21.72
GROUP 4	$ 35.67	21.72
GROUP 5	$ 35.13	21.72
Shotcrete Specialist	$ 37.12	21.72

TUNNEL AND SHAFT CLASSIFICATIONS

GROUP 1: Diamond driller; Groundmen; Gunite and shotcrete nozzlemen

GROUP 2: Rodmen; Shaft work & raise (below actual or excavated ground level)

GROUP 3: Bit grinder; Blaster, driller, powdermen, heading; Cherry pickermen - where car is lifted; Concrete finisher in tunnel; Concrete screedman; Grout pumpman and potman; Gunite & shotcrete gunman & potman; Headermen; High pressure nozzleman; Miner - tunnel, including top and bottom man on shaft and raise work; Nipper; Nozzleman on slick line; Sandblaster - potman, Robotic Shotcrete Placer, Segment Erector, Tunnel Muck Hauler, Steel Form raiser and setter; Timberman, retimberman (wood or steel or substitute materials therefore); Tugger (for tunnel laborer work); Cable tender; Chuck tender; Powderman - primer house

GROUP 4: Vibrator operator, pavement breaker; Bull gang - muckers, trackmen; Concrete crew - includes rodding and spreading, Dumpmen (any method)

GROUP 5: Grout crew; Reboundman; Swamper/ Brakeman

LABO0324-012 06/27/2017

CONTRA COSTA COUNTY

	Rates	Fringes
LABORER (CONSTRUCTION CRAFT LABORERS - AREA A:)		
Construction Specialist Group	$ 30.49	22.38
GROUP 1	$ 29.79	22.38
GROUP 1-a	$ 30.01	22.38
GROUP 1-c	$ 29.84	22.38
GROUP 1-e	$ 30.34	22.38
GROUP 1-f	$ 30.37	22.38
GROUP 1-g	$ 29.99	22.38
GROUP 2	$ 29.64	22.38
GROUP 3	$ 29.54	22.38
GROUP 4	$ 23.23	22.38

See groups 1-b and 1-d under laborer classifications.

LABORER (GARDENERS,

HORTICULURAL & LANDSCAPE

LABORERS - AREA A:)		
(1) New Construction	$ 29.54	22.31
(2) Establishment Warranty Period	$ 23.23	22.31
LABORER (GUNITE - AREA A:)		
GROUP 1	$ 30.75	22.31
GROUP 2	$ 30.25	22.31
GROUP 3	$ 29.66	22.31
GROUP 4	$ 29.54	22.31
LABORER (WRECKING - AREA A:)		
GROUP 1	$ 29.79	22.31
GROUP 2	$ 29.64	22.31

FOOTNOTES:
Laborers working off or with or from bos'n chairs, swinging scaffolds, belts shall receive $0.25 per hour above the applicable wage rate. This shall not apply to workers entitled to receive the wage rate set forth in Group 1-a below.

LABORER CLASSIFICATIONS

CONSTRUCTION SPECIALIST GROUP: Asphalt ironer and raker; Chainsaw; Laser beam in connection with laborers' work; Cast-in- place manhole form setter; Pressure pipelayer; Davis trencher - 300 or similar type (and all small trenchers); Blaster; Diamond driller; Multiple unit drill; Hydraulic drill

GROUP 1: Asphalt spreader boxes (all types); Barko, Wacker and similar type tampers; Buggymobile; Caulker, bander, pipewrapper, conduit layer, plastic pipelayer; Certified hazardous waste worker including Leade Abatement; Compactors of all types; Concrete and magnesite mixer, 1/2 yd. and under; Concrete pan work; Concrete sander; Concrete saw; Cribber and/or shoring; Cut granite curb setter; Dri-pak-it machine; Faller, logloader and bucker; Form raiser, slip forms; Green cutter; Headerboard, Hubsetter, aligner, by any method; High pressure blow pipe (1-1/2" or over, 100 lbs. pressure/over); Hydro seeder and similar type; Jackhammer operator; Jacking of pipe over 12 inches; Jackson and similar type compactor; Kettle tender, pot and worker applying asphalt, lay-kold, creosote, lime, caustic and similar type materials (applying means applying, dipping or handling of such materials); Lagging, sheeting, whaling, bracing, trenchjacking, lagging hammer; Magnesite, epoxyresin, fiberglass, mastic worker (wet or dry); No joint pipe and stripping of same, including repair of voids; Pavement breaker and spader, including tool grinder; Perma curb; Pipelayer (including grade checking in connection with pipelaying); Precast-manhole setter; Pressure pipe tester; Post hole digger, air, gas and electric; Power broom sweeper; Power tampers of all types (except as shown in Group 2); Ram set gun and stud gun;

Riprap stonepaver and rock-slinger, including placing of sacked concrete and/or sand (wet or dry) and gabions and similar type; Rotary scarifier or multiple head concrete chipping scarifier; Roto and Ditch Witch; Rototiller; Sandblaster, pot, gun, nozzle operators; Signalling and rigging; Tank cleaner; Tree climber; Turbo blaster; Vibrascreed, bull float in connection with laborers' work; Vibrator; Hazardous waste worker (lead removal); Asbestos and mold removal worker

GROUP 1-a: Joy drill model TWM-2A; Gardner-Denver model DH143 and similar type drills; Track driller; Jack leg driller; Wagon driller; Mechanical drillers, all types regardless of type or method of power; Mechanical pipe layers, all types regardless of type or method of power; Blaster and powder; All work of loading, placing and blasting of all powder and explosives of whatever type regardless of method used for such loading and placing; High scalers (including drilling of same); Tree topper; Bit grinder

GROUP 1-b: Sewer cleaners shall receive $4.00 per day above Group 1 wage rates. "Sewer cleaner" means any worker who handles or comes in contact with raw sewage in small diameter sewers. Those who work inside recently active, large diameter sewers, and all recently active sewer manholes shal receive $5.00 per day above Group 1 wage rates.

GROUP 1-c: Burning and welding in connection with laborers' work; Synthetic thermoplastics and similar type welding

GROUP 1-d: Maintenance and repair track and road beds. All employees performing work covered herein shall receive $ .25 per hour above their regular rate for all work performed on underground structures not specifically covered herein. This paragraph shall not be construed to apply to work below ground level in open cut. It shall apply to cut and cover work of subway construction after the temporary cover has been placed.

GROUP 1-e: Work on and/or in bell hole footings and shafts thereof, and work on and in deep footings. (A deep footing is a hole 15 feet or more in depth.) In the event the depth of the footing is unknown at the commencement of excavation, and the final depth exceeds 15 feet, the deep footing wage rate would apply to all employees for each and every day worked on or in the excavation of the footing from the date of inception.

GROUP 1-f: Wire winding machine in connection with guniting or shot crete

GROUP 1-g, CONTRA COSTA COUNTY: Pipelayer (including grade checking in connection with pipelaying); Caulker; Bander; Pipewrapper; Conduit layer; Plastic pipe layer; Pressure pipe tester; No joint pipe and stripping of same, including repair of voids; Precast manhole setters, cast in place manhole form setters

GROUP 2: Asphalt shoveler; Cement dumper and handling dry cement or gypsum; Choke-setter and rigger (clearing work); Concrete bucket dumper and chute; Concrete chipping and grinding; Concrete laborer (wet or dry); Driller tender, chuck tender, nipper; Guinea chaser (stake), grout crew; High pressure nozzle, adductor; Hydraulic monitor (over 100 lbs. pressure); Loading and unloading, carrying and hauling of all rods and materials for use in reinforcing concrete construction; Pittsburgh chipper and similar type brush shredders; Sloper; Single foot, hand-held, pneumatic tamper; All pneumatic, air, gas and electric tools not listed in Groups 1 through 1-f; Jacking of pipe - under 12 inches

GROUP 3: Construction laborers, including bridge and general laborer; Dump, load spotter; Flag person; Fire watcher; Fence erector; Guardrail erector; Gardener, horticultural and landscape laborer; Jetting; Limber, brush loader and piler; Pavement marker (button setter); Maintenance, repair track and road beds; Streetcar and railroad construction track laborer; Temporary air and water lines, Victaulic or similar; Tool room attendant (jobsite only)

GROUP 4: Final clean-up work of debris, grounds and building including but not limited to: street cleaner; cleaning and washing windows; brick cleaner (jobsite only); material cleaner (jobsite only). The classification "material cleaner" is to be utilized under the following conditions:
A: at demolition site for the salvage of the material.
B: at the conclusion of a job where the material is to be salvaged and stocked to be reused on another job.
C: for the cleaning of salvage material at the jobsite or temporary jobsite yard.

The material cleaner classification should not be used in the performance of "form stripping, cleaning and oiling and moving to the next point of erection".

GUNITE LABORER CLASSIFICATIONS

GROUP 1: Structural Nozzleman

GROUP 2: Nozzleman, Gunman, Potman, Groundman

GROUP 3: Reboundman

GROUP 4: Gunite laborer

WRECKING WORK LABORER CLASSIFICATIONS

GROUP 1: Skilled wrecker (removing and salvaging of sash, windows and materials)

GROUP 2: Semi-skilled wrecker (salvaging of other building materials)

GROUP 1-g, CONTRA COSTA COUNTY: Pipelayer (including grade checking in connection with pipelaying); Caulker; Bander; Pipewrapper; Conduit layer; Plastic pipe layer; Pressure pipe tester; No joint pipe and stripping of same, including repair of voids; Precast manhole setters, cast in place manhole form setters

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LABO0324-014 05/01/2017

CONTRA COSTA COUNTY:

	Rates	Fringes
Brick Tender	$ 33.18	21.49

FOOTNOTES: Work on jobs where heat-protective clothing is required: $2.00 per hour additional. Work at grinders: $.25 per hour additional. Manhole work: $2.00 per day additional.

LABO0324-018 07/01/2017

ALAMEDA AND CONTRA COSTA COUNTIES:

	Rates	Fringes
Plasterer tender	$ 34.70	23.11

Work on a swing stage scaffold: $1.00 per hour additional.

LABO1130-002 06/26/2017

MARIPOSA, MERCED, STANISLAUS, AND TUOLUMNE COUNTIES

	Rates	Fringes
LABORER (TRAFFIC CONTROL/LANE CLOSURE)		
Escort Driver, Flag Person	$ 28.54	22.17
Traffic Control Person I	$ 28.84	22.17
Traffic Control Person II	$ 26.34	22.17

TRAFFIC CONTROL PERSON I: Layout of traffic control, crash cushions, construction area and roadside signage.

TRAFFIC CONTROL PERSON II: Installation and removal of temporary/permanent signs, markers, delineators and crash cushions.

LABO1130-003 06/26/2017

MARIPOSA, MERCED, STANISLAUS, AND TUOLUMNE COUNTIES

	Rates	Fringes
Tunnel and Shaft Laborers:		
GROUP 1	$ 36.60	24.83
GROUP 2	$ 36.37	24.83
GROUP 3	$ 36.12	24.83
GROUP 4	$ 35.67	24.83
GROUP 5	$ 35.13	24.83
Shotcrete Specialist	$ 37.12	24.83

TUNNEL AND SHAFT CLASSIFICATIONS

GROUP 1: Diamond driller; Groundmen; Gunite and shotcrete nozzlemen

GROUP 2: Rodmen; Shaft work & raise (below actual or excavated ground level)

GROUP 3: Bit grinder; Blaster, driller, powdermen, heading; Cherry pickermen - where car is lifted; Concrete finisher in tunnel; Concrete screedman; Grout pumpman and potman; Gunite & shotcrete gunman & potman; Headermen; High pressure nozzleman; Miner - tunnel, including top and bottom man on shaft and raise work; Nipper; Nozzleman on slick line; Sandblaster - potman, Robotic Shotcrete Placer, Segment Erector, Tunnel Muck Hauler, Steel Form raiser and setter; Timberman, retimberman (wood or steel or substitute materials therefore); Tugger (for tunnel laborer work); Cable tender; Chuck tender; Powderman - primer house

GROUP 4: Vibrator operator, pavement breaker; Bull gang - muckers, trackmen; Concrete crew - includes rodding and spreading, Dumpmen (any method)

GROUP 5: Grout crew; Reboundman; Swamper/ Brakeman

LABO1130-005 07/01/2017

MARIPOSA, MERCED, STANISLAUS AND TUOLUMNE COUNTIES

	Rates	Fringes
LABORER		
Mason Tender-Brick	$ 30.45	21.04

LABO1130-007 06/26/2017

MARIPOSA, MERCED, STANISLAUS, AND TUOLUMNE , COUNTIES

	Rates	Fringes
LABORER (CONSTRUCTION CRAFT LABORERS - AREA B:)		
Construction Specialist Group	$ 29.49	22.38
GROUP 1	$ 28.79	22.38

GROUP 1-a.....$ 29.01 22.38
GROUP 1-c.....$ 28.84 22.38
GROUP 1-e.....$ 29.34 22.38
GROUP 1-f.....$ 29.37 22.38
GROUP 2.....$ 28.64 22.38
GROUP 3.....$ 28.54 22.38
GROUP 4.....$ 22.23 22.38

See groups 1-b and 1-d under laborer classifications.

LABORER (GARDENERS, HORTICULTURAL & LANDSCAPE LABORERS - AREA B:)
(1) New Construction.....$ 28.54 22.31
(2) Establishment Warranty Period.....$ 22.23 22.31

LABORER (GUNITE - AREA B:)
GROUP 1.....$ 29.75 22.31
GROUP 2.....$ 29.25 22.31
GROUP 3.....$ 28.66 22.31
GROUP 4.....$ 28.54 22.31

LABORER (WRECKING - AREA B:)
GROUP 1.....$ 28.79 22.31
GROUP 2.....$ 28.64 22.31

FOOTNOTES:

Laborers working off or with or from bos'n chairs, swinging scaffolds, belts shall receive $0.25 per hour above the applicable wage rate. This shall not apply to workers entitled to receive the wage rate set forth in Group 1-a below.

LABORER CLASSIFICATIONS

CONSTRUCTION SPECIALIST GROUP: Asphalt ironer and raker; Chainsaw; Laser beam in connection with laborers' work; Cast-in- place manhole form setter; Pressure pipelayer; Davis trencher - 300 or similar type (and all small trenchers); Blaster; Diamond driller; Multiple unit drill; Hydraulic drill

GROUP 1: Asphalt spreader boxes (all types); Barko, Wacker and similar type tampers; Buggymobile; Caulker, bander, pipewrapper, conduit layer, plastic pipelayer; Certified hazardous waste worker including Leade Abatement; Compactors of all types; Concrete and magnesite mixer, 1/2 yd. and under; Concrete pan work; Concrete sander; Concrete saw; Cribber and/or shoring; Cut granite curb setter; Dri-pak-it machine; Faller, logloader and bucker; Form raiser, slip forms; Green cutter; Headerboard, Hubsetter, aligner, by any method; High pressure blow pipe (1-1/2" or over, 100 lbs. pressure/over); Hydro seeder and similar type; Jackhammer operator; Jacking of pipe over 12 inches; Jackson and similar type compactor; Kettle tender, pot and worker applying asphalt, lay-kold, creosote, lime, caustic and similar type materials (applying means applying, dipping or handling of such materials); Lagging, sheeting,

whaling, bracing, trenchjacking, lagging hammer; Magnesite, epoxyresin, fiberglass, mastic worker (wet or dry); No joint pipe and stripping of same, including repair of voids; Pavement breaker and spader, including tool grinder; Perma curb; Pipelayer (including grade checking in connection with pipelaying); Precast-manhole setter; Pressure pipe tester; Post hole digger, air, gas and electric; Power broom sweeper; Power tampers of all types (except as shown in Group 2); Ram set gun and stud gun; Riprap stonepaver and rock-slinger, including placing of sacked concrete and/or sand (wet or dry) and gabions and similar type; Rotary scarifier or multiple head concrete chipping scarifier; Roto and Ditch Witch; Rototiller; Sandblaster, pot, gun, nozzle operators; Signalling and rigging; Tank cleaner; Tree climber; Turbo blaster; Vibrascreed, bull float in connection with laborers' work; Vibrator; Hazardous waste worker (lead removal); Asbestos and mold removal worker

GROUP 1-a: Joy drill model TWM-2A; Gardner-Denver model DH143 and similar type drills; Track driller; Jack leg driller; Wagon driller; Mechanical drillers, all types regardless of type or method of power; Mechanical pipe layers, all types regardless of type or method of power; Blaster and powder; All work of loading, placing and blasting of all powder and explosives of whatever type regardless of method used for such loading and placing; High scalers (including drilling of same); Tree topper; Bit grinder

GROUP 1-b: Sewer cleaners shall receive $4.00 per day above Group 1 wage rates. "Sewer cleaner" means any worker who handles or comes in contact with raw sewage in small diameter sewers. Those who work inside recently active, large diameter sewers, and all recently active sewer manholes shal receive $5.00 per day above Group 1 wage rates.

GROUP 1-c: Burning and welding in connection with laborers' work; Synthetic thermoplastics and similar type welding

GROUP 1-d: Maintenance and repair track and road beds. All employees performing work covered herein shall receive $ .25 per hour above their regular rate for all work performed on underground structures not specifically covered herein. This paragraph shall not be construed to apply to work below ground level in open cut. It shall apply to cut and cover work of subway construction after the temporary cover has been placed.

GROUP 1-e: Work on and/or in bell hole footings and shafts thereof, and work on and in deep footings. (A deep footing is a hole 15 feet or more in depth.) In the event the depth of the footing is unknown at the commencement of excavation, and the final depth exceeds 15 feet, the deep footing wage rate would apply to all employees for each and every day worked on or in the excavation of the footing from the date of inception.

GROUP 1-f: Wire winding machine in connection with guniting or shot crete

GROUP 2: Asphalt shoveler; Cement dumper and handling dry cement or gypsum; Choke-setter and rigger (clearing work); Concrete bucket dumper and chute; Concrete chipping and grinding; Concrete laborer (wet or dry); Driller tender, chuck tender, nipper; Guinea chaser (stake), grout crew; High pressure nozzle, adductor; Hydraulic monitor (over 100 lbs. pressure); Loading and unloading, carrying and hauling of all rods and materials for use in reinforcing concrete construction; Pittsburgh chipper and similar type brush shredders; Sloper; Single foot, hand-held, pneumatic tamper; All pneumatic, air, gas and electric tools not listed in Groups 1 through 1-f; Jacking of pipe - under 12 inches

GROUP 3: Construction laborers, including bridge and general laborer; Dump, load spotter; Flag person; Fire watcher; Fence erector; Guardrail erector; Gardener, horticultural and landscape laborer; Jetting; Limber, brush loader and piler; Pavement marker (button setter); Maintenance, repair track and road beds; Streetcar and railroad construction track laborer; Temporary air and water lines, Victaulic or similar; Tool room attendant (jobsite only)

GROUP 4: Final clean-up work of debris, grounds and building including but not limited to: street cleaner; cleaning and washing windows; brick cleaner (jobsite only); material cleaner (jobsite only). The classification "material cleaner" is to be utilized under the following conditions:
A: at demolition site for the salvage of the material.
B: at the conclusion of a job where the material is to be salvaged and stocked to be reused on another job.
C: for the cleaning of salvage material at the jobsite or temporary jobsite yard.

The material cleaner classification should not be used in the performance of "form stripping, cleaning and oiling and moving to the next point of erection".

GUNITE LABORER CLASSIFICATIONS

GROUP 1: Structural Nozzleman

GROUP 2: Nozzleman, Gunman, Potman, Groundman

GROUP 3: Reboundman

GROUP 4: Gunite laborer

WRECKING WORK LABORER CLASSIFICATIONS

GROUP 1: Skilled wrecker (removing and salvaging of sash,

windows and materials)

GROUP 2: Semi-skilled wrecker (salvaging of other building materials)

LABO1130-008 07/01/2017

CALAVERAS, FRESNO, KINGS, MADERA, MARIPOSA, MERCED, SAN JOAQUIN, STANISLAUS & TUOLUMNE

	Rates	Fringes
Plasterer tender	$ 31.02	22.52

Work on a swing stage scaffold: $1.00 per hour additional.

LABO1130-009 07/01/2017

MARIPOSA, MERCED, STANISLAUS, AND TUOLUMNE COUNTIES

	Rates	Fringes
LABORER (Plaster Tender)	$ 31.02	22.52

Work on a swing stage scaffold: $1.00 per hour additional.

PAIN0016-001 01/01/2018

ALAMEDA, CONTRA COSTA, MONTEREY, SAN BENITO, SAN MATEO, SANTA CLARA, AND SANTA CRUZ COUNTIES

	Rates	Fringes
Painters:	$ 40.62	23.83

PREMIUMS:

EXOTIC MATERIALS - $0.75 additional per hour.
SPRAY WORK: - $0.50 additional per hour.
INDUSTRIAL PAINTING - $0.25 additional per hour
[Work on industrial buildings used for the manufacture and processing of goods for sale or service; steel construction (bridges), stacks, towers, tanks, and similar structures]

HIGH WORK:
over 50 feet - $2.00 per hour additional
100 to 180 feet - $4.00 per hour additional
Over 180 feet - $6.00 per houir additional

PAIN0016-003 01/01/2018

AREA 1: ALAMEDA, CONTRA COSTA, SAN FRANCISCO, SAN MATEO & SANTA CLARA COUNTIES

AREA 2: CALAVERAS, MARIPOA, MERCED, MONTEREY, SAN BENITO, SAN JOAQUIN, SANTA CRUZ, STANISLAUS & TUOLUMNE COUNTIES

	Rates	Fringes
Drywall Finisher/Taper		
AREA 1	$ 45.16	26.74
AREA 2	$ 41.03	25.34

PAIN0016-012 01/01/2018

ALAMEDA, CONTRA COSTA, MARIPOSA, MERCED, MONTEREY, SAN BENITO, SAN FRANCISCO, SAN MATEO, SANTA CLARA AND SANTA CRUZ COUNTIES

	Rates	Fringes
SOFT FLOOR LAYER	$ 48.00	26.03

PAIN0016-015 01/01/2018

CALAVERAS, MARIPOSA, MERCED, SAN JOAQUIN, STANISLAUS & TUOLUMNE COUNTIES

	Rates	Fringes
PAINTER		
Brush	$ 32.91	19.26

FOOTNOTES:
SPRAY/SANDBLAST: $0.50 additional per hour.
EXOTIC MATERIALS: $1.00 additional per hour.
HIGH TIME: Over 50 ft above ground or water level $2.00 additional per hour. 100 to 180 ft above ground or water level $4.00 additional per hour. Over 180 ft above ground or water level $6.00 additional per hour.

PAIN0016-022 01/01/2018

SAN FRANCISCO COUNTY

	Rates	Fringes
PAINTER	$ 44.24	23.83

PAIN0169-001 01/01/2018

FRESNO, KINGS, MADERA, MARIPOSA AND MERCED COUNTIES:

	Rates	Fringes
GLAZIER	$ 35.00	26.26

PAIN0169-005 01/01/2018

ALAMEDA CONTRA COSTA, MONTEREY, SAN BENITO, SAN FRANCISCO, SAN MATEO, SANTA CLARA & SANTA CRUZ COUNTIES

	Rates	Fringes
GLAZIER	$ 46.13	28.04

PAIN0294-004 01/01/2018

FRESNO, KINGS AND MADERA COUNTIES

	Rates	Fringes
PAINTER		
Brush, Roller	$ 29.78	18.11
Drywall Finisher/Taper	$ 34.87	23.68

FOOTNOTE:
Spray Painters & Paperhangers recive $1.00 additional per hour. Painters doing Drywall Patching receive $1.25 additional per hour. Lead Abaters & Sandblasters receive $1.50 additional per hour. High Time - over 30 feet (does not include work from a lift) $0.75 per hour additional.

PAIN0294-005 01/01/2018

FRESNO, KINGS & MADERA

	Rates	Fringes
SOFT FLOOR LAYER	$ 31.49	20.48

PAIN0767-001 01/01/2018

CALAVERAS, SAN JOAQUIN, STANISLAUS AND TUOLUMNE COUNTIES:

	Rates	Fringes
GLAZIER	$ 34.57	28.25

PAID HOLIDAYS: New Year's Day, Martin Luther King, Jr. Day, President's Day, Memorial Day, Independence Day, Labor Day, Veteran's Day, Thanksgiving Day, and Christmas Day.

Employee rquired to wear a body harness shall receive $1.50 per hour above the basic hourly rate at any elevation.

PAIN1176-001 01/01/2017

HIGHWAY IMPR0VEMENT

	Rates	Fringes
Parking Lot Striping/Highway Marking:		

GROUP 1.....$ 34.41 16.31
GROUP 2.....$ 29.25 16.31
GROUP 3.....$ 29.59 16.31

CLASSIFICATIONS

GROUP 1: Striper: Layout and application of painted traffic stripes and marking; hot thermo plastic; tape, traffic stripes and markings

GROUP 2: Gamecourt & Playground Installer

GROUP 3: Protective Coating, Pavement Sealing

PAIN1237-003 01/01/2018

CALAVERAS; SAN JOAQUIN COUNTIES; STANISLAUS AND TUOLUMNE COUNTIES:

	Rates	Fringes
SOFT FLOOR LAYER	$ 34.81	21.51

PLAS0066-002 07/01/2017

ALAMEDA, CONTRA COSTA, SAN MATEO AND SAN FRANCISCO COUNTIES:

	Rates	Fringes
PLASTERER	$ 40.51	27.13

PLAS0300-001 07/01/2018

	Rates	Fringes
PLASTERER		
AREA 188: Fresno	$ 32.70	31.68
AREA 224: San Benito, Santa Clara, Santa Cruz	$ 32.88	31.68
AREA 295: Calaveras & San Joaquin Couonties	$ 32.70	31.68
AREA 337: Monterey County	$ 32.88	31.68
AREA 429: Mariposa, Merced, Stanislaus, Tuolumne Counties	$ 32.70	31.68

PLAS0300-005 07/01/2017

	Rates	Fringes
CEMENT MASON/CONCRETE FINISHER	$ 33.49	23.67

PLUM0038-001 07/01/2017

SAN FRANCISCO COUNTY

	Rates	Fringes
PLUMBER (Plumber, Steamfitter, Refrigeration Fitter)	$ 70.00	43.24

PLUM0038-005 07/01/2017

SAN FRANCISCO COUNTY

	Rates	Fringes
Landscape/Irrigation Fitter (Underground/Utility Fitter)	$ 59.50	38.24

PLUM0062-001 07/01/2018

MONTEREY AND SANTA CRUZ COUNTIES

	Rates	Fringes
PLUMBER & STEAMFITTER	$ 42.30	32.94

PLUM0159-001 07/01/2018

CONTRA COSTA COUNTY

	Rates	Fringes
Plumber and steamfitter		
(1) Refrigeration	$ 59.42	35.94
(2) All other work	$ 55.92	34.44

PLUM0246-001 07/01/2018

FRESNO, KINGS & MADERA COUNTIES

	Rates	Fringes
PLUMBER & STEAMFITTER	$ 39.65	31.89

PLUM0246-004 01/01/2017

FRESNO, MERCED & SAN JOAQUIN COUNIES

	Rates	Fringes
PLUMBER (PIPE TRADESMAN)	$ 13.00	10.74

PIPE TRADESMAN SCOPE OF WORK:
Installation of corrugated metal piping for drainage, as well as installation of corrugated metal piping for culverts in connection with storm sewers and drains; Grouting, dry packing and diapering of joints, holes or chases including paving over joints, in piping; Temporary piping for dirt work for building site preparation; Operating jack hammers, pavement breakers, chipping guns, concrete saws and spades to cut holes, chases and channels for piping systems;

Digging, grading, backfilling and ground preparation for all types of pipe to all points of the jobsite; Ground preparation including ground leveling, layout and planting of shrubbery, trees and ground cover, including watering, mowing, edging, pruning and fertilizing, the breaking of concrete, digging, backfilling and tamping for the preparation and completion of all work in connection with lawn sprinkler and landscaping; Loading, unloading and distributing materials at jobsite; Putting away materials in storage bins in jobsite secure storage area; Demolition of piping and fixtures for remodeling and additions; Setting up and tearing down work benches, ladders and job shacks; Clean-up and sweeping of jobsite; Pipe wrapping and waterproofing where tar or similar material is applied for protection of buried piping; Flagman

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PLUM0342-001 07/01/2017

ALAMEDA & CONTRA COSTA COUNTIES

	Rates	Fringes
PIPEFITTER		
CONTRA COSTA COUNTY	$ 58.10	42.45
PLUMBER, PIPEFITTER, STEAMFITTER		
ALAMEDA COUNTY	$ 58.10	42.45

PLUM0355-004 07/01/2018

ALAMEDA, CALAVERAS, CONTRA COSTA, FRESNO, KINGS, MADERA, MARIPOSA, MERCED, MONTEREY, SAN BENITO, SAN JOAQUIN, SAN MATEO, SANTA CLARA, SANTA CRUZ, STANISLAUS, AND TUOLUMNE COUNTIES:

	Rates	Fringes
Underground Utility Worker /Landscape Fitter	$ 27.10	16.30

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* PLUM0393-001 07/01/2018

SAN BENITO AND SANTA CLARA COUNTIES

	Rates	Fringes
PLUMBER/PIPEFITTER	$ 62.66	41.93

PLUM0442-001 07/01/2018

CALAVERAS, MARIPOSA, MERCED, SAN JOAQUIN, STANISLAUS & TUOLUMNE COUNTIES

	Rates	Fringes
PLUMBER & STEAMFITTER	$ 41.50	30.14

PLUM0467-001 07/01/2017

SAN MATEO COUNTY

	Rates	Fringes
Plumber/Pipefitter/Steamfitter	$ 62.70	34.21

ROOF0027-002 01/01/2017

FRESNO, KINGS, AND MADERA COUNTIES

	Rates	Fringes
ROOFER	$ 26.01	14.21

FOOTNOTE: Work with pitch, pitch base of pitch impregnated products or any material containing coal tar pitch, on any building old or new, where both asphalt and pitchers are used in the application of a built-up roof or tear off: $2.00 per hour additional.

ROOF0040-002 08/01/2017

SAN FRANCISCO & SAN MATEO COUNTIES:

	Rates	Fringes
ROOFER	$ 37.88	18.22

ROOF0081-001 08/01/2017

ALAMEDA AND CONTRA COSTA COUNTIES:

	Rates	Fringes
Roofer	$ 38.20	16.81

ROOF0081-004 08/01/2017

CALAVERAS, MARIPOSA, MERCED, SAN JOAQUIN, STANISLAUS AND TUOLUMNE COUNTIES:

	Rates	Fringes
ROOFER	$ 38.20	16.81

ROOF0095-002 08/01/2017

MONTEREY, SAN BENITO, SANTA CLARA, AND SANTA CRUZ COUNTIES:

	Rates	Fringes
ROOFER		
Journeyman	$ 41.56	17.47

Kettle person (2 kettles);
Bitumastic, Enameler, Coal
Tar, Pitch and Mastic
worker.....$ 42.36 16.42

SFCA0483-001 01/01/2018

ALAMEDA, CONTRA COSTA, SAN FRANCISCO, SAN MATEO AND SANTA CLARA COUNTIES:

	Rates	Fringes
SPRINKLER FITTER (FIRE).....	$ 61.37	29.12

SFCA0669-011 04/01/2017

CALAVERAS, FRESNO, KINGS, MADERA, MARIPOSA, MERCED, MONTEREY, SAN BENITO, SAN JOAQUIN, SANTA CRUZ, STANISLAUS AND TUOLUMNE COUNTIES:

	Rates	Fringes
SPRINKLER FITTER.....	$ 37.20	15.84

SHEE0104-001 01/01/2018

AREA 1: ALAMEDA, CONTRA COSTA, SAN FRANCISCO, SAN MATEO, SANTA CLARA

AREA 2: MONTEREY & SAN BENITO

AREA 3: SANTA CRUZ

	Rates	Fringes
SHEET METAL WORKER		
AREA 1:		
Mechanical Contracts		
under $200,000.....	$ 50.29	37.16
All Other Work.....	$ 57.09	37.79
AREA 2.....	$ 46.97	32.08
AREA 3.....	$ 49.31	29.61

SHEE0104-003 07/01/2017

CALAVERAS AND SAN JOAQUIN COUNTIES:

	Rates	Fringes
SHEET METAL WORKER.....	$ 39.74	31.50

SHEE0104-005 07/01/2017

MARIPOSA, MERCED, STANISLAUS AND TUOLUMNE COUNTIES:

	Rates	Fringes
SHEET METAL WORKER (Excluding metal deck and siding)	$ 37.67	34.10

SHEE0104-007 07/01/2017

FRESNO, KINGS, AND MADERA COUNTIES:

	Rates	Fringes
SHEET METAL WORKER	$ 37.49	34.45

SHEE0104-015 07/01/2017

ALAMEDA, CONTRA COSTA, MONTEREY, SAN BENITO, SAN FRANCISCO, SAN MATEO, SANTA CLARA AND SANTA CRUZ COUNTIES:

	Rates	Fringes
SHEET METAL WORKER (Metal Decking and Siding only)	$ 37.53	32.10

SHEE0104-018 07/01/2017

CALAVERAS, FRESNO, KINGS, MADERA, MARIPOSA, MERCED, SAN JOAQUIN, STANISLAUS AND TUOLUMNE COUNTIES:

	Rates	Fringes
Sheet metal worker (Metal decking and siding only)	$ 37.53	32.10

TEAM0094-001 07/01/2017

	Rates	Fringes
Truck drivers:		
GROUP 1	$ 30.72	27.47
GROUP 2	$ 31.02	27.47
GROUP 3	$ 31.32	27.47
GROUP 4	$ 31.67	27.47
GROUP 5	$ 32.02	27.47

FOOTNOTES:
Articulated dump truck; Bulk cement spreader (with or without auger); Dumpcrete truck; Skid truck (debris box); Dry pre-batch concrete mix trucks; Dumpster or similar type; Slurry truck: Use dump truck yardage rate.
Heater planer; Asphalt burner; Scarifier burner; Industrial lift truck (mechanical tailgate); Utility and clean-up truck: Use appropriate rate for the power unit or the equipment utilized.

TRUCK DRIVER CLASSIFICATIONS

GROUP 1: Dump trucks, under 6 yds.; Single unit flat rack (2-axle unit); Nipper truck (when flat rack truck is used appropriate flat rack shall apply); Concrete pump truck (when flat rack truck is used appropriate flat rack shall apply); Concrete pump machine; Fork lift and lift jitneys; Fuel and/or grease truck driver or fuel person; Snow buggy; Steam cleaning; Bus or personhaul driver; Escort or pilot car driver; Pickup truck; Teamster oiler/greaser and/or serviceperson; Hook tender (including loading and unloading); Team driver; Tool room attendant (refineries)

GROUP 2: Dump trucks, 6 yds. and under 8 yds.; Transit mixers, through 10 yds.; Water trucks, under 7,000 gals.; Jetting trucks, under 7,000 gals.; Single-unit flat rack (3-axle unit); Highbed heavy duty transport; Scissor truck; Rubber-tired muck car (not self-loaded); Rubber-tired truck jumbo; Winch truck and "A" frame drivers; Combination winch truck with hoist; Road oil truck or bootperson; Buggymobile; Ross, Hyster and similar straddle carriers; Small rubber-tired tractor

GROUP 3: Dump trucks, 8 yds. and including 24 yds.; Transit mixers, over 10 yds.; Water trucks, 7,000 gals. and over; Jetting trucks, 7,000 gals. and over; Vacuum trucks under 7500 gals. Trucks towing tilt bed or flat bed pull trailers; Lowbed heavy duty transport; Heavy duty transport tiller person; Self- propelled street sweeper with self-contained refuse bin; Boom truck - hydro-lift or Swedish type extension or retracting crane; P.B. or similar type self-loading truck; Tire repairperson; Combination bootperson and road oiler; Dry distribution truck (A bootperson when employed on such equipment, shall receive the rate specified for the classification of road oil trucks or bootperson); Ammonia nitrate distributor, driver and mixer; Snow Go and/or plow

GROUP 4: Dump trucks, over 25 yds. and under 65 yds.; Water pulls - DW 10's, 20's, 21's and other similar equipment when pulling Aqua/pak or water tank trailers; Helicopter pilots (when transporting men and materials); Lowbedk Heavy Duty Transport up to including 7 axles; DW10's, 20's, 21's and other similar Cat type, Terra Cobra, LeTourneau Pulls, Tournorocker, Euclid and similar type equipment when pulling fuel and/or grease tank trailers or other miscellaneous trailers; Vacuum Trucks 7500 gals and over and truck repairman

GROUP 5: Dump trucks, 65 yds. and over; Holland hauler; Low bed Heavy Duty Transport over 7 axles

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WELDERS - Receive rate prescribed for craft performing operation to which welding is incidental.

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Note: Executive Order (EO) 13706, Establishing Paid Sick Leave for Federal Contractors applies to all contracts subject to the Davis-Bacon Act for which the contract is awarded (and any solicitation was issued) on or after January 1, 2017. If this contract is covered by the EO, the contractor must provide employees with 1 hour of paid sick leave for every 30 hours they work, up to 56 hours of paid sick leave each year. Employees must be permitted to use paid sick leave for their own illness, injury or other health-related needs, including preventive care; to assist a family member (or person who is like family to the employee) who is ill, injured, or has other health-related needs, including preventive care; or for reasons resulting from, or to assist a family member (or person who is like family to the employee) who is a victim of, domestic violence, sexual assault, or stalking. Additional information on contractor requirements and worker protections under the EO is available at www.dol.gov/whd/govcontracts.

Unlisted classifications needed for work not included within the scope of the classifications listed may be added after award only as provided in the labor standards contract clauses (29CFR 5.5 (a) (1) (ii)).

The body of each wage determination lists the classification and wage rates that have been found to be prevailing for the cited type(s) of construction in the area covered by the wage determination. The classifications are listed in alphabetical order of "identifiers" that indicate whether the particular rate is a union rate (current union negotiated rate for local), a survey rate (weighted average rate) or a union average rate (weighted union average rate).

Union Rate Identifiers

A four letter classification abbreviation identifier enclosed in dotted lines beginning with characters other than "SU" or "UAVG" denotes that the union classification and rate were prevailing for that classification in the survey. Example: PLUM0198-005 07/01/2014. PLUM is an abbreviation identifier of the union which prevailed in the survey for this classification, which in this example would be Plumbers. 0198 indicates the local union number or district council number where applicable, i.e., Plumbers Local 0198. The next number, 005 in the example, is an internal number used in processing the wage determination. 07/01/2014 is the effective date of the most current negotiated rate, which in this example is July 1, 2014.

Union prevailing wage rates are updated to reflect all rate changes in the collective bargaining agreement (CBA) governing this classification and rate.

Survey Rate Identifiers

Classifications listed under the "SU" identifier indicate that no one rate prevailed for this classification in the survey and the published rate is derived by computing a weighted average rate based on all the rates reported in the survey for that classification. As this weighted average rate includes all rates reported in the survey, it may include both union and non-union rates. Example: SULA2012-007 5/13/2014. SU indicates the rates are survey rates based on a weighted average calculation of rates and are not majority rates. LA indicates the State of Louisiana. 2012 is the year of survey on which these classifications and rates are based. The next number, 007 in the example, is an internal number used in producing the wage determination. 5/13/2014 indicates the survey completion date for the classifications and rates under that identifier.

Survey wage rates are not updated and remain in effect until a new survey is conducted.

Union Average Rate Identifiers

Classification(s) listed under the UAVG identifier indicate that no single majority rate prevailed for those classifications; however, 100% of the data reported for the classifications was union data. EXAMPLE: UAVG-OH-0010 08/29/2014. UAVG indicates that the rate is a weighted union average rate. OH indicates the state. The next number, 0010 in the example, is an internal number used in producing the wage determination. 08/29/2014 indicates the survey completion date for the classifications and rates under that identifier.

A UAVG rate will be updated once a year, usually in January of each year, to reflect a weighted average of the current negotiated/CBA rate of the union locals from which the rate is based.

WAGE DETERMINATION APPEALS PROCESS

1.) Has there been an initial decision in the matter? This can be:

* an existing published wage determination
* a survey underlying a wage determination
* a Wage and Hour Division letter setting forth a position on a wage determination matter
* a conformance (additional classification and rate) ruling

On survey related matters, initial contact, including requests for summaries of surveys, should be with the Wage and Hour Regional Office for the area in which the survey was conducted because those Regional Offices have responsibility for the Davis-Bacon survey program. If the response from this initial contact is not satisfactory, then the process described in 2.) and 3.) should be followed.

With regard to any other matter not yet ripe for the formal process described here, initial contact should be with the Branch of Construction Wage Determinations. Write to:

Branch of Construction Wage Determinations
Wage and Hour Division
U.S. Department of Labor
200 Constitution Avenue, N.W.
Washington, DC 20210

2.) If the answer to the question in 1.) is yes, then an interested party (those affected by the action) can request review and reconsideration from the Wage and Hour Administrator (See 29 CFR Part 1.8 and 29 CFR Part 7). Write to:

Wage and Hour Administrator
U.S. Department of Labor
200 Constitution Avenue, N.W.
Washington, DC 20210

The request should be accompanied by a full statement of the interested party's position and by any information (wage payment data, project description, area practice material, etc.) that the requestor considers relevant to the issue.

3.) If the decision of the Administrator is not favorable, an interested party may appeal directly to the Administrative Review Board (formerly the Wage Appeals Board). Write to:

Administrative Review Board
U.S. Department of Labor
200 Constitution Avenue, N.W.
Washington, DC 20210

4.) All decisions by the Administrative Review Board are final.

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END OF GENERAL DECISION

SECTION 01011

DESCRIPTION OF WORK

PART 1 GENERAL

1.1 WORK INCLUDED

A. The Work consists of furnishing all labor, materials, and equipment necessary to modify and improve the existing Water Works District 38 Wastewater Collection and Pump Station Facilities. The work shall include demolition, removal of existing facilities, construction of new facilities, and mechanical, structural and electrical items, and incidentals for complete and usable facilities.

B. The Sky Harbor Wastewater Facilities, in Water Works District 38, are located near the community of Friant, California.

C. The primary components are generally described as follows:

1. Furnish and install submersible jet aerator and submersible mixer in existing aeration basin, remove existing aerator. Clean aeration basin and clarifier, rehabilitate as needed.

2. Furnish and install new sludge chain and scraper collector consisting of, but not limited to, chain, flight, sprockets, stub shafts, and drive units;

3. Furnish and install two new effluent pumps, remove and salvage existing pumps.

4. Replace electrical equipment.

5. Miscellaneous items including all civil, structural, mechanical and electrical/instrumentation work and items necessary to complete the work.

6. Incidental items necessary to complete the work including mobilization, project closeout, temporary and bypassing facilities, quality control and similar construction activities; bonds, insurance, permits, licenses and fees required to complete the project.

7. The County will be responsible for initial dewatering and sludge removal from the aeration and settling tanks. Sludge will be removed within 1 foot of the bottom of the tanks. The Contractor is responsible for removal of the remaining sludge, including cleaning the concrete walls and floor to allow for visual inspection by the County prior to installation of equipment by the Contractor.

8. The Contractor shall coordinate the operation of the treatment plant with the County for the duration of construction. The Contractor will be responsible for installing and operating a temporary bypass of the concrete treatment plant structure and treatment system as described herein. After initial

dewatering and sludge removal is complete, the Contractor is responsible for operation of temporary bypass and treatment until all work is accepted by the County. After improvements have been accepted, the temporary bypass and treatment system will be removed by the Contractor and the County will resume operation of the plant.

PART 2 PRODUCTS

Not Used

PART 3 EXECUTION

3.1 WORK INVOLVED WITH EXISTING TREATMENT SYSTEM

A. The Contractor shall coordinate his operation with the County's wastewater treatment plant operator and be responsible for maintaining continuous operation of the WWTP during construction of the improvements. The Contractor shall request permission of the Owner or Owner's representative before implementation of the Contractor's planned procedures for each specific alteration of existing facilities and before the alteration begins. The Contractor shall not begin an alteration until specific permission has been granted by the County in each case. The County will coordinate the Contractor's planned procedure with the treatment facility operator. The making of connections to existing facilities or other operations that interfere with the operation of the existing system shall be coordinated with the County, completed as quickly as possible and with as little delay as possible.

B. Any operational functions of the existing system that are required to facilitate Contractor's operation will be done by the plant personnel only.

C. Plant operation and maintenance personnel will cooperate in every way practicable to expedite Contractor's operation; however, if it is necessary for the proper operation or maintenance of portions of the system, the Contractor shall reschedule his operations so there shall be no conflict with necessary operations or maintenance of the system.

D. Existing materials and equipment removed not designated to be salvaged for the County in the execution of the Work shall become the property of the Contractor, shall be removed from, and disposed of, off the site by the Contractor in an acceptable and lawful manner at no extra cost to the County.

E. Work involved with the existing system is indicated in the Contract Documents.

3.2 STAGING AND BYPASS REQUIREMENTS

A. The following is an illustration of three potential methods of staging the Contractor's operation during the construction of the improvements. The Contractor shall have the sole responsibility of developing a staging and bypass to be approved by the County.

The Contractor will truck the bypassed sewage and sludge to a sewer manhole upstream to Brighten Crest Wastewater Plant. There will be no charge to the Contract for discharging the sewage to one of the sewer manholes/lift station as designated by the County (Approximate location LAT 36° 58' 27" N, LONG 119° 40' 07" W). Depending on the time of the year that this project is being constructed some available manholes are within developed area, hence, odor control will be required when sewage is being disposed at these locations.

B. The Contractor shall replace the existing non-operating gate valve in the pipeline connecting influent lift station to onsite concrete sewer pond. The valve replacement is shown on Sheet No. C1-A of the Plans.

1. Option 1: Setup bypass pumping and temporary pond storage

   a. The Contractor can furnish temporary bypass pumps, or use the existing influent pumps, to divert the influent flow to the on-site concrete sewer pond for temporary storage by installing temporary bypass piping with necessary containment. The Contractor will not be allowed to use any existing plant pipes to convey water for the bypass.

      1) The plant peak hour flow rate ranges at about 70 gallons per minute (gpm) The Contractor's bypass must be capable of handling a minimum of 70 gpm. The average plant inflow is 4,000 to 5,000 gallon per day

   b. The concrete sewer pond may be used for temporary holding of sewage bypassing the plant. The Contractor will be responsible for hauling off sewage and disposing to prevent the pond from overflowing during construction. The pond must be completely emptied after construction is complete and the bypass is removed.

      1) The pond is 48 ft x 48 ft at the top of the berm. It's 8 ft deep with 1:1 side slope on all four sides. The total capacity is estimated to be 65,000 gallons with 2 ft of freeboard. The Contractor is responsible for verifying actual usable storage volume.

   c. If the concrete sewer pond is used as a temporary holding pond, the Contractor is responsible for installing an aerator in the pond for temporary aeration and odor control before the sewage is hauled offsite for disposal. The existing floating aerator may be relocated to the concrete sewer pond and used for this purpose. The aerator must be removed and/or disposed of after construction is complete.

   d. If additional construction time is needed, septic pump truck should be used to ensure enough storage volume is available for the incoming sewage.

2. Option 2: Setup bypass pumping without temporary treatment

a. The Contractor can setup the temporary bypass pump, as described above, to divert sewage flow directly to a covered sewer holding tank or tank truck parked onsite. No sewage would be stored in the concrete sewer pond under this option and no temporary treatment would be required. The Contractor will be responsible for hauling off sewage and disposing to prevent the tank from overflowing during construction.

3. Option 3: Treat the influent sewer in the on-site concrete sewer pond and discharge through existing or new effluent pumps

a. This option consists of diverting influent wastewater from the influent lift station to the onsite concrete sewer pond for treatment and disposal to the spray fields using the effluent pumps.

b. The Contractor can furnish temporary bypass pumps, or use the existing influent pumps, to divert the influent flow to the onsite concrete sewer pond by installing temporary bypass piping with necessary containment. The Contractor will not be allowed to use existing plant pipes to convey water for the bypass.

c. Contractor shall pump 10,000 gallons of activated sludge from the aeration tank to the onsite concrete sewer pond. Contractor is responsible for installing an aerator in the pond for temporary treatment. The existing floating aerator may be relocated to the concrete sewer pond and used for this purpose. The aerator shall be installed within 8 hours of finishing pumping the sludge into the onsite concrete sewer pond and used to keep the pond aerated for treatment. The aerator must be removed and/or disposed of after construction is complete.

d. The onsite concrete sewer pond has a capacity of about 65,000 gallons, which is equivalent to about 12 to 14 days of hydraulic detention time.

e. After the onsite concrete sewer pond reaches high water level (2 feet of free board), a temporary decanter furnished and installed by the Contractor will be set up to pump the supernatant to the effluent tank for disposal. The aeration shall be turned off by timer at 3 AM every day. The decanter can start between 7 and 9 AM after the pond is allowed to settle for 4 to 6 hours. The decant pump shall be rated about 30 to 50 GPM and decant 5000 gallons at a time (1.5 to 3 hours).

f. Effluent quality will be monitored by County operator for BOD and TSS limit.

C. Empty the Aeration Basin and Complete In-tank Work

1. The remaining sewage in the aeration basin will be allowed to settle. The County will pump the supernatant to the effluent tank and pumped to the

spray field for disposal. The aeration basin will be emptied to within 1 foot (or less) in depth. The Contractor is responsible for removing and hauling off the remaining wastewater and sludge in the tank.

2. The aeration basin shall then be pressure washed by the Contractor, inspected by both Contractor and the County inspector to determine the extent of repair needed. The cracks of the concrete wall shall be patched according to Section 01900 Explanation of Bid Items.

3. The in-tank demolishing and installation can be completed after any repairs are made.

D. Clarifier Work

1. The County will also dewater the clarifier. The supernatant in the clarifier will be decanted to effluent tank for disposal. The County will pump the supernatant to the effluent tank. The clarifier will be emptied to within 1 foot (or less) in depth. The Contractor is responsible for removing and hauling off the remaining wastewater and sludge in the tank.

2. The clarifier has a dimension of approximately 30 ft x 10 ft x 11 ft deep, total about 25,000 gallons plus the sludge hopper.

3. The clarifier basin can then be pressure washed, inspected and patched as necessary. The in-tank demolishing and installation can be completed.

E. Resume Treatment

1. Once the aeration basin and the clarifier equipment installation are completed, equipment tested and accepted by the Engineer, Contractor shall pump sewage from the temporary storage pond into the aeration tank. Contractor can pump it through a temporary bypass pump or using the influent pumps. The influent sewer can be resumed to fill the aeration basin.

2. While the aeration basin is holding and treating the influent sewer, the effluent tank shall be pumped down. The effluent tank can then be pressure washed, inspected and patched as necessary. washed. The Contractor is responsible for removing and hauling off the remaining wastewater and sludge in the tank.

3. The previously stored sewage in the onsite concrete sewer pond and effluent in the effluent tank can be pumped back into aeration basin for further treatment. Contractor shall clean the onsite concrete sewer pond once it is emptied.

F. Effluent Pumps

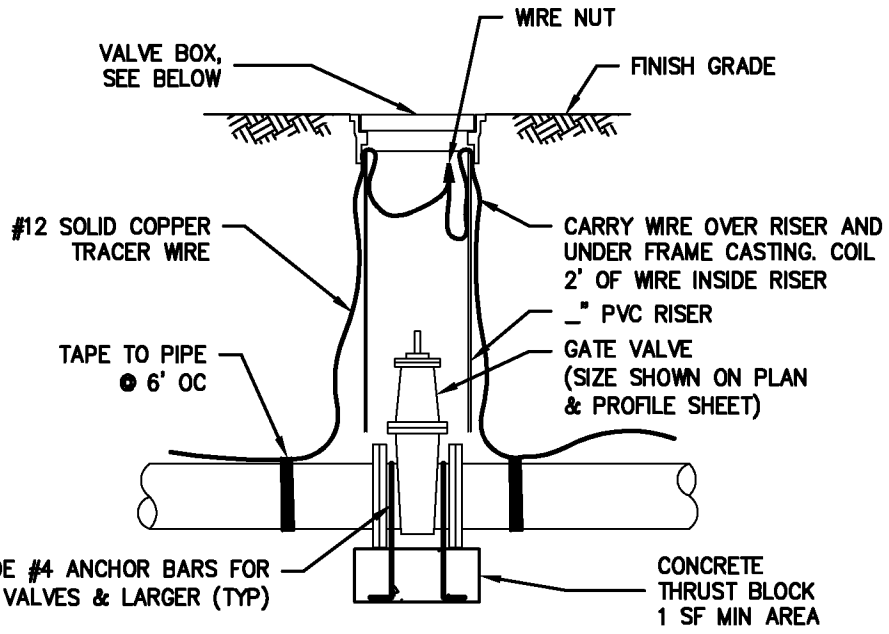
1. Effluent Pumps can be replaced either before or after the aeration basin and clarifier construction. It can be done without emptying the effluent tank.

G. Electrical

1. Most of the new electrical cabinets, conduits, conductors and junction boxes can be constructed prior to the bypass and mechanical construction without interrupting the normal operation.

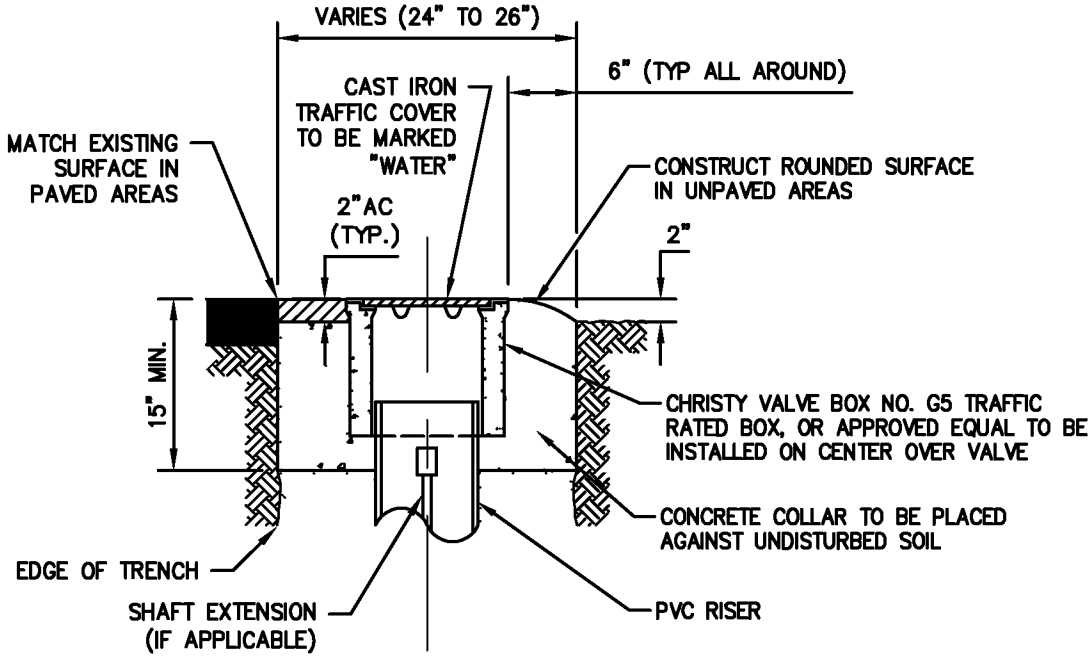
2. The switch-over to the new electrical system can be done during the aeration basin construction where new aerator and mixer will be powered after the transition. Contractor shall coordinate with PG&E regarding the switch-over to avoid delays. Temporary power provisions (either a temporary MCC or generator) shall be provided by the Contractor to maintain WWTP operation during the work.

END OF SECTION



NOTES

1. EXTENSION ROD REQUIRED WHEN DISTANCE FROM FINISHED GRADE IS GREATER THAN 36" CONSTRUCT CONCRETE COLLAR.
2. PROVIDE AT LEAST 6" OF OVERLAP BETWEEN RISER PIPES.
3. THRUST BLOCK ANCHORAGE REQUIRED FOR NON-FLANGED FITTINGS. ASSUME DEAD END CONDITION WITH #4 REBAR.
4. THRUST BLOCK SHALL EXTEND A MINIMUM OF 6" BEYOND THE EDGE OF THE VALVE BODY ON EACH SIDE.



NOTES

1. ADJUST VALVE BOX AND COVER TO FINISHED GRADE.
2. CONCRETE COLLAR SHALL BE CONSTRUCTED USING CLASS "A" CONCRETE.
3. APPLY PAINT BINDER TO EXPOSED SIDE OF VALVE BOX PRIOR TO PAVING.

NOT TO SCALE

EST. 1968
PROVOST& PRITCHARD
CONSULTING GROUP
An Employee Owned Company

WASTEWATER TREATMENT FACILITY DESIGN

COUNTY OF FRESNO

GATE VALVE AND BOX INSTALLATION

DESIGN ENGINEER: ZT
DATE: 07-24-2018
JOB NO: 139716006
SHEET 1 OF 1

7/24/2018 4:21 PM G:\Fresno_County of-1397\139716006-WWD38 WWTF Design_DOCS\Bidding\VALVE AND BOX.dwg -Liz Varner



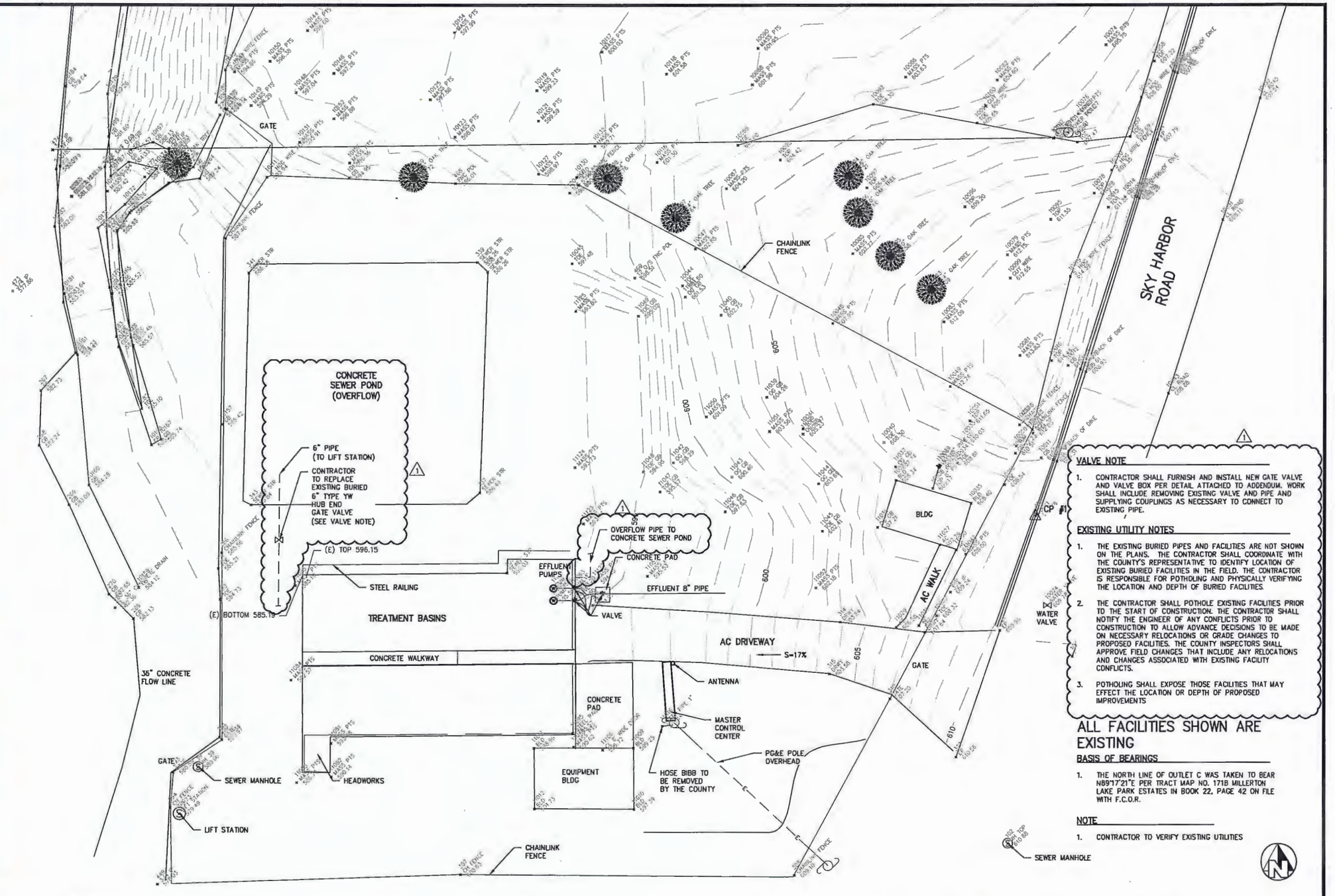
MASTER CONTROL CENTER & AC DRIVEWAY



AC DRIVEWAY & SEWER POND



INFLUENT PUMP STATION & HEADWORKS



VALVE NOTE

1. CONTRACTOR SHALL FURNISH AND INSTALL NEW GATE VALVE AND VALVE BOX PER DETAIL ATTACHED TO ADDENDUM. WORK SHALL INCLUDE REMOVING EXISTING VALVE AND PIPE AND SUPPLYING COUPLINGS AS NECESSARY TO CONNECT TO EXISTING PIPE.

EXISTING UTILITY NOTES

1. THE EXISTING BURIED PIPES AND FACILITIES ARE NOT SHOWN ON THE PLANS. THE CONTRACTOR SHALL COORDINATE WITH THE COUNTY'S REPRESENTATIVE TO IDENTIFY LOCATION OF EXISTING BURIED FACILITIES IN THE FIELD. THE CONTRACTOR IS RESPONSIBLE FOR POTHOLING AND PHYSICALLY VERIFYING THE LOCATION AND DEPTH OF BURIED FACILITIES.
2. THE CONTRACTOR SHALL POTHOLE EXISTING FACILITIES PRIOR TO THE START OF CONSTRUCTION. THE CONTRACTOR SHALL NOTIFY THE ENGINEER OF ANY CONFLICTS PRIOR TO CONSTRUCTION TO ALLOW ADVANCE DECISIONS TO BE MADE ON NECESSARY RELOCATIONS OR GRADE CHANGES TO PROPOSED FACILITIES. THE COUNTY INSPECTORS SHALL APPROVE FIELD CHANGES THAT INCLUDE ANY RELOCATIONS AND CHANGES ASSOCIATED WITH EXISTING FACILITY CONFLICTS.
3. POTHOLING SHALL EXPOSE THOSE FACILITIES THAT MAY EFFECT THE LOCATION OR DEPTH OF PROPOSED IMPROVEMENTS

ALL FACILITIES SHOWN ARE EXISTING

BASIS OF BEARINGS

1. THE NORTH LINE OF OUTLET C WAS TAKEN TO BEAR N89°17'21"E PER TRACT MAP NO. 1718 MILLERTON LAKE PARK ESTATES IN BOOK 22, PAGE 42 ON FILE WITH F.C.O.R.

NOTE

1. CONTRACTOR TO VERIFY EXISTING UTILITIES

	DATE	100% SUBMITTAL		SCALE
DESIGNED: ZT	11-10-17	ADDENDUM NO. 1	07-23-2018	SCALE IN FEET 0 5 10 20
DRAWN: PPI	11-10-17			
CHECKED: KKS	11-10-17			

FOR RIGHT OF WAY DATA AND ACCURATE ACCESS DETERMINATION, SEE DOCUMENTS IN THE DEPARTMENT OF PUBLIC WORKS AND PLANNING.

7/26/18
ENGINEER OF RECORD DATE

PROJECT
WASTEWATER TREATMENT FACILITY DESIGN
FRESNO COUNTY
ROAD NO. N/A BRIDGE NO. N/A

THE COUNTY OF FRESNO

DEPARTMENT OF PUBLIC WORKS AND PLANNING
OVERALL SITE PLAN
CIVIL
DRAWING NO. 11267 SHEET NO. C1-A TOTAL 13

T A B L E O F C O N T E N T S

COVER SHEET

BOARD ADOPTION AND ACKNOWLEDGMENT

Engineer's Signature
Consultant’s Signature

NOTICE TO BIDDERS

SPECIAL PROVISIONS

FEDERAL REQUIREMENTS

Implementation of American Iron and Steel Provisions, USEPA
Davis-Bacon Requirements
Federal Wage Decision

PROJECT DETAILS / DRAWINGS

Project Drawings/Details
Project Signage
Summary of Charges for Permits
Self-Dealing Transactions Disclosure Form
Contractor Request for Clarification
Revised Standard Specifications

BID BOOK

Bidder’s Declaration
Bid Form
Abbreviations Used
Signature Page
Noncollusion Affidavit
Public Contract Code
Subcontractor List
Certifications
DBE Form
Guaranty
Guidelines for Meeting the California State Revolving Fund Programs Disadvantaged Business Enterprise Requirements

AGREEMENT

PLANS

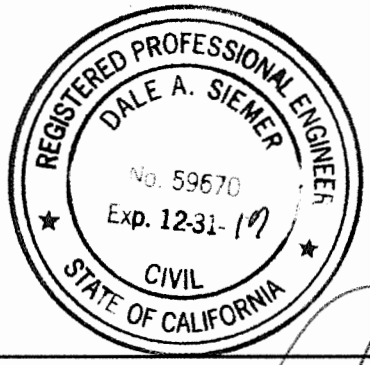
PROJECT: WWD 38 - WASTEWATER TREATMENT FACILITY IMPROVEMENTS

CONTRACT NUMBER: 18-08-C

Sal Quintero, Chairman	3rd District
Andreas Borgeas, Vice Chairman	2nd District
Brian Pacheco	1st District
Ernest Buddy Mendes	4th District
Nathan Magsig	5th District

Jean Rousseau, County Administrative Officer

Steven E. White, Director
Department of Public Works and Planning



Date Signed: 6/12/18

Supervising Engineer: _____

Dale Siemer, PE C59670
Lic. Expiration: 12/31/19

FRESNO COUNTY
Department of Public Works and Planning
m/a 2220 Tulare Street, Suite 720
Fresno, CA 93721-2106

PROJECT: WWD 38 - WASTEWATER TREATMENT FACILITY IMPROVEMENTS

CONTRACT NUMBER: 18-08-C



Date Signed: 6/11/18

DATE SIGNED_____

Consultant Engineer: _____

ZHENG TENG, PE C68783
Lic. Expiration: 09/30/19

PROVOST & PRITCHARD CONSULTING GROUP
286 WEST CROMWELL AVENUE
FRESNO, CA 93711-6162

BOARD OF SUPERVISORS COUNTY OF FRESNO STATE OF CALIFORNIA

N O T I C E T O B I D D E R S

Sealed proposals will be received at the Fresno County Department of Public Works and Planning (Department), Office of the Design Engineer, Seventh Floor, Fresno County Plaza Building, 2220 Tulare Street, Fresno, CA 93721 until

2:00 P.M., (1400 hours and 00 seconds)
Thursday, August 2, 2018

at which time the bidding will be closed. Promptly following the closing of the bidding all timely submitted bids will be publicly opened and read at the Department in said building, for construction in accordance with the project specifications therefor, to which special reference is made as follows:

WATERWORKS DISTRICT 38
Wastewater Treatment Facility Improvements

Clean Water State Revolving Fund
Project No. C-06-7109-110

CONTRACT NUMBER: 18-08-C

The work to be done consists, in general, of removal and replacement of wastewater plant treatment machinery, including but not limited to the aerator, the submersible mixer, chain and scraper sludge collector unit, and effluent pumps and necessary appurtenances. In addition, the project includes rehabilitation to the treatment basins if needed, and removal and replacement of the existing electrical motor control center and miscellaneous electrical components.

Funding for this project has been provided in full or in part by the United States Environmental Protection Agency (USEPA) and the State Water Resources Control Board (SWRCB). The contents of this document do not necessarily reflect the views and policies of the USEPA or the SWRCB, nor does the USEPA or the SWRCB endorse trade names or recommend the use of commercial products mentioned in this document.

Bidders are advised that their Good Faith Effort implementation, as described pursuant to the *Guidelines for Meeting the California State Revolving Fund (CASRF) Programs Disadvantaged Business Enterprise (DBE) Requirements* (Proposal 17 of the Bid Book), will be evaluated to determine bidder responsiveness, regardless of whether fair share objectives have been met. Meeting or exceeding the objectives will not be considered evidence of adequate Good Faith Efforts. Emphasis is placed on the need for contractors to post solicitations for bids or proposals for a minimum of 30 calendar days before the bid opening date. Failure to comply with the Good Faith Efforts requirements will be considered non-responsive.

The County of Fresno affirms that in any contract entered into pursuant to this advertisement, disadvantaged business enterprises will be afforded full opportunity to submit bids in response to this invitation.

A pre-bid conference will be held at 2 p.m., on June 28, 2018. A discussion of the project will be held and the project sites will be open for examination. Contractors should meet at the WWD 38

Site, 28763 Sky Harbour Road, Friant, CA 93626. The treatment facility is located toward the north end of Sky Harbour Road. Attendance at the pre-bid is not mandatory; however, the scheduled pre-bid will be the only opportunity for prospective bidders to visit the site in the presence of County staff, and requests for individual site visits with County staff will not be granted. The Department has made available, for inspection of prospective bidders, the record drawings (as-builts) of the wastewater treatment facility.

THIS PROJECT IS SUBJECT TO THE "AMERICAN IRON AND STEEL" PROVISIONS CONTAINED IN SECTION 608 OF THE CLEAN WATER ACT. UNLESS A PREDOMINANTLY IRON OR STEEL PRODUCT QUALIFIES FOR AN EXEMPTION, AS LISTED BY THE UNITED STATES ENVIRONMENTAL PROTECTION AGENCY, ALL MANUFACTURED IRON AND STEEL PRODUCTS MUST BE CERTIFIED AS PRODUCED WITHIN THE UNITED STATES.

Planholder and exchange/publication names may be obtained from the Fresno County website at **http://www.co.fresno.ca.us/planholders**.

Electronic copies, in ".pdf" file format, of the official project plans and specifications, and such additional supplemental project information as may be provided, are available to view, download, and print at **http://www.co.fresno.ca.us/planholders**.

Bid books, which contain bid proposal sheets necessary to submit a bid, may be obtained at no charge by sending a request to DesignServices@co.fresno.ca.us. Upon receipt of the request, a bid book will be mailed to the requestor via First Class United States Mail and the requestor will then be listed as a planholder for the project.

Project plans and specifications will not be sold to prospective bidders in hardcopy format except upon special written request to DesignServices@co.fresno.ca.us. A payment to the Department in the amount of $30 will be required for each set of plans and $30 for each set of specifications.

A Summary of Bids and a list of subcontractors for the apparent low bidder will be posted at the above listed website, generally within 24 hours of the Bid Opening.

All questions regarding this project shall be in writing and shall be received by the Department of Public Works and Planning, Design Division, no later than 2:00 P.M. on the seventh (7th) calendar day before bid opening. Any questions received after this deadline will not receive a response unless the Department of Public Works and Planning elects to issue an addendum to revise the bid opening date. In the event that the bid opening date is revised, the deadline for questions will be extended to no later than 2:00 P.M. on the seventh (7th) calendar day before the revised bid opening date. Questions shall be submitted on the "CONTRACTOR REQUEST FOR CLARIFICATION" form provided in the "Project Details" section of these project specifications. Fax questions to (559) 455-4609; e-mail to DesignServices@co.fresno.ca.us or mail to:

County of Fresno
Department of Public Works and Planning
2220 Tulare Street, Sixth Floor
Fresno, Ca. 93721-2104

Any changes to, or clarification of, the project plans and specifications shall be in the form of a written addendum issued to planholders of record. Questions that prompt a change or clarification shall be included in the addendum with the subsequent answer.

Any oral explanation or interpretations given to this project are not binding.

Bids shall be submitted in a sealed envelope addressed to the Department and labeled with the name of the bidder, the name of the project and the statement 'Do Not Open Until The Time Of Bid Opening.'

Bid security in the amount of ten (10) percent of the amount of the bid, and in the form of a bid bond issued by an admitted surety insurer licensed by the California Department of Insurance, cash, cashier's check or certified check shall accompany the bid. Bid security shall be made in favor of the County of Fresno.

No contract will be awarded to a contractor who has not been licensed in accordance with the provisions of the Contractors State License Law, California Business and Professions Code, Division 3, Chapter 9, as amended, or whose bid is not on the proposal form included in the contract document. A valid California Contractor's License, **Class A (General Engineering)**, is required for this project.

Pursuant to Section 1773 of the Labor Code, the general prevailing wage rates in the county, or counties, in which the work is to be done have been determined by the Director of the California Department of Industrial Relations. These wages are set forth in the General Prevailing Wage Rates for this project, available at County of Fresno, Department of Public Works and Planning, 2220 Tulare Street, Sixth Floor, Fresno CA 93721-2104 and available from the California Department of Industrial Relations' Internet web site at http://www.dir.ca.gov/DLSR/PWD. Future effective general prevailing wage rates, which have been predetermined and are on file with the California Department of Industrial Relations are referenced but not printed in the general prevailing wage rates.

This project is subject to compliance monitoring and enforcement by the Department of Industrial Relations.

No contractor or subcontractor may be listed on a bid proposal for a public works project unless registered with the Department of Industrial Relations pursuant to Labor Code section 1725.5 [with limited exceptions from this requirement for bid purposes only under Labor Code section 1771.1(a)].

No contractor or subcontractor may be awarded a contract for public work on a public works project unless registered with the Department of Industrial Relations pursuant to Labor Code section 1725.5.

This contract is subject to state contract nondiscrimination and compliance requirements pursuant to Government Code, Section 12990.

The Federal minimum wage rates for this project as predetermined by the United States Secretary of Labor are set forth in **General Decision Number CA180029, Dated 6/1/2018**, which is incorporated in these special provisions by this reference as if fully set forth herein and which can be viewed at http://www.wdol.gov/wdol/scafiles/davisbacon/CA29.dvb. Said Federal wage rates, as well as project plans, special provisions, and bid forms, may also be examined at the County of Fresno office described in the preceding paragraph. Addenda to modify the reference to Federal minimum wage rates to reflect revisions thereto, if necessary, will be issued to planholders of record.

Attention is directed to the provisions in the "Federal Requirements" section of these specifications. If there is a difference between the minimum wage rates predetermined by the Secretary of Labor and the general prevailing wage rates determined by the Director of the California Department of Industrial Relations for similar classifications of labor, the Contractor and subcontractors shall pay not less than the higher wage rate. The Department will not accept lower State wage rates not specifically included in the Federal minimum wage determinations. This includes "helper" (or other classifications based on hours of experience) or any other classification not appearing in the Federal wage determinations. Where Federal wage determinations do not contain the State wage rate determination otherwise available for use by the Contractor and subcontractors, the Contractor and subcontractors shall pay not less than the Federal minimum wage rate, which most closely approximates the duties of the employees in question.
The USEPA provides a toll-free "hotline" service to report bid rigging activities. Bid rigging activities can be reported Mondays through Fridays, between 8:00 a.m. and 5:00 p.m., Eastern Time,

Telephone No. 1-888-645-8740. Anyone with knowledge of possible bid rigging, bidder collusion, or other fraudulent activities should use the “hotline” to report these activities. The “hotline” is part of the USEPA’s continuing effort to identify and investigate fraud and abuse and is operated under the direction of the USEPA’s Office of Inspector General. All information will be treated confidentially and caller anonymity will be respected.

Bids are required for the entire work described herein. Bids will be compared on the basis of the total of bid items.

The successful bidder shall furnish a faithful performance bond in the amount of 100 percent of the contract amount and a payment bond in the amount of 100 percent of the contract amount. Each bond specified in this Notice (bid bond, faithful performance bond and payment bond) shall meet the requirements of all applicable statutes, including but not limited to those specified in Public Contract Code section 20129 and Civil Code section 3248.

Each bond specified in this Notice shall be issued by a surety company designated as an admitted surety insurer in good standing with and authorized to transact business in this state by the California Department of Insurance, and acceptable to the County of Fresno. Bidders are cautioned that representations made by surety companies will be verified with the California Department of Insurance. Additionally, the County of Fresno, in its discretion, when determining the sufficiency of a proposed surety company, may require the surety company to provide additional information supported by documentation. The County generally requires such information and documentation whenever the proposed surety company has either a Best’s Key Rating Guide of less than **A** and a financial size designation of less than **VIII**. Provided, however, that the County expressly reserves its right to require all information and documentation to which the County is legally entitled from any proposed surety company.

Pursuant to Public Contract Code Section 22300, substitution of securities for any moneys withheld by the County of Fresno to ensure performance under the contract shall be permitted.

The Board of Supervisors reserves the right to reject any or all bids.

Board of Supervisors, County of Fresno

Jean Rousseau, County Administrative Officer

Issue Date: June 12, 2018

DIVISION 1

Board of Supervisors County of Fresno State of California

S P E C I A L P R O V I S I O N S

WATERWORKS DISTRICT 38
WASTEWATER TREATMENT FACILITY IMPROVEMENTS

CLEAN WATER STATE REVOLVING FUND PROJECT NUMBER C-06-7109-110

CONTRACT NO. 18-08-C

SECTION 1 – SPECIFICATIONS AND PLANS

The work embraced herein shall be done in accordance with the Standard Specifications dated May 2006 and with the Standard Plans dated May 2006, of the State of California, Department of Transportation insofar as the same may apply and in accordance with the following special provisions.

Amendments to the Standard Specifications shall not apply except to the extent, if any, set forth as “Amendments to the State of California, Department of Transportation May 2006 Standard Specifications” in the “Project Details” Section of these special provisions or as otherwise set forth elsewhere in these special provisions.

Amendments to the Standard Specifications set forth in these special provisions shall be considered as part of the Standard Specifications for the purposes set forth in Section 5-1.04, "Coordination and Interpretation of Plans, Standard Specifications and Special Provisions," of the Standard Specifications. Whenever either the term "Standard Specifications is amended" or the term "Standard Specifications are amended" is used in the special provisions, the indented text or table following the term shall be considered an amendment to the Standard Specifications.

In case of conflict between the Standard Specifications and these special provisions, the special provisions shall take precedence over and be used in lieu of such conflicting portions.

For the purpose of this contract, the following terms or pronouns in place of them, used throughout the Standard Specifications and defined in Section l, General,” of the Standard Specifications, shall be as follows:

TERM	INTERPRETATION
(A) State	County of Fresno
(B) Department	The Fresno County Board of Supervisors
(C) Director	Chairman of the Board of the Fresno County Board of Supervisors
(D) Engineer	Director of the Department of Public Works and Planning of Fresno County, acting either directly or through properly authorized agents, such agents acting

	within the scope of the particular duties entrusted to them
(E) Department of Transportation	Fresno County Department of Public Works and Planning
(F) Contractor	The person or persons, co-partnership or corporation, private or municipal, who have entered into a contract with Fresno County as party or parties of the second part, or his or her legal representatives.
(G) Owner	County of Fresno
(H) County	County of Fresno

SECTION 2 – PROPOSAL REQUIREMENTS AND CONDITIONS

02-1.01 GENERAL - The bidder's attention is directed to the provisions in Section 2, "Proposal Requirements and Conditions," of the Standard Specifications and these special provisions for the requirements and conditions which the bidder must observe in the preparation of and the submission of the bid.

The bidder's bond shall be properly filled out and executed.

In conformance with Public Contract Code Section 7106, a Noncollusion Affidavit is included in the Proposal forms.

The contractor, sub recipient or subcontractor shall not discriminate on the basis of race, color, national origin, or sex in the performance of this contract. The contractor shall carry out applicable requirements of Title 40 CFR (Code of Federal Regulations) part 33 in the award and administration of USEPA assisted contracts. Failure by the contractor to carry out these requirements is a material breach of this contract, which may result in the termination of this contract or such other remedy, as the recipient deems appropriate. Each subcontract signed by the bidder must include this assurance.

Failure of the bidder to fulfill the requirements of the Special Provisions for submittals required to be furnished after bid opening, including but not limited to escrowed bid documents, where applicable, may subject the bidder to a determination of the bidder's responsibility in the event it is the apparent low bidder on a future public works contracts

02-1.015 FEDERAL LOBBYING RESTRICTIONS - Section 1352, Title 31, United States Code prohibits Federal funds from being expended by the recipient or any lower tier sub recipient of a Federal-aid contract to pay for any person for influencing or attempting to influence a Federal agency or Congress in connection with the awarding of any Federal-aid contract, the making of any Federal grant or loan, or the entering into of any cooperative agreement.

If any funds other than Federal funds have been paid for the same purposes in connection with this Federal-aid contract, the recipient shall submit an executed certification and, if required, submit a completed disclosure form as part of the bid documents.

A certification for Federal-aid contracts regarding payment of funds to lobby Congress or a Federal agency is included in the proposal forms. Standard Form - LLL, "Disclosure of Lobbying Activities," with instructions for completion of the Standard Form is also included in the Proposal forms. Signing the Proposal forms shall constitute signature of the Certification.

The above referenced certification and disclosure of lobbying activities shall be included in each subcontract and any lower-tier contracts exceeding $100,000. All disclosure forms, shall be forwarded from tier to tier until received by the Engineer.

The Contractor, subcontractors and any lower-tier contractors shall file a disclosure form at the end of each calendar quarter in which there occurs any event that requires disclosure or that materially affects the accuracy of the information contained in any disclosure form previously filed by the Contractor, subcontractors and any lower-tier contractors. An event that materially affects the accuracy of the information reported includes:

(1) A cumulative increase if $25,000 or more in the amount paid or expected to be paid for influencing or attempting to influence a covered Federal action; or

(2) A change in the person(s) or individual(s) influencing or attempting to influence a covered Federal action; or

(3) A change in the officer(s), employees(s), or Member(s) contacted to influence or attempt to influence a covered Federal Action.

02-1.02 DISADVANTAGED BUSINESS ENTERPRISE (DBE) - This project is subject to 40 CFR 33.301:

The contractor shall not discriminate on the basis of race, color, national origin or sex in the performance of this contract. The contractor shall carry out applicable requirements of 40 CFR part 33 in the award and administration of contracts awarded under EPA financial assistance agreements. Failure by the contractor to carry out these requirements is a material breach of this contract which may result in the termination of this contract or other legally available remedies.

Any references to DBEs under these special provisions shall be interpreted as those certified DBEs acceptable under the United States Environmental Protection Agency's (EPA) regulations concerning financial assistance programs. More specifically, Title 40 CFR 33 governs the acceptability of DBEs to be counted towards the fair-share objectives. For a DBE to receive credit, they must be certified by an organization acceptable to SWRCB and their status must be ascertainable. To that end, the agency certifying a DBE shall be clearly stated.

Take necessary and reasonable steps to ensure that DBEs have opportunity to participate in the contract.

Meet the DBE goal shown in the Notice to Bidders or demonstrate that you made adequate good faith efforts to meet this goal. Continue to make adequate good faith efforts if a subcontractor must be replaced while under contract.

It is your responsibility to verify that the DBE firm is certified as DBE at date of bid opening. For listings of certified DBEs, go to:

California Unified Certification Program:
http://www.dot.ca.gov/hq/bep/find_certified.htm

U.S. Small Business Administration:
http://dsbs.sba.gov/dsbs/search/dsp_dsbs.cfm

Credit for materials or supplies you purchase from DBEs counts towards the goal in the following manner:

1. 100 percent counts if the materials or supplies are obtained from a DBE manufacturer.

2. 60 percent counts if the materials or supplies are obtained from a DBE regular dealer.

3. Only fees, commissions, and charges for assistance in the procurement and delivery of materials or supplies count if obtained from a DBE that is neither a manufacturer or regular dealer. 49 CFR 26.55 defines "manufacturer" and "regular dealer."

You receive credit towards the goal if you employ a DBE trucking company that performs a commercially useful function as defined in 49 CFR 26.55.

DBE Commitment Submittal

Submit subcontractor information on the Subcontractor List and the “DBE Sub-Contractor Performance Form” (SWRCB Form 4500-3). Please list information for all sub-contractors, and not only DBEs. **If you do not submit these forms with your bid, the County must find your bid nonresponsive.**

In addition to the above, the selected Contractor must ensure that each of their Sub-Contractors is provided a copy of the “DBE Subcontractor Participation Form” (SWRCB Form 4500-2). Submission of a bid represents an explicit acceptance and agreeance to this term.

Form UR-334, included in the proposal forms, is to be completed and submitted to the County on an annual basis and upon completion of work, and will summarize payments made to each DBE subcontractor during the specified time-period. The form must be submitted on October 1 of each year during construction, and on the date the notice of completion is issued.

Good Faith Efforts Submittal

Complete and submit the “DBE Information - Good Faith Efforts,” Proposal 14 form showing that you made adequate good faith efforts to meet the goal. Good faith efforts will be evaluated and considered, regardless of whether a firm has met the fair share objectives. Only good faith efforts directed towards obtaining participation by DBEs will be considered. **Submission of the “DBE Information - Good Faith Efforts,” Proposal 14 form and documentation no later than 4:00 PM on the fourth business day after the bid opening is required to protect your eligibility for award of the contract. Good Faith Efforts documentation must demonstrate adequate good faith effort implementation prior to the bid opening.**

Good faith efforts documentation must include the following information and supporting documents, as necessary:

1. Items of work you have made available to DBE firms. Identify those items of work you might otherwise perform with its own forces and those items that have been broken down into economically feasible units to facilitate DBE participation. For each item listed, show the dollar value and percentage of the total contract. It is your responsibility to demonstrate that sufficient work to meet the goal was made available to DBE firms.

2. Names of certified DBEs and dates on which they were solicited to bid on the project. Include the items of work offered. Describe the methods used for following up initial solicitations to determine with certainty if the DBEs were interested, and the dates of the follow-up. Attach supporting documents such as copies of letters, memos, facsimiles sent, telephone logs, telephone billing statements, and other evidence of solicitation. You are reminded to solicit certified DBEs through all reasonable and available means and provide sufficient time to allow DBEs to respond.

3. Name of selected firm and its status as a DBE for each item of work made available. Include name, address, and telephone number of each DBE that provided a quote and their price quote. If the firm selected for the item is not a DBE, provide the reasons for the selection.

4. Name and date of each publication in which you requested DBE participation for the project. Attach copies of the published advertisements.

5. Names of agencies and dates on which they were contacted to provide assistance in contacting, recruiting, and using DBE firms. If the agencies were contacted in writing, provide copies of supporting documents.

6. List of efforts made to provide interested DBEs with adequate information about the plans, specifications, and requirements of the contract to assist them in responding to a solicitation. If you have provided information, identify the name of the DBE assisted, the nature of the information provided, and date of contact. Provide copies of supporting documents, as appropriate.

7. List of efforts made to assist interested DBEs in obtaining bonding, lines of credit, insurance, necessary equipment, supplies, and materials, excluding supplies and equipment that the DBE subcontractor purchases or leases from the prime contractor or its affiliate. If such assistance is provided by you, identify the name of the DBE assisted, nature of the assistance offered, and date. Provide copies of supporting documents, as appropriate.

8. Any additional data to support demonstration of good faith efforts.

Executive Order No. 11246

All contracts and subcontracts related to the Project shall contain the enumerated provisions of this subsection:

During the performance of this contract, the contractor agrees as follows:

(1) The contractor will not discriminate against any employee or applicant for employment because of race, creed, color, or national origin. The contractor will take affirmative action to ensure that applicants are employed, and that employees are treated during employment, without regard to their race, creed, color, or national origin. Such action shall include, but not be limited to

the following: employment, upgrading, demotion, or transfer; recruitment or recruitment advertising; layoff or termination; rates of pay or other forms of compensation; and selection for training, including apprenticeship. The contractor agrees to post in conspicuous places, available to employees and applicants for employment, notices to be provided by the contracting officer setting forth the provisions of this nondiscrimination clause.

(2) The contractor will, in all solicitations or advertisements for employees placed by or on behalf of the contractor, state that all qualified applicants will receive considerations for employment without regard to race, creed, color, or national origin.

(3) The contractor will send to each labor union or representative of workers with which he has a collective bargaining agreement or other contract or understanding, a notice, to be provided by the agency contracting officer, advising the labor union or workers' representative of the contractor's commitments under Section 202 of Executive Order No. 11246 of September 24, 1965, and shall post copies of the notice in conspicuous places available to employees and applicants for employment.

(4) The contractor will comply with all provisions of Executive Order No. 11246 of September 24, 1965, and of the rules, regulations, and relevant orders of the Secretary of Labor.

(5) The contractor will furnish all information and reports required by Executive Order No. 11246 of September 24, 1965, and by the rules, regulations, and orders of the Secretary of Labor, or pursuant thereto, and will permit access to his books, records, and accounts by the contracting agency and the Secretary of Labor for purposes of investigations to ascertain compliance with such rules, regulations, and orders.

(6) In the event of the contractor's noncompliance with the nondiscrimination clauses of this contract or with any of such rules, regulations, or orders, this contract may be cancelled, terminated or suspended in whole or part and the contractor may be declared ineligible for further Government contracts in accordance with procedures authorized in Executive Order No. 11246 of September 24, 1965, and such other sanctions may be imposed and remedies invoked as provided in Executive Order 11246 of September 24, 1985, or by rule, regulation, or order of the Secretary of Labor, or as otherwise provided by law.

(7) The contractor will include the provisions of Paragraphs (1) through (7) in every subcontract or purchase order unless exempted by rules, regulations, or orders of the Secretary of Labor issued pursuant to Section 204 of Executive Order 11246 of September 24, 1965, so that such provisions will be binding upon each subcontractor or vendor. The contractor will take such action with respect to any subcontract or purchase order as the contracting agency may direct as a means of enforcing such provisions including sanctions for noncompliance: Provided, however, that in the event the contractor becomes involved in, or is threatened with, litigation with a subcontractor or vendor as a result of such direction by the contracting agency, the contractor may request the United States to enter into such litigation to protect the interests of the United States.

02-1.03 BID INELIGIBILITY - A firm that has provided architectural or engineering services to the County of Fresno for this contract before bid submittal for this contract is prohibited from any of the following:

1. Submit a bid
2. Subcontract for a part of the work
3. Supply materials

02-1.04 WITHDRAWAL OF PROPOSALS - Requests to withdraw proposals shall be in accordance with the provisions in Section 2-1.15, "Bid Withdrawal" of the Standard Specifications and these special provisions. The written request to withdraw the proposal, executed by the bidder or the bidder's duly authorized representative, shall include the name of the individual authorized to receive the withdrawn proposal, and said individual shall be required to present photo identification prior to withdrawing the proposal.

02-1.05 DISCLOSURE OF SELF-DEALING TRANSACTIONS - This provision is only applicable if the contractor is operating as a corporation (a for-profit or non-profit corporation) or if the contractor changes its status to operate as a corporation during the term of this agreement.

Members of the contractor's Board of Directors shall disclose any self-dealing transactions that they are a party to while contractor is providing goods or performing services under this agreement. A self-dealing transaction shall mean a transaction to which the contractor is a party and in which one or more of its directors has a material financial interest. Members of the Board of Directors shall disclose any self-dealing transactions that they are a party to by completing and signing a Self-Dealing Transaction Disclosure Form which is included in the "Project Details" Section of these special provisions.

In the event that the Contractor (to whom the project is awarded) is operating as a corporation or incorporates during the course of the construction contract, and any member of its board of directors is engaged or intends to become engaged in self-dealing transaction(s), each member of its board of directors who is engaged or intends to become engaged in a self-dealing transaction or transactions must complete and submit to the County a completed Self-Dealing Transaction Disclosure Form (in Project Details) for each such transaction prior to engaging therein or immediately thereafter.

02-1.06 NON-MANDATORY PRE-BID MEETING – A non-mandatory pre-bid meeting is scheduled, pursuant to the instructions in the Notice to Bidders. This will be the only opportunity for interested contractors and subcontractors to view the site, prior to bidding. A discussion of the project will be held and the project site will be open for examination. This meeting will inform bidders of project requirements and subcontractors of subcontracting and material supply opportunities. Attendance will not be mandatory.

SECTION 3 – AWARD AND EXECUTION OF CONTRACT

03-1.01 GENERAL

Prospective bidders are advised that a primary source of financing for this Agreement for construction of the Project is the "State Financing" under the Clean Water State Revolving Fund, as more fully described in the "Installment Sale Agreement" (Agreement No. D17-01039) between the County of Fresno and the California State Water Resources Control Board, and that the Owner may not have funds to finance this Agreement independently of the State Financing.

The award of contract, if it be awarded, will be to the lowest responsible bidder whose proposal complies with all the requirements prescribed. The award, if made, will be as follows within ninety (90) calendar days after the opening of proposals, unless that time is extended pursuant to Section 03-3.01, below:

03-2.01 CONDITIONAL AWARD

The Owner will first make a "conditional award of contract" to the lowest responsible bidder whose proposal complies with all the requirements prescribed. Such Owner's "conditional award of contract" is subject to, and conditioned upon, approval of such lowest responsible bidder's proposal by the California State Water Resources Control Board ("SWRCB"), as evidenced by notice thereof by the SWRCB to the Owner. The Owner has no authority or control over, and the Owner does not assume any responsibility herein for, the SWRCB's decision-making; the Owner may rely solely upon the SWRCB's notice thereof to the Owner as proof of such SWRCB approval, if it is given. Such Owner's "conditional award of contract" is not by itself the award of the contract.

03-2.02 AWARD APPROVAL

If the SWRCB provides the Owner with the SWRCB's notice of approval of such lowest responsible bidder's proposal, (a) the Owner's receipt thereof satisfies the condition of the Owner's "conditional award of contract" to the lowest responsible bidder whose proposal complies with all the requirements prescribed, and (b) the Director will provide written notice to the Chairman of the Board of Supervisor of the Owner and such lowest responsible bidder, mailed to the address shown on his or her proposal, substantially to the following effect:

(a) the Owner received the SWRCB's notice that the SWRCB approved such lowest responsible bidder's proposal;

(b) the Owner's receipt of notice of such approval by the SWRCB satisfies the condition of the Owner's "conditional award of contract" to the lowest responsible bidder whose proposal complies with all the requirements prescribed; and

(c) that such written notice is given pursuant to this section.

03-2.03 AWARD NOTIFICATION

The award of contract, if it is to be is made, will be made as follows: the Director will notify the successful bidder by letter, mailed to the address shown on his or her proposal, that (a) his or her bid has been accepted and that he or she has been awarded the contract, and (b) before the Owner executes the written contract, the successful bidder must first comply with Section 03-5.01, below. The Owner shall

not be required to enter into the written contract with the successful bidder unless and until the successful bidder shall have complied with Section 03-5.01, below.

The right is reserved by the Owner to reject any or all proposals, to waive technicalities, to advertise for new proposals, or to proceed to do this work otherwise, if in the judgment of the Owner the best interests of the Owner will be promoted thereby.

03-3.01 EXTENSION OF TIME

If the Owner finds that it will be unable to award the contract within ninety (90) calendar days after the opening of proposals, the Director may request any or all bidders to extend all terms of their proposal(s) to a specified date. More than one such extension may be requested, and in all such instances, the provisions of this section shall likewise apply. If a bidder who receives a request for an extension does not elect to extend the terms of his or her proposal beyond the ninety (90) calendar days (or such further extended date) following opening of proposals, or does not respond within seven (7) calendar days to a request for an extension, that bidder's proposal will be deemed as having expired, and that bidder's proposal will not be considered for award of the contract.

03-4.01 CANCELLATION OF CONDITIONAL AWARD OR AWARD

The Owner reserves the right to cancel the conditional award of any contract or the award of any contract at any time before the execution of said contract by all parties without any liability against the Owner.

03-5.01 CONTRACT BONDS AND DELIVERY OF DOCUMENTS

The bidder to whom award is made shall, within ten (10) calendar days after receiving the award notification, execute and deliver to the Owner a written contract, upon terms and conditions required herein, with the Owner. The bidder shall forfeit the proposal guarantee in the event he or she does not follow through with the execution and delivery of the written contract to the Owner within ten (10) calendar days after the contract is awarded.

The successful bidder shall furnish a faithful performance bond in the amount of 100% of the contract amount and a payment bond in the amount of 100% of the contract amount; each of said bonds shall comply with all applicable legal requirements, and shall be submitted in triplicate.

The payment bond shall include provisions such that if the Contractor or his or her subcontractors shall fail to pay either (a) amounts due under the Unemployment Insurance Code with respect to work performed under the contract, or (b) any amounts required to be deducted, withheld and paid over to the Employment Development Department and to the Franchise Tax Board from the wages of the employees of the Contractor and subcontractors pursuant to Section 13020 of the Unemployment Insurance Code with respect to such work and labor, then the surety

will pay these amounts. In case suit is brought upon the payment bond, the surety will pay a reasonable attorney's fee to be fixed by the court.

The payment bond and the faithful performance bond shall name the State of California as an additional beneficiary under the bonds.

Liability and Workers Compensation Insurance requirements shall be as set forth in the written agreement. Execution of the written contract by bidders will not be required until after the award approval, and the requirements for such execution by the successful bidder are provided hereinabove.

After the successful bidder shall have complied with this Section, the Director and Chairman of the Board of Supervisors of the Owner will execute the written contract on behalf of the Owner, and deliver the executed written contract to the successful bidder.

SECTION 4 – BEGINNING OF WORK, TIME OF COMPLETION, LIQUIDATED DAMAGES

Attention is directed to the Provisions in Section 8-1.03 "Beginning of Work," to Section 8-1.06 "Time of Completion," and to Section 8-1.07 "Liquidated Damages," of the Standard Specifications and these special provisions.

The Contractor shall schedule the work, including submittal of required equipment and materials information, in the manner specified in Section 10-1.01, "Order of Work", in these special provisions.

In lieu of the requirements that the Contractor shall begin work within fifteen (15) days after approval of the contract, as provided in Section 8-1.03, of the Standard Specifications, the Contractor shall begin work as specified in these special provisions.

First Order of Work (Submittals) – Time is of the essence in completing this project. The Contractor shall be prepared to begin the First Order of Work immediately upon approval of the contract. The Engineer will issue the “Notice to Proceed – Submittals” within five (5) working days after approval of the contract.

The Contractor shall perform the First Order of Work as described in Section 10-1.01, "Order of Work" in these special provisions and these special provisions and shall diligently prosecute the same to completion before the expiration of

THIRTY (30) WORKING DAYS

from the date shown in said Notice to Proceed – Submittals.

The Contractor shall pay to the County of Fresno the sum of

TWO THOUSAND DOLLARS ($2,000.00)

per day for each and every calendar day's delay in finishing the **First Order of Work** in excess of the number of working days prescribed above.

The first order of work is complete when you:

- have received approval for all submittals required for the project.
- have furnished a statement from the vendors that the orders for required equipment and materials has been received and accepted by said vendor
- have furnished a statement from vendors which indicates that the anticipated delivery date for the equipment and materials ordered is in conformance with contract requirements.
- The Engineer issues a statement that the first order of work is complete.

The County of Fresno is aware that there is a long lead time for the effluent pump. The Contractor will coordinate his operations with the delivery dates of all the equipment on this project.

Second Order of Work (Construction) – The Contractor shall be prepared to begin the Second Order of work as described in Section 10-1.01, “Order of Work” in these special provisions.

The Contractor shall not perform any work at the project site until the Engineer issues the Notice to Proceed and the Engineer has provided written authorization to commence with construction work at the site.

Within three (3) working days of receiving written notice from the Contractor that all materials and equipment required to complete the project have been delivered, the County will issue the “Notice To Proceed – Construction.” Physical work at the site shall not begin before the date shown on the “Notice To Proceed – Construction.”

The Contractor will coordinate his on-site operations with the delivery date of the effluent pump and all other equipment. Nothing herein absolves the Contractor from accruing liquidated damages as a result of delaying the project construction due to the delivery time of the effluent pump, or any other piece of equipment for this project.

In the event the Contractor has not notified the Engineer that the equipment has been received after twelve (12) weeks from the order-date, the Engineer will issue the Notice to Proceed – Construction and working days shall commence to be counted against the allotted working days for the Second Order of Work. The Notice to Proceed – Construction shall not be construed as authorization to begin work on the site, and no such work shall commence until all materials and equipment required to complete the project have been delivered and the Notice to Proceed – Construction has been issued.

Special attention is required to special provisions Section 05-1.16 “Permits and Licenses” as to required building permits are necessary to perform the work.

The Contractor shall begin the **Second Order of Work** as described in Section 10-1.01, “Order of Work” in these special provisions, on the first working day as stated in the “Notice to Proceed – Construction,” and shall diligently prosecute the same to completion before the expiration of

FORTY (40) WORKING DAYS

from the date the Contractor receives Notice to Proceed - Construction from the Engineer.

Complete all work, including corrective work and punch list work, prior to the expiration of the allotted working days. Working days continue to accrue until corrective work and punch list work is completed and accepted.

The Contractor shall pay to the County of Fresno the sum of

THREE THOUSAND ($3,000.00)

per day for each and every calendar day delay in finishing the work in excess of the number of working days prescribed above.

The Contractor shall not be assessed liquidated damages for delay in completion of the project, when such delay was caused by the failure of the County of Fresno or the Owner of the utility to provide for removal or relocation of the existing utility facilities.

SECTION 5 – GENERAL PROVISIONS

SECTION 5-1 MISCELLANEOUS

05-1.01 LABOR NONDISCRIMINATION - Attention is directed to the following Notice that is required by Chapter 5 of Division 4 of Title 2, California Code of Regulations.

NOTICE OF REQUIREMENT FOR NONDISCRIMINATION PROGRAM (GOV. CODE, SECTION 12990)

Your attention is called to the "Nondiscrimination Clause", set forth in Section 7-1.01A(4), "Labor Nondiscrimination," of the Standard Specifications, which is applicable to all nonexempt state contracts and subcontracts, and to the "Standard California Nondiscrimination Construction Contract Specifications" set forth therein. The Specifications are applicable to all nonexempt construction contracts and subcontracts of $5,000 or more.

05-1.02 PREVAILING WAGE - Attention is directed to Section 7-1.01A(2), "Prevailing Wage," of the Standard Specifications.

The general prevailing wage rates determined by the Director of Industrial Relations, for the county or counties in which the work is to be done, are available at the County of Fresno, Department of Public Works and Planning, 2220 Tulare Street, Sixth Floor, Fresno CA 93721-2104 or on the State of California Department of Industrial Relations Website at:

http://www.dir.ca.gov/dirdatabases.html

These wage rates are not included in the special provisions for the project. Changes, if any, to the general prevailing wage rates will be available at the same location. Attention is also directed to the specific Federal Wage General Decision incorporated in these special provisions by reference in the "Notice to Bidders," and to the Davis Bacon Requirements which have been incorporated in the Federal Requirements section of these Special Provisions. The Contractor shall pay wages

and fringe benefits no less than the higher of the State and Federal wage decisions, for each classification.

05-1.03 AMERICAN IRON AND STEEL - Attention is directed to the "American Iron and Steel" requirements of P.L. 113-76 (better known as the Continuing Appropriations Act of 2014), and the regulations adopted pursuant thereto. In conformance with the law and regulations, all manufacturing processes for steel and iron materials furnished for incorporation into the work on this project shall occur in the United States. American Iron and Steel compliance certifications and/or waivers must be provided to the Engineer with the applicable material or equipment submittal, as specified elsewhere in these provisions, for any covered materials. A list of materials covered by this provision, as well as any active state or nationwide waivers, may be obtained from the United States Environmental Protection Agency.

The Contractor acknowledges to and for the benefit of the County, the State of California, and the United States, that it understands the goods and services under this Agreement are being funded with monies made available from the CWSRF that have statutory requirements commonly known as “American Iron and Steel;” that requires all of the iron and steel products used in the project to be produced in the United States (“American Iron and Steel Requirement”) including iron and steel products provided by the Contractor for this contract. The Contractor represents and warrants to and for the benefit of the County, the State of California, and the United States, that:

(a) the Contractor has reviewed and understands the American Iron and Steel Requirement; and

(b) all of the iron and steel products used in the project will be and/or have been produced in the United States in a manner that complies with the American Iron and Steel Requirement, unless a waiver of the requirement is approved; and

(c) the Contractor will provide any further verified information, certification or assurance of compliance with this section, or information necessary to support compliance or a waiver of the American Iron and Steel Requirement, as may be requested by the County, the State of California, or the United States.

Notwithstanding any other provision of this Agreement, any failure to comply with this paragraph by the Contractor shall permit the County, the State of California, or the United States, to recover damages against the Contractor any loss, expense, or cost (including without limitation attorney’s fees) incurred by the County, the State of California, or the United States, resulting from such a failure (including without limitation any impairment or loss of funding, whether in whole or in part, from the State of California or any damages owed to the State of California by the County). While the Contractor has no direct contractual privity with the State of California, as a lender to the County for the funding of its project, the County and the Contractor agree that the State of California is a third-party beneficiary and neither this paragraph (nor any other provision of this contract necessary to give this paragraph force or effect) shall be amended or waived without the prior written consent of the State of California.

Certifications must be provided for all applicable materials under the American Iron and Steel provisions, which are not covered under an applicable waiver from the United States Environmental Protection Agency.

05-1.04 APPRENTICES – Attention is directed to the provisions in Section 7-1.01A(5), “Apprentices,” of the Standard Specifications.

Information relative to apprenticeship standards, wage schedules, and other requirements may be obtained from the Director of Industrial Relations, Ex Officio The Administrator of Apprenticeship, San Francisco, CA, or from the Division of Apprenticeship Standards, 2550 Mariposa St., Fresno, CA 93721, (559) 445-5431.

05-1.05 PUBLIC SAFETY - The Contractor shall provide for the safety of traffic and the public in conformance with the provisions in Section 7-1.09, "Public Safety," of the Standard Specifications and these special provisions.

The Contractor shall install temporary railing (Type K) between a lane open to public traffic and an excavation, obstacle or storage area when the following conditions exist:

A. Excavations — The near edge of the excavation is 12 feet or less from the edge of the lane, except:

    1. Excavations covered with sheet steel or concrete covers of adequate thickness to prevent accidental entry by traffic or the public.

    2. Excavations less than 1 foot deep.

    3. Trenches less than 1 foot wide for irrigation pipe or electrical conduit, or excavations less than 0.3-m in diameter.

    4. Excavations parallel to the lane for the purpose of pavement widening or reconstruction.

    5. Excavations in side slopes, where the slope is steeper than 1:4 (vertical: horizontal).

    6. Excavations protected by existing barrier or railing.

B. Temporarily Unprotected Permanent Obstacles — The work includes the installation of a fixed obstacle together with a protective system, such as a sign structure together with protective railing, and the Contractor elects to install the obstacle prior to installing the protective system; or the Contractor, for the Contractor's convenience and with permission of the Engineer, removes a portion of an existing protective railing at an obstacle and does not replace such railing complete in place during the same day.

C. Storage Areas — Material or equipment is stored within 12 feet of the lane and the storage is not otherwise prohibited by the provisions of the Standard Specifications and these special provisions.

The approach end of temporary railing (Type K), installed in conformance with the provisions in this section "Public Safety" and in Section 7-1.09, "Public Safety," of the Standard Specifications, shall be offset a minimum of 15 feet from the edge of the traffic lane open to public traffic. The temporary railing shall be installed on a skew toward the edge of the traffic lane of not more than 1 foot transversely to 10 feet longitudinally with respect to the edge of the traffic lane. If the 15 feet minimum offset cannot be achieved, the temporary railing shall be installed on the 10 to 1 skew to obtain the maximum available offset between the approach end of the railing

and the edge of the traffic lane, and an array of temporary crash cushion modules shall be installed at the approach end of the temporary railing.

Except for installing, maintaining and removing traffic control devices, whenever work is performed or equipment is operated in the following work areas, the Contractor shall close the adjacent traffic lane unless otherwise provided in the Standard Specifications and these special provisions:

Approach Speed of Public Traffic (Posted Limit) (Miles Per Hour)	Work Areas
Over 45 Miles Per Hour	Within 6 feet of a traffic lane but not on a traffic lane
35 to 45 Miles Per Hour	Within 3 feet of a traffic lane but not on a traffic lane

The lane closure provisions of this section shall not apply if the work area is protected by permanent or temporary railing or barrier.

When traffic cones or delineators are used to delineate a temporary edge of a traffic lane, the line of cones or delineators shall be considered to be the edge of the traffic lane, however, the Contractor shall not reduce the width of an existing lane to less than 10 feet without written approval from the Engineer.

When work is not in progress on a trench or other excavation that required closure of an adjacent lane, the traffic cones or portable delineators used for the lane closure shall be placed off of and adjacent to the edge of the traveled way. The spacing of the cones or delineators shall be not more than the spacing used for the lane closure.

Suspended loads or equipment shall not be moved nor positioned over public traffic or pedestrians.

Full compensation for conforming to the provisions in this section "Public Safety," including furnishing and installing temporary railing (Type K) and temporary crash cushion modules, shall be considered as included in the lump sum contract price paid for Traffic Control System and no additional compensation will be allowed therefor.

05-1.06 REMOVAL OF ASBESTOS AND HAZARDOUS SUBSTANCES - When the presence of asbestos or hazardous substances are not shown on the plans or indicated in the specifications and the Contractor encounters materials which the Contractor reasonably believes to be asbestos or a hazardous substance as defined in Section 25914.1 of the Health and Safety Code, and the asbestos or hazardous substance has not been rendered harmless, the Contractor may continue work in unaffected areas reasonably believed to be safe. The Contractor shall immediately cease work in the affected area and report the condition to the Engineer in writing.

In conformance with Section 25914.2 of the Health and Safety Code, removal of asbestos or hazardous substances including exploratory work to identify and determine the extent of the asbestos or hazardous substance will be performed by separate contract.

If delay of work in the area delays the current controlling operation, the delay will be considered a right of way delay and the Contractor will be compensated for the delay in conformance with the provisions in Section 8-1.09, "Right of Way Delays," of the Standard Specifications.

05-1.07 SUBCONTRACTOR AND DBE RECORDS - The Contractor shall maintain records showing the name and business address of each first-tier subcontractor. The records shall also show the name and business address of every DBE subcontractor, DBE vendor of materials and DBE trucking company, regardless of tier. The records shall show the date of payment and the total dollar figure paid to all firms. DBE prime contractors shall also show the date of work performed by their own forces along with the corresponding dollar value of the work.

Prior to the fifteenth of each month, the Contractor shall submit documentation to the Engineer showing the amount of payments made to all DBE firms involved in the performance of this contract. The Contractor shall also obtain and submit documentation to the Engineer showing the amount paid by DBE trucking companies to all firms, including owner-operators, for the leasing of trucks. If the DBE leases trucks from a non-DBE, the Contactor may count only the fee or commission the DBE receives as a result of the lease arrangement.

DBE records must be kept for a period no shorter than three (3) years after project completion, and may be audited by the County, the state agency administering the Clean Water State Revolving Fund, or the Environmental Protection Agency at any time, after being given appropriate notice.

05-1.08 DBE CERTIFICATION STATUS - If a DBE subcontractor is decertified during the life of the project, the decertified subcontractor shall notify the Contractor in writing with the date of decertification. If a subcontractor becomes a certified DBE during the life of the project, the subcontractor shall notify the Contractor in writing with the date of certification. The Contractor shall furnish the written documentation to the Engineer.

Before beginning work, the Contractor must ensure that each DBE subcontractor is provided “DBE Sub-Contractor Participation Form,” SWRCB Form 4500-2, provided in Proposal 17 in the Bid Book. A DBE subcontractor may also, using their own discretion, submit this form directly to County and to the United States Environmental Protection Agency (Region 9) DBE Coordinator at any time to document discrepancies between work and amounts received and the amount claimed under the contract proposal.

05-1.09 PERFORMANCE OF SUBCONTRACTORS - The subcontractors listed by you in the proposal forms shall list therein the name, contractor’s license number and address of each subcontractor to whom the bidder proposes to subcontract portions of the work in an amount in excess of one-half of one percent of the total bid or $10,000, whichever is greater, in accordance with the Subletting and Subcontracting Fair Practices Act, commencing with Section 4100 of the Public Contract Code. The bidder’s attention is invited to other provisions of the Act related to the imposition of penalties for a failure to observe its provisions by using unauthorized subcontractors or by making unauthorized substitutions.

DBEs must perform work or supply materials as listed in the forms specified under Section 2-1.02 “Disadvantaged Business Enterprise (DBE),” of these special provisions. Do not terminate a DBE listed subcontractor for convenience and

perform the work with your own forces or obtain materials from other sources without prior written authorization from the Engineer.

The Engineer will grant authorization to use other forces or sources of materials for requests that show any of the following justifications:

1. Listed DBE fails or refuses to execute a written contract based on plans and specifications for the project.

2. You stipulate a bond is a condition of executing the subcontract and the listed DBE fails to meet your bond requirements.

3. Work requires a contractor's license for which the listed DBE does not have a valid license under Contractors License Law.

4. Listed DBE fails or refuses to perform the work or furnish the listed materials.

5. Listed DBE's work is unsatisfactory and not in compliance with the contract.

6. Listed DBE delays or disrupts the progress of the work.

7. Listed DBE becomes bankrupt or insolvent.

If a listed DBE or other subcontractor is terminated, you must make and document good faith efforts to find another DBE subcontractor to substitute for the original. The substitute DBE must perform at least the same amount of work as the original DBE under the contract to the extent needed to meet the DBE goal.

The substitute DBE must be certified as a DBE at the time of request for substitution.

The Agency does not pay for work or material unless it is performed or supplied by the listed DBE, unless the DBE is terminated in accordance with this section.

05-1.10 SUBCONTRACTING - No subcontract releases the Contractor from the contract or relieves the Contractor of their responsibility for a subcontractor's work.

If the Contractor violates Public Contract Code (PCC) § 4100 et seq., the County of Fresno may exercise the remedies provided under PCC § 4110. The County of Fresno may refer the violation to the Contractors State License Board as provided under PCC § 4111.

The Contractor shall perform work equaling at least 30 percent of the value of the original total bid with the Contractor's own employees and equipment, owned or rented, with or without operators.

Each subcontract must comply with the contract.

Each subcontractor must have an active and valid State contractor's license with a classification appropriate for the work to be performed (Bus & Prof Code, § 7000 et seq.).

Submit copies of subcontracts upon request by the Engineer.

Before subcontracted work starts, submit a Subcontracting Request form.

Do not use a debarred contractor; a current list of debarred contractors is available at the Department of Industrial Relations' Web site.

Upon request by the Engineer, immediately remove and not again use a subcontractor who fails to prosecute the work satisfactorily.

05-1.11 PROMPT PROGRESS PAYMENT TO SUBCONTRACTORS - A prime contractor or subcontractor shall pay any subcontractor not later than 10 days of receipt of each progress payment in accordance with the provision in Section 7108.5 of the California Business and Professions Code concerning prompt payment to subcontractors. The 10 days is applicable unless a longer period is agreed to in writing. Any delay or postponement of payment over 30 days may take place only for good cause and with the agency's prior written approval. Any violation of Section 7108.5 shall subject the violating contractor or subcontractor to the penalties, sanction and other remedies of that section. This requirement shall not be construed to limit or impair any contractual, administrative, or judicial remedies otherwise available to the contractor or subcontractor in the event of a dispute involving late payment or nonpayment by the prime contractor, deficient subcontract performance, or noncompliance by a subcontractor.

05-1.12 PROMPT PAYMENT OF FUNDS WITHHELD TO SUBCONTRACTORS - The agency shall hold retainage from the prime contractor and shall make prompt and regular incremental acceptances of portions, as determined by the agency, of the contract work, and pay retainage to the prime contractor based on these acceptances. The prime contractor, or subcontractor, shall return all monies withheld in retention from a subcontractor within 30 days after receiving payment for work satisfactorily completed and accepted including incremental acceptances of portions of the contract work by the agency. Federal law (49CFR26.29) requires that any delay or postponement of payment over 30 days may take place only for good cause and with the agency's prior written approval. Any violation of this provision shall subject the violating prime contractor or subcontractor to the penalties, sanctions and other remedies specified in Section 7108.5 of the Business and Professions Code. These requirements shall not be construed to limit or impair any contractual, administrative, or judicial remedies otherwise available to the prime contractor or subcontractor in the event of a dispute involving late payment or nonpayment by the prime contractor, deficient subcontract performance, or noncompliance by a subcontractor.

05-1.13 WORK DAY - All work shall be performed during the regular work week (Monday through Friday) and between the time of sunrise and sunset each day, defined as "daytime" for the purpose of this special provision. The time of sunrise and sunset will be as determined by the National Oceanic and Atmospheric Administration's National Weather Service (www.noaa.nws.gov) for the project location. The contractor shall plan his work such that all construction operations performed each day, including cleanup of the project site, establishment of appropriate traffic control and any other work necessary for the safety of the public shall be completed within the daytime hours.

No work shall be performed after the sunset of one day or before the sunrise of the following day, defined as "nighttime" for the purpose of this special provision, without the approval of the Engineer a minimum of 48 hours in advance. All requests by the contractor to work at nighttime shall be in writing and shall include the appropriate traffic control plan(s) and work plan(s) which clearly identify all provisions for illuminating all portions of the work site, including any flagging operations.

In the event that the contractor fails to complete his work during the daytime hours, the Engineer shall have the authority to stop all work upon the onset of nighttime and order the contractor to perform any and all work as the Engineer deems necessary for the safety of the public during the nighttime hours. The contractor shall not be entitled to any additional compensation or extension of the contract time as a result of the Engineer stopping the work due to the onset of nighttime.

05-1.14 LAWS TO BE OBSERVED - In addition to the provisions of Section 7-1.01, “Laws to be Observed,” of the Standard Specifications, the Contractor shall observe and comply with the provisions of the Charter of the County of Fresno.

A retention in the amount of $1,000 will be withheld from the Contractor’s monthly progress payment for each and every required document not submitted in a timely manner by the Contractor or its subcontractors (up to a maximum of $10,000). For purposes of this Paragraph, the term “required document” includes, but is not limited to, certified payrolls, labor compliance documents, Disadvantaged Business Enterprise documents, and any other information or documents required to be submitted by the Contractor or any of its subcontractors under the terms of this Agreement or pursuant to applicable federal, state or local laws or regulations. The retention provided for in this Paragraph shall be in addition to any other deduction or retention allowed under this Agreement, and shall be in addition to any other remedy or consequence provided by law for untimely submission of any required document. Such retention shall remain in effect only until such time as the required documents have been submitted by the Contractor or its subcontractor(s) and have been determined by the County to be both complete and acceptable as to form.

05-1.15 PLANS AND SPECIFICATIONS - The awarded Contractor may receive a maximum of ten (10) sets of plans and specifications at no charge. The 10 plan sets shall include not less than five full-sized plan sets and not less than five reduced size plan sets. Should the Contractor require additional copies, the Contractor may make such additional copies, at the Contractor’s expense, using the sets of Plans and Specifications provided the Contractor. Alternatively, the Contractor may request and purchase from the County additional documents for the price named in the notice to Notice to Bidders. Prepayment therefor and a 2–working day notice shall be required if the contractor requests that additional sets be printed.

05-1.16 PERMITS AND LICENSES - Attention is directed to Section 7-1.04, "Permits, Licenses, Agreements, and Certifications," of the Standard Specifications and these special provisions.

The Contractor shall obtain Fresno County building and electrical permits and schedule associated inspections for the work performed. Permits can be obtained from the County of Fresno Development Services Division, at the southwest corner of Tulare and M Streets, Suite A, Fresno California.

Mailing address is: County of Fresno
Development Services Division
2220 Tulare Street
Fresno, CA 93721

Appointment with Development Services is required. Coordination between the Contractor and Engineer will be necessary to properly schedule the appointment.

The Contractor will have to provide information/ documentation in order to obtain Building permit. A summary of charges for the permits is included herewith in the Project Details.

The necessary information/documents are but not limited to:

A) Contractor information and license

Full compensation for performing all work involved in procuring permits and conforming to conditions set forth in said permits shall be considered as included in the various contract items of work and no separate payment will be made therefor.

05-1.17 FIRE PLAN - The Contractor shall cooperate with local fire prevention authorities in eliminating hazardous fire conditions and shall implement the following fire plan under the direction of the Engineer:

A. The Contractor shall be responsible for:

   1. obtaining the phone number of the nearest fire suppression agency and providing this phone number to the Engineer as a first order of work,

   2. immediately reporting to the nearest fire suppression agency fires occurring within the limits of the project,

   3. preventing project personnel from setting open fires not part of the work, unless the Fire Index is at "Low," or the determination of the Fire Index is suspended or, if in an area not covered by the Fire Index rating system, the Engineer determines that the fire hazard is negligible,

   4. preventing the escape of fires caused directly or indirectly as a result of project operations and extinguishing these fires.

B. Except for motor trucks, truck tractors, buses and passenger vehicles, the Contractor shall equip all hydro-carbon fueled engines, both stationary and mobile, including motorcycles, with spark arresters that meet United States Forest Service Standards as specified in the Forest Service Spark Arrester Guide and shall maintain the spark arresters in good operating condition. Spark arresters are not required by the State Department of Forestry or the United States Forest Service on equipment powered by properly maintained exhaust-driven turbo-charged engines or when equipped with scrubbers with properly maintained water levels. The Forest Service Spark Arrester Guide is available at the District Offices of the Department of Transportation.

C. Toilets shall have a metal receptacle, at least 6 inches in diameter by 8 inches deep, half-filled with sand for ashes and discarded smokes, and within easy reach of anyone utilizing the facility.

D. Equipment service areas, parking areas and gas and oil storage areas shall be located so that there is no flammable material within a radius of at least 50 feet of these areas. Small mobile or stationary engine sites shall be cleared of flammable material for a radius of at least 15 feet from the engine.

E. The areas to be cleared and grubbed shall be cleared, and kept clear of, flammable material such as dry grass, weeds, brush, downed trees, oily rags and waste, paper, cartons, and plastic waste.

F. The Contractor shall furnish each piece of equipment with the following:

1. one shovel and one fully charged fire extinguisher UL rated at 4 B:C or more on each truck, personnel vehicle tractor, grader or other heavy equipment,

2. one shovel and one back-pack 5-gallon water-filled tank with pump for each welder,

3. one shovel or one chemical pressurized fire extinguisher, fully charged, for each gasoline-powered tool, including but not limited to chain saws, soil augers, rock drills, etc. The required fire tools shall, at no time, be farther than 25 feet from the point of operation of the power tool. Fire extinguishers shall be of the type and size required by the California Public Resource Code, Section 4431, and the California Administrative Code, Title 14, Section 1234,

4. shovels shall be size "O" or larger and shall be not less than 46 inches in length.

G. The Contractor shall furnish a pickup truck and driver that will be available for fire control during working hours and as specified herein.

H. The Contractor's operations shall also conform to the following:

1. during welding operations, the fire control pickup and associated fire tools shall be located as close as practicable to the welding operation, and shall remain there until welding is discontinued,

2. during welding operations, a spotter, other than the welder, shall be assigned to observe welding to ensure that any stray sparks are extinguished immediately.

If the project is shut down or partially shut down on account of hazardous fire conditions, working days during such period will be determined in the same manner as provided in Section 8-1.06, "Time of Completion," of the Standard Specifications for shutdowns due to weather.

Full compensation for conforming to the provisions herein shall be considered as included in the prices paid for the various contract items of work and no separate payment will be made therefor.

05-1.18 STOCKPILING MATERIALS / EQUIPMENT STORAGE - Before any materials are stockpiled or equipment parked / stored outside of the highway right of way, the Contractor shall first obtain written authorization from the property owner whose property the materials are to be stockpiled or equipment parked/stored. The Contractor shall file with the Engineer said authority or a certified copy thereof together with a written release from the property owner absolving the County of Fresno from any and all responsibility in connection with the stockpiling of materials or parking/storage of equipment on said property. Before any material is stockpiled or equipment parked/stored, the Contractor shall obtain written permission from the Engineer to stockpile materials or park/store equipment at the location designated in said authorization. **Failure by the Contractor to provide written authorization shall result in the withholding of all funds due to the Contractor until said authorization is received by the County.**

The Contractor is required to obtain all permits required by all applicable regulatory agencies and to comply with all applicable codes, regulations and zoning ordinances prior to establishing a storage yard for materials and/or equipment. The Contractor shall provide copies of all permits acquired to the Engineer.

05-1.19 DAMAGE BY STORM, FLOOD, TSUNAMI OR EARTHQUAKE - The provisions in Section 7-1.165 “Damage by Storm, Flood, Tsunami or Earthquake” of the Standard Specifications shall not apply.

05-1.20 INCREASED OR DECREASED QUANTITIES - Attention is directed to the provisions in Section 4-1.03B, “Increased or Decreased Quantities,” of the Standard Specifications and these special provisions.

All written requests for adjustment shall be made no later than five working days after notification by the Engineer that the item of work is complete.

05-1.21 FINAL PAY ITEMS - Attention is directed to the provisions in Section 9-1.01C, “Final Pay Items,” of the Standard Specifications and these special provisions.

05-1.22 ARBITRATION - The provisions in Section 9-1.10, “Arbitration,” of the Standard Specifications shall not apply.

05-1.23 RESOLUTION OF CONTRACT CLAIMS - Public works contract claims of three hundred seventy-five thousand dollars ($375,000) or less which arise between a Contractor and a local public agency shall be resolved in accordance with the provisions of Article 1.5 (Sections 20104-20104.6, inclusive) of Chapter 1 of Part 3 of Division 2 of the Public Contract Code. Article 1.5 requires that its provisions or a summary thereof be set forth in the plans and specifications for any work which may give rise to a claim thereunder. Accordingly, this contract incorporates all of the terms and conditions of Article 1.5, as follows:

Article 1.5 Resolution of Contract Claims

20104.(a)(1) This article applies to all public works claims of three hundred seventy-five thousand dollars ($375,000) or less which arise between a Contractor and a local agency.

(2) This article shall not apply to any claims resulting from a contract between a Contractor and a public agency when the public agency has elected to resolve any disputes pursuant to Article 7.1 (commencing with Section 10240) of Chapter 1 of Part 2.

(b)(1) "Public work" has the same meaning as in Sections 3100 and 3106 of the Civil Code, except that "public work" does not include any work or improvement contracted for by the state or the Regents of the University of California.

(2) "Claim" means a separate demand by the Contractor for (A) a time extension, (B) payment of money or damages arising from work done by or on behalf of the Contractor pursuant to the contract for a public work and payment of which is not otherwise expressly provided for or the claimant is not otherwise entitled to, or (C) an amount the payment of which is disputed by the local agency.

(c) The provisions of this article or a summary thereof shall be set forth in the plans or specifications for any work which may give rise to a claim under this article.

(d) This article applies only to contracts entered into on or after January 1, 1991.

20104.2 For any claim subject to this article, following requirements 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 in this subdivision is intended to extend the time limit or supersede notice requirements otherwise provided by contract for the filing of claims.

(b)(1) For claims of less than fifty thousand dollars ($50,000), the local agency 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 or claims the local agency 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 local agency and the claimant.

(3) The local agency'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)(1) For claims of over fifty thousand dollars ($50,000) and less than or equal to three hundred seventy-five thousand dollars ($375,000), the local agency 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 or claims the local agency 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 local agency and the claimant.

(3) The local agency's written response to the claim, as further documented, shall be submitted to the claimant within 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 or requested documentation, whichever is greater.

(d) If the claimant disputes the local agency's written response, or the local agency fails to respond within the time prescribed, the claimant may so notify the local agency in writing, either within 15 days of receipt of the local agency's response or within 15 days of the local agency'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 local agency shall schedule a meet and confer conference within 30 days for settlement of the dispute.

(e) If following the meet and confer conference the claim or any portion remains in dispute, the claimant may file a claim pursuant to 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 from the time the claimant submits his or her written claim pursuant to subdivision (a) until the time the claim is denied, including any period of time utilized by the meet and confer conference.

20104.4 The following procedures are established for all civil actions filed to resolve claims subject to this article:

(a) Within 60 days, but no earlier than 30 days, following the filing or responsive pleadings, the court shall submit the matter to nonbinding mediation unless waived by the mutual stipulation of both parties. The mediation process shall provide for the selection within 15 days by both parties of disinterested third person as mediator, shall be commenced within 30 days of the submittal, and shall be concluded within 15 days from the commencement of the mediation unless a time requirement is extended upon a good cause showing to the court or by stipulation of both parties. If the parties fail to select a mediator within the 15-day period, any party may petition the court to appoint the mediator.

(b)(1) If the matter remains in dispute, the case shall be submitted to the judicial arbitration pursuant to Chapter 2.5 (commencing with Section 1141.10) of Title 3 of Part 3 of the Code of Civil Procedure, notwithstanding Section 1141.11 of that code.

The Civil Discovery Act of 1986 (Article 3 (commencing with Section 2016) of Chapter 3 of Title 3 of Part 4 of Civil Procedure) shall apply to any proceeding brought under this subdivision consistent with the rule pertaining to judicial arbitration.

(2) Notwithstanding any other provision of law, upon stipulation of the parties, arbitrators appointed for purposes of this article shall be experienced in construction law, and, upon stipulation of the parties, mediators and arbitrators shall be paid necessary and reasonable hourly rates of pay not to exceed their customary rate, and such fees and expenses shall be paid equally by the parties, except in the case of arbitration where the arbitrator, for good cause, determines a different division. In no event shall these fees or expenses be paid by state or county funds.

(3) In addition to Chapter 2.5 (commencing with Section 1141.10) of Title 3 of Part 3 of the Code of Civil Procedure, any party who after receiving an arbitration award requests a trial de novo but does not obtain a more favorable judgment shall, in addition to payment of costs and fees under that chapter, pay the attorney's fees of the other party arising out of the trial de novo.

(c) The court may, upon request by any party, order any witnesses to participate in the mediation or arbitration process. Arbitrators shall be experienced in construction law.

20104.6 (a) No local agency shall fail to pay money as to any portion of a claim which is undisputed except as otherwise provided in the contract.

(b) In any suit filed under Section 20104.4, the local agency shall pay interest at the legal rate on any arbitration award or judgment. The interest shall begin to accrue on the date the suit is filed in a court of law.

05-1.24 JOB SAFETY - The Contractors attention is directed to Section 5-1.02A, “Excavation Safety Plans,” of the Standard Specifications. Attention is directed to the provisions of the Construction Safety Orders, Tunnel Safety Orders and General

Safety Orders of the California Department of Industrial Relations, Labor Code Section 6705 and all other applicable laws and regulations.

Where the plans call for trenching and pipeline installations, and boring or jacking of pipe, the Contractor will be required to obtain permits from the California Department of Industrial Relations, Division of Industrial Safety.

The Contractor shall be responsible for obtaining such permits and shall provide evidence of their permit to the Engineer before beginning trenching, boring or jacking operations.

05-1.25 TRENCHING AND EXCAVATION SHORING - In accordance with Section 7104 of the California Public Contract Code, the following provisions shall apply to any contract involving digging of trenches or other excavations that extend deeper than 4 feet below the surface:

1) The Contractor shall promptly, and before the following conditions are disturbed, notify the Engineer in writing, of any:

   a) Material that the Contractor believes may be material that is hazardous waste, as defined in Section 25117 of the Health and Safety Code, that is required to be removed to a Class I, Class II, or Class III disposal site in accordance with provisions of existing law.

   b) Subsurface or latent physical conditions at the site differing from those indicated.

   c) Unknown physical conditions at the site of any unusual nature, different materially from those ordinarily encountered and generally recognized as inherent in work of the character provided for in the contract.

2) The Engineer shall promptly investigate the conditions, and if it finds that the conditions do materially so differ, or do involve hazardous waste, and cause a decrease or increase in the Contractor's cost of, or the time required for, performance of any part of the work, shall issue a change order in accordance with Section 9-1.06, “Work Character Changes,” of the Standard Specifications.

3) In the event that a dispute arises between the County and the Contractor whether the conditions materially differ, or involve hazardous waste, or cause a decrease or increase in the Contractor's cost of, or time required for, performance of any part of the work, the Contractor shall not be excused from any scheduled completion date provided for by the contract, but shall proceed with all work to be performed under the contract. The Contractor shall retain any and all rights provided either by contract or by law which pertain to the resolution of disputes and protests between the contracting parties.

Attention is directed to Section 5-1.02A, "Excavation Safety Plans," and Section 7-1.01E. "Trench Safety," of the Standard Specifications.

Excavation for structures shall be considered "open excavations."

The requirements as set forth by the State Division of Industrial Safety for the provision of worker protection from the hazard of caving ground are minimum requirements. In addition, the Contractor shall provide, for the life of the Contract, the same protection for any person, including the Engineer or any of his/her

representatives, subcontractors, or any other person required to be exposed to such hazard in the performance of the work, inspection of the work, or any other reason.

The contract lump sum price paid for excavation shoring shall include full compensation for furnishing all labor, materials, tools, equipment and incidentals, and for doing all the work involved in excavation shoring, complete in place, including the design of the shoring system, preparation of the safety plan, removal and disposal of shoring materials, excavation and replacement of sloped sides of excavations, as shown on the Plans, as specified in the Standard Specifications and these special provisions and as directed by the Engineer.

05-1.26 GUARANTY AND BONDS - A material guaranty for a period of 12 months or as specified in these Special Provisions and Technical Specifications, whichever is longer, from the date of acceptance for the following items of work as designated in the proposal will be required. A guaranty form for this purpose is included in the proposal.

ALL WORK

Prior to the acceptance of the contract, the Contractor shall require the manufacturer to furnish in writing to the Engineer, the manufacturer's standard guarantee providing for the satisfactory operation of the, but not limited to Aerator, Mixer, Motor control Center, Effluent pumps, Clarifier and all other such equipment necessary to operate this equipment.

The terms of the guarantee shall be clearly stated and shall be approved by the Engineer prior to the acceptance of the contract.

Full compensation for furnishing the guaranty and bonds will be considered as included in the prices paid for the various items of work involved and no additional compensation will be allowed therefor.

05-1.27 COOPERATION - Attention is directed to Section 7-1.14, “Cooperation,” of the Standard Specifications.

The Contractor shall cooperate with other Contractors or forces which may be working in the general vicinity.

Full compensation for conforming to the requirements of this section shall be considered as included in the prices paid for the various items of work and no separate payment will be made therefor.

05-1.28 PAYMENTS - Attention is directed to Section 9-1.07, "Progress Payments," and 9-1.08, "Payment After Contract Acceptance," of the Standard Specifications and these special provisions; provided, however that the provision in Section 9-1.07F, “Retentions,” shall not apply.

The Department, once in each month, shall cause an estimate in writing to be made by the Engineer. The estimate shall include the total amount of work done and acceptable materials furnished, provided the acceptable materials are listed as eligible for partial payment as materials in the special provisions and are furnished and delivered by the Contractor on the ground and not used or are furnished and stored for use on the contract, if the storage is within the State of California and the Contractor furnishes evidence satisfactory to the Engineer that the materials are stored subject to or under the control of the Department, to the time of the estimate,

and the value thereof. The estimate shall also include any amounts payable for mobilization. Daily extra work reports furnished by the Contractor less than 5 calendar days, not including Saturdays, Sundays and legal holidays, before the preparation of the monthly progress estimate shall not be eligible for payment until the following month's estimate.

The amount of any material to be considered in making an estimate will in no case exceed the amount thereof which has been reported by the Contractor to the Engineer on State-furnished forms properly filled out and executed, including accompanying documentation as therein required, less the amount of the material incorporated in the work to the time of the estimate. Only materials to be incorporated in the work will be considered. The estimated value of the material established by the Engineer will in no case exceed the contract price for the item of work for which the material is furnished.

The Department shall retain 5 percent of the estimated value of the work done and 5 percent of the value of materials so estimated to have been furnished and delivered and unused or furnished and stored as aforesaid as part security for the fulfillment of the contract by the Contractor.

The Department shall pay monthly to the Contractor, while carrying on the work, the balance not retained, as aforesaid, after deducting therefrom all previous payments and all sums to be kept or retained under the provisions of the contract. No monthly estimate or payment shall be required to be made when, in the judgment of the Engineer, the work is not proceeding in accordance with the provisions of the contract.

No monthly estimate or payment shall be construed to be an acceptance of any defective work or improper materials.

Attention is directed to the prohibitions and penalties pertaining to unlicensed contractors as provided in Business and Professions Code Sections 7028.15(a) and 7031.

The provisions in Section 9-1.07F of the Standard Specifications shall not apply

05-1.29 PAYMENT OF WITHHELD FUNDS - Substitution of securities for any moneys withheld by the Owner to ensure performance under a contract shall be permitted, provided that substitution of securities provisions shall not apply to contracts in which there will be financing provided by the Rural Development Administration of the United States Department of Agriculture pursuant to the Consolidated Farm and Rural Development Act (7 U.S.C. Sec. 1921 et seq.), and where federal regulations or policies, or both, do not allow the substitution of securities.

At the request and expense of the Contractor and in compliance with Public Contract Code Section 22300, securities equivalent to the amount withheld pursuant to these specifications shall be deposited by the Contractor with the Owner, or with a state or federally chartered bank as the escrow agent, who shall then pay such withheld amounts to the Contractor upon written authorization of the Owner.

Securities eligible for investment under this section shall include those listed in Section 16430 of the Government Code, bank or savings and loans certificates of deposit, interest bearing demand deposit accounts, standby letters of credit, or any other security mutually agreed to by the Contractor and the Owner.

Securities to be placed in escrow shall be of a value at least equivalent to the amounts of retention to be paid to the Contractor.

The Contractor shall be beneficial owner of any securities substituted for moneys withheld and shall receive any interest thereon.

The Contractor shall enter into an escrow agreement satisfactory to the Owner, which agreement shall substantially comply with Public Contract Code Section 22300.

The Contractor shall obtain the written consent of the surety to such escrow agreement.

05-1.30 FINAL PAYMENT - Final payment for the work will be made in accordance with the standard County of Fresno procedures.

Upon completion and acceptance of the entire work, a partial payment of 95 percent of the total amount due the Contractor will be made. The balance of the total amount due the Contractor will be paid no sooner than thirty-five days after the Notice of Completion is recorded.

No monthly progress payments, as provided for in Section 9-1.07 of the Standard Specifications, will be made.

05-1.31 ASSIGNMENT - Attention is directed to Section 8-1.02, “Assignment,” of the Standard Specifications and these special provisions.

The performance of the contract may not be assigned, except upon the written consent of the Director and authorization from SWRCB and EPA. Consent will not be given to any proposed assignment which would relieve the original Contractor or the Contractor's surety of their responsibilities under the contract nor will the Director consent to any assignment of a part of the work under the contract.

The Contractor may assign monies due or to become due the Contractor under the contract and the assignment will be recognized by the Auditor-Controller of the local agency. Any assignment of monies shall be subject to all proper setoffs in favor of the local agency. And to all deductions provided for in the contract and particularly all money withheld, whether assigned or not, shall be subject to being used by the local agency for the completion of the work in the event that the Contractor should be in default therein.

05-1.32 SURFACE MINING AND RECLAMATION ACT - Attention is directed to the Surface Mining and Reclamation Act of 1975, commencing in Public Resources Code, Mining and Geology, Section 2710, which establishes regulations pertinent to surface mining operations.

Material from mining operations furnished for this project shall only come from permitted sites in compliance with the Surface Mining and Reclamation Act of 1975.

The requirements of this section shall apply to all materials furnished for the project, except for acquisition of materials in conformance with Section 4-1.05, “Use of Materials Found on the Work,” of the Standard Specifications.

05-1.33 RESPONSIBILITY TO OTHER ENTITIES - The Contractor shall be responsible for any liability imposed by law and for injuries to or death of any person

including, but not limited to, workers and the public or damage to property, and shall indemnify and save harmless State Water Board, any county, city or district, its officers and employees connected with the work, within the limits of which county, city or district the work is being performed, all in the same manner and to the same extent conforming to the provisions in Section 7-1.12, "Indemnification and Insurance," of the Standard Specifications, for the protection of the State of California and all officers and employees thereof connected with the work.

05-1.34 PROJECT APPEARANCE - The Contractor shall maintain a neat appearance to the work.

In areas visible to the public, the following shall apply:

A. When practicable, broken concrete and debris developed during clearing and grubbing shall be disposed of concurrently with its removal. If stockpiling is necessary, the material shall be removed or disposed of weekly.

B. Trash bins shall be furnished for debris from structure construction. Debris shall be placed in trash bins daily. Forms or falsework that are to be re-used shall be stacked neatly concurrently with their removal. Forms and falsework that are not to be re-used shall be disposed of concurrently with their removal.

Full compensation for conforming to the provisions in this section, not otherwise provided for, shall be considered as included in prices paid for the various contract items of work involved and no additional compensation will be allowed therefor.

05-1.35 ARCHAEOLOGICAL DISCOVERIES - The Contractor shall leave archaeological materials, including human skeletal material and disarticulated human bone, undisturbed in accordance with the following codes and these special provisions:

A. California Public Resources Code, Chapter 1.7, Section 5097.5;

B. California Administrative Code, Title 14, Section 4308;

C. California Penal Code, Title 14, Part 1, Section 622-1/2;

D. California Health and Human Safety Code 7050.5; and

E. California Public Resources Code, Sections 5097.98 and 5097.99.

Archaeological materials are defined as the physical remains of past human activity, and include historic-period archaeological materials and prehistoric Native American archaeological materials. Nonhuman fossils are not considered to be archaeological except when showing direct evidence of human use or alteration, or when they are found in direct physical association with archaeological materials as described in these special provisions.

Historic-period archaeological materials include cultural remains beginning with initial European contact in California, but at least 50 years old. Historical archaeological materials may include:

A. trash deposits or clearly-defined disposal pits containing tin cans, bottles, ceramic dishes, or other refuse indicating previous occupation or use of the site;

B. structural remains of stone, brick, concrete, wood, or other building material found above or below ground; or

C. human skeletal remains from the historic period, with or without coffins or caskets, including any associated grave goods.

Prehistoric Native American archaeological materials may include:

A. human skeletal remains or associated burial goods such as beads or ornaments;

B. evidence of tool making or hunting such as arrowheads and associated chipping debris of fine-grained materials such as obsidian, chert, or basalt;

C. evidence of plant processing such as pestles, grinding slabs, or stone bowls;

D. evidence of habitation such as cooking pits, stone hearths, packed or burnt earth floors; or

E. remains from food processing such as concentrations of discarded or burnt animal bone, shellfish remains, or burnt rocks used in cooking.

Full compensation for leaving archaeological materials undisturbed and for cooperating with the archaeological monitor will be considered as included in the various items of work and no additional compensation will be allowed therefor.

05-1.36 SOUND CONTROL REQUIREMENTS - The Contractor shall comply with all local sound control and noise level rules, regulations and ordinances which apply to any work performed pursuant to the contract.

Each internal combustion engine, used for any purpose on the job or related to the job, shall be equipped with a muffler of a type recommended by the manufacturer. No internal combustion engine shall be operated on the project without the muffler.

The noise level from the Contractor's operations, between the hours of 9:00 p.m. and 6:00 a.m., shall not exceed 86 dBa at a distance of 50 feet. This requirement shall not relieve the Contractor from responsibility for complying with local ordinances regulating noise level.

The noise level requirement shall apply to the equipment on the job or related to the job, including but not limited to trucks, transit mixers or transient equipment that may or may not be owned by the Contractor. The use of loud sound signals shall be avoided in favor of light warnings except those required by safety laws for the protection of personnel.

Full compensation for conforming to the requirements of this section shall be considered as included in the prices paid for the various contract items of work involved and no additional compensation will be allowed therefor.

SECTION 6 – NOT USED

SECTION 7 – FORCE ACCOUNT PAYMENT

07-1.01 LABOR SURCHARGE - Attention is directed to the provisions in Section 9-1.03B, “Labor,” of the Standard Specifications. The labor surcharge to be added

to the actual wages paid shall be **11** percent of the actual wages, except as provided for the premium portion of dump truck operation wages as provided in the Equipment Rental Rates referred to in Section "Equipment Rental Rates" of these special provisions and except as provided for below:

Type of work performed: Mobile Crane or Hoist Service
Labor Surcharge 15% RT, 14% OT

Type of work performed: Wrecking and Demolition
Labor Surcharge 13% RT, 12% OT

07-1.02 RECORDS - The Contractor shall furnish to the Engineer completed daily extra work reports, on forms furnished by the Engineer or on computerized facsimiles of the County of Fresno's forms acceptable to the Engineer, for each day's extra work to be paid for on a force account basis. The daily extra work reports shall itemize the materials used, and shall cover the direct cost of labor and the charges for equipment rental, whether furnished by the Contractor, subcontractor or other forces, except for charges described in Section 9-1.04, "Extra Work Performed by Specialists." The daily extra work reports shall provide names or identifications and classifications of workers, the hourly rate of pay and hours worked, and also the size, type and identification number of equipment, and hours operated. These reports are to be furnished no later than the second working day following the work for labor and equipment involved and no later than the fifth working day for material invoices and specialized forces.

Unless otherwise permitted by the Engineer, no payment will be made for extra work on a force account basis if not reported within the time and in the manner specified.

Certified payroll records must be retained for a minimum of three (3) years after project completion, and may be audited by the County, the state agency administering the Clean Water State Revolving Fund, or the United States Environmental Protection Agency at any time.

07-1.03 EQUIPMENT RENTAL RATES - Attention is directed to the provisions of Section 9-1.03D, "Equipment Rental," of the Standard Specifications. The equipment rental rates to be paid are listed in a table entitled "State of California, Business, Transportation, and Housing Agency, Department of Transportation, Division of Construction, Labor Surcharge and Equipment Rental Rates" available at http://www.dot.ca.gov/hq/construc/equipmnt.html.

The rates to be applied to this project are the latest rates dated on or before the date of approval of this contract for advertising. The date of approval for advertising appears on the last page of the Notice To Bidders for this project.

SECTION 8 – MATERIALS

SECTION 8-1. MISCELLANEOUS

08-1.01 GENERAL - Attention is directed to Section 6, "Control of Materials," of the Standard Specifications and these special provisions.

All materials required to complete the work under this contract shall be furnished by the Contractor.

A certificate of compliance may be required for materials used on this contract as directed by the Engineer.

When requested by the Engineer, the supplier or Contractor shall furnish, without charge, samples of all materials entering into the work, and no material shall be used prior to approval by the Engineer. Samples of the material from local sources shall be taken by or in the presence of the Engineer, otherwise the samples will not be considered for testing.

Unless otherwise specified elsewhere in these special provisions, salvaged material shall be carefully removed and stockpiled near the project site at a location designated by the Engineer. County forces or other forces will remove salvaged materials from the project site.

08-1.02 TESTING - Whenever a specified test is required and the material or portion thereof so tested fails to meet or exceed the required specification, the first retest shall be so performed at no expense to the Contractor. Should the first retest also fail, a charge of $150 for each additional retest shall be deducted from the monies due or that may become due the Contractor under the contract.

The Contractor shall provide the Engineer 24 hours notice prior to performance by the County of any compaction testing.

08-1.03 MEASUREMENT OF MATERIALS - Attention is directed to Section 9-1.01 "Measurement of Quantities" of the Standard Specifications and these special provisions.

08-1.04 TRADE NAMES AND ALTERNATIVES - Unless substitution of a particular product is expressly disallowed in the special provisions, whenever an article, or any class of materials, is specified by trade name or by the name of any particular patentee, manufacturer or dealer, or by reference to the catalog of any such manufacturer or dealer, it shall be taken as intending to mean and specify the article or material described or any other equal thereto in quality, finish and durability, and equally as serviceable for the purpose for which it is or they are intended. The intent of the plans and specifications is to specify high grade standard equipment, and it is not the intent of these plans and specifications to exclude or omit the products of any responsible manufacturer, if such products are equal in every respect to those mentioned herein.

All requests for substitution (after bid opening), along with all supporting information necessary for the County's review, shall be submitted no later than fifteen (15) days from the approval of contract.

The County does not guarantee that alternative articles, components, materials or equipment other than the item specified by trade name or other specific identification, will fit within the design parameters of the project without alteration of the project design by the contractor.

The County has the right to reject any proposed alternative material which requires alteration of the project design which impacts the safety of the public or the user of the completed facility. If the proposed alternative material requires alteration of the design of the project and said alterations are acceptable to the County, the contractor shall be responsible for performing said alterations at no additional cost to the County.

08-1.05 SUBMITTALS - Unless otherwise specified in these special provisions, submittals shall be provided via email in .pdf format.

The time allocated for the Engineer's review of submittals and for re-review of previously rejected submittals shall be as specified elsewhere in these special provisions; provided, however, that the time allocated for each such review or each such re-review shall not exceed fifteen working days notwithstanding anything to the contrary elsewhere in these special provisions. In the event that the time allocated for the Engineer's review of particular submittals and for re-review of previously rejected submittals is not specified elsewhere in these special provisions, then the Engineer's review time shall be 15 working days.

08-1.06 VALUE ENGINEERING CHANGE PROPOSALS (VECP) – You may submit a VECP to reduce any of the following:

1. Total cost of construction

2. Construction activity duration

3. Traffic congestion

Before preparing a VECP, meet with the Engineer to discuss:

1. Proposal concept

2. Permit issues

3. Impact on other projects

4. Project impacts, including traffic, schedule, and later stages

5. Peer reviews

6. Overall proposal merits

7. Review times required by the Department and other agencies

The VECP must not impair the project's essential functions or characteristics, such as:

1. Service life

2. Operation economy

3. Maintenance ease

4. Desired appearance

5. Design and safety

The VECP must include:

1. Description of the contract specifications and drawing details for performing the work and the proposed changes.

2. Itemization of contract specifications and drawing details that would be changed.

3. Detailed cost estimate for performing the work under the existing contract and under the proposed change.

4. Determine the estimates under Section 9-1.03, "Force Account Payment."

5. Deadline for the Engineer to decide on the changes.

6. Bid items affected and resulting quantity changes.

The Department is not required to consider a VECP. If a VECP is similar to a change in the plans or specifications being considered by the Department at the time the proposal is submitted or if the proposal is based on or similar to drawings or specifications adopted by the Department before Contract award, the Department does not accept the VECP and may make these changes without VECP payments.

Until the Department approves a change order incorporating the VECP or parts of it, continue to perform the work under the contract. If the Department does not approve a change order before the deadline stated in the VECP or other date you subsequently stated in writing, the VECP is rejected. The Department does not adjust time or payment for a rejected VECP.

The Department decides whether to accept a VECP and the estimated net construction-cost savings from adopting the VECP or parts of it.

The Department may require you to accept a share of the investigation cost as a condition of reviewing a VECP.

After written acceptance, the Department considers the VECP and deducts the agreed cost.

If the Department accepts the VECP or parts of it, the Department issues a change order that:

1. Incorporates changes in the contract necessary to implement the VECP or the parts adopted

2. Includes the Department's acceptance conditions

3. States the estimated net construction-cost savings resulting from the VECP

4. Obligates the Department to pay you 50 percent of the estimated net savings

In determining the estimated net construction-cost savings, the Department excludes your VECP preparation cost and the Department's VECP investigation cost, including parts paid by you.

If a VECP providing for a reduction in working days is accepted by the Department, 50 percent of the reduction is deducted from contract time.

If a VECP providing for a reduction in traffic congestion or avoiding traffic congestion is accepted by the Department, the Department pays 60 percent of the estimated net

savings in construction costs attributable to the VECP. Submit detailed traffic handling comparisons between the existing contract and the proposed change, including estimates of the traffic volumes and congestion.

The Department may apply an accepted VECP for general use on other contracts.

If an accepted VECP is adopted for general use, the Department pays only the contractor who first submitted the VECP and only to the contracts awarded to that contractor before the submission of the accepted VECP.

If the Department does not adopt a general-use VECP, an identical or similar submitted proposal is eligible for acceptance.

The Contractor may submit a VECP proposal for such substitution only in strict conformance with the requirements in said Section 4-1.035B and these special provisions, and any such proposal shall provide for a substantial net reduction in cost to the County or will not be considered. Furthermore, the determination to consider or not consider any VECP shall, irrespective of proposed cost reductions and/or reductions in working days allotted for completion of the contract shall be at the Engineer's sole discretion.

Other VECPs which may be submitted by the Contractor must provide for a substantial reduction in net cost to the County and/or in working days allotted for completion of the contract.

The provisions of section 4-1.035C, "Value Analysis Workshop," of the 2006 Amendments shall not apply to this contract.

SECTION 8-2 CONCRETE

08-2.01 PORTLAND CEMENT CONCRETE - Portland cement concrete shall conform to the provisions in Section 90, "Portland Cement Concrete," of the Standard Specifications and these special provisions.

The Contractor is hereby informed that all requirements associated with Portland Cement Concrete, including requirements pertaining to the qualities of mineral admixtures, will be strictly enforced, except where expressly noted in these special provisions. Mix designs not conforming to all requirements shall be rejected, and the Contractor shall not be granted any extension of contract time nor any additional compensation therefor.

The California Department of Transportation maintains a list of sources of fine and coarse aggregate that have been approved for use with a reduced amount of supplementary cementitious material in the total amount of cementitious material to be used.

If the aggregates used in the concrete are on the Department of Transportation's list, the minimum amount of supplementary cementitious material shall conform to the following:

1. If fly ash or natural pozzolan conforming to the provisions in Section 90-2.01C, "Required Use of Supplementary Cementitious Materials," of the Standard Specifications is used, the minimum amount of supplementary cementitious material shall be 15 percent by weight of the total cementitious material; or

2. If silica fume conforming to the provisions in Section 90-2.01C, "Required Use of Supplementary Cementitious Materials," of the Standard Specifications is used, the minimum amount of supplementary cementitious material shall be 7 percent by weight of the total cementitious material.

The limitation on tricalcium silicate (C_3S) content in Type II cement specified in Section 90-2.01A, "Cement," of the Standard Specifications shall not apply.

SECTION 9 – DESCRIPTION OF WORK

The work to be done consists, in general, of removal and replacement of wastewater plant treatment machinery, including but not limited to the aerator, the submersible mixer, chain and scraper sludge collector unit, and effluent pumps and necessary appurtenances. In addition, the project includes rehabilitation to the treatment basins if needed, and removal and replacement of the existing electrical motor control center and miscellaneous electrical components. Other items or details not mentioned herein that are required by the plans, Standard Specifications or these special provisions shall be performed, constructed, furnished or installed.

Finishing of the project site shall be considered as included in the work herein, and no additional compensation shall be furnished for its completion.

SECTION 10 - CONSTRUCTION DETAILS

10-1.01 ORDER OF WORK – Order of work shall conform to the provisions in Section 5-1.05, "Order of Work," of the Standard Specifications and these special provisions.

Unless otherwise permitted in writing by the Engineer, the Contractor shall construct the work as set forth herein. No additional compensation will be allowed in the event the contract is temporarily suspended as specified herein.

The Contractor's attention is directed to Section 4, "Beginning of Work, Time of Completion, Liquidated Damages" of these special provisions. The Contractor shall be prepared to begin the First Order of Work immediately upon the Engineer's approval of the contract. The Engineer will issue the "Notice to Proceed – Submittals" within five (5) working days after the Engineer's approval of the contract.

Attention is directed to "Water Pollution Control" of these special provisions regarding the submittal and approval of the "Water Pollution Control Program."

Attention is directed to "Fire Plan" of these special provisions regarding cooperating with local fire prevention authorities and implementing the fire plan established for this project.

First Order of Work (Submittals)

Unless otherwise specified elsewhere in these special provisions, the Contractor shall provide submittals to the Engineer, as specified in these special provisions, within ten (10) Working Days of the issuance of the "Notice to Proceed – Submittals." The submittals as required herein shall be submitted in proper format and must include, but not be limited to, manufacturer's drawings, specifications, performance characteristics, and manufacturer guarantees for the equipment specified in these special provisions and the technical specifications, and any other submittals as may be required, regardless of whether they have been expressly enumerated in this section.

The Contractor shall field verify and identify underground infrastructure and accurately measure critical points of connection (i.e. underground conduits, point of connection of new piping, underground piping, etc). Dimensions or size for items to be supplied or fabricated for the completion of this contract shall be clearly shown on the submittals.

The Engineer shall review the submittals and notify the Contractor of approval or deficiencies within ten (10) working days of submittal, which shall not be counted against the allotment of Working Days for the First Order of Work. The time required to resubmit any rejected submittal will be counted toward the number of working days in the First Order of Work.

Within five (5) Working Days of approval, the Contractor shall submit an affidavit that the order(s) for the equipment and materials required for this contract has/have been received and accepted by the vendor(s), and shall give the delivery date for the equipment and materials ordered.

The Contractor shall inform the Engineer, in writing, if equipment delivery will exceed date specified in the affidavit and any requested time extension. Any request for a

time extension must be accompanied by a statement of cause. The total time to delivery, from placement of the order, shall not exceed twelve (12) weeks from the date that the order is placed without prior approval of the Engineer. Any time in excess of this threshold will result in the issuance of the "Notice to Proceed – Construction" as specified in Section 4 of these special provisions, and days shall then be counted against the Working Days of the Second Order of Work.

Second Order of Work (Construction)

Within three (3) working days of receiving written notice from the Contractor that all materials and equipment required to complete the project have been delivered, unless otherwise stated in these Special Provisions, the County will issue the "Notice to Proceed - Construction". Physical work at the site shall not begin before the date shown on the "Notice to Proceed-Construction". The first working day charged to the project shall be the date stated in the "Notice to proceed-Construction" issued by the Engineer.

Once the Engineer has provided authorization to commence with construction work at the project site the Contractor shall commence operations and diligently prosecute the work to completion.

10-1.02 CONSTRUCTION PROJECT INFORMATION SIGNS - Before any major physical construction work which is readily visible to highway users is started on this contract, the Contractor shall furnish and erect construction project information signs at the locations designated by the Engineer. The signs shall conform to the requirements in the State Standard Specifications, these special provisions and as directed by the Engineer.

This reconstruction project will require **1** sign. The Contractor's attention is directed to "Project Details" of these special provisions.

The Contractor shall construct and maintain signage meeting the guidelines specified in the Project Details insert, *CWSRF Project Signage Requirements*. The sign shall be prominently displayed in a location visible to the public.

During construction work, the signs shall be kept clean and in good repair by the Contractor. Signs destroyed or damaged by the Contractor's operations shall be replaced at the Contractor's expense.

Upon completion and acceptance of the work, the signs shall remain in place until approved for removal by the Engineer. The Contractor shall be responsible for removing the signs after acceptance of the work.

Full compensation for furnishing the project funding identification signs, wood posts and hardware, and erecting and maintaining construction project information signs shall be considered as included in the contract unit price paid for each construction project information sign, and no additional compensation will be allowed therefor.

10-1.03 WATER POLLUTION CONTROL GENERAL

Summary

Work activities must not disturb 1 or more acres of soil. Manage work activities to reduce the discharge of pollutants to surface waters, groundwater, or municipal separate storm sewer systems including the work item shown in

the verified Bid Item List for Prepare Water Pollution Control Program. WPCP preparation includes obtaining WPCP approval, amending the WPCP, and monitoring and inspecting WPC practices at the job site.

Do not start work until:

1. WPCP is approved
2. WPCP review requirements have been fulfilled.

Definitions and Abbreviations

active and inactive areas: (1) Active areas have soil disturbing work activities occurring at least once within 14 days, and (2) Inactive areas are areas that have not been disturbed for at least 15 days.

BMPs: Best Management Practices are water pollution control practices.

construction phase: Construction phases are (1) Highway Construction including work activities for building roads and structures, (2) Plant Establishment including maintenance on vegetation installed for final stabilization, and (3) Suspension where work activities are suspended and areas are inactive.

Preparation Manual: The Department's "Storm Water Pollution Prevention Plan and Water Pollution Control Program Preparation Manual."

NPDES: National Pollutant Discharge Elimination System.

NOI: Notice of Intent.

QSD: Qualified SWPPP Developer.

QSP: Qualified SWPPP Practitioner.

RWQCB: Regional Water Quality Control Board. **SWPPP:** Storm Water Pollution Prevention Plan. **SWRCB:** State Water Resources Control Board. **WPC:** Water Pollution Control.

WPC Manager: Water Pollution Control Manager. The WPC Manager implements water pollution control work described in the WPCP and oversees revisions and amendments to the WPCP.

WPCP: Water Pollution Control Program.

Submittals

Within 10 days after contract approval, the Contractor shall submit 3 copies of a project specific WPCP.

Within 10 days of the Contractor’s submission of the WPCP the Engineer will provide notification of approval of the WPCP or comments outlining necessary revisions.

If revisions are required, the Contractor shall make all necessary changes and resubmit the WPCP within 10 days of receipt of the Engineer's comments. The Engineer shall have an additional 5 days to review the revised WPCP.

Upon notification of the Engineer's approval of the WPCP, the Contractor shall submit one (1) electronic copy and four (3) printed copies of the approved WPCP.

Time required for the preparation and Engineer's review of the WPCP will not be counted toward the number of working days specified in "Section 4 – Beginning of Work, Time of Completion, Liquidated Damages" of these special provisions. Unless otherwise directed by the Engineer, work shall not be performed at the project site until the WPCP has been approved.

Submit:

1. Stormwater training records including training dates and subject for employees and subcontractors. Include dates and subject for ongoing training, including tailgate meetings.

2. Employee training records:

   2.1. Within 5 days of WPCP approval for existing employees

   2.2. Within 5 days of training for new employees

   2.3. At least 5 days before subcontractors start work for subcontractor's employees

Submit as required:

1. BMP Status Report

2. Inspection Reports

At least 5 days before operating any construction support facility, submit:

1. A plan showing the location and quantity of WPC practices associated with the construction support facility

2. A copy of the NOI approved by the RWQCB and the WPCP approved by the RWQCB if you will be operating a batch plant or a crushing plant under the General Industrial Permit

Quality Control and Assurance Training

Provide storm water training for:

1. Project managers

2. Supervisory personnel

3. Employees involved with WPC work

Train all employees, including subcontractor's employees, in the following subjects:

1. WPC rules and regulations
2. Implementation and maintenance for:
   - 2.1. Temporary Soil Stabilization
   - 2.2. Temporary Sediment Control
   - 2.3. Tracking Control
   - 2.4. Wind Erosion Control
   - 2.5. Material pollution prevention and control
   - 2.6. Waste management
   - 2.7. Non-storm water management
   - 2.8. Identifying and handling hazardous substances
   - 2.9. Potential dangers to humans and the environment from spills and leaks or exposure to toxic or hazardous substances

Employees must receive initial WPC training before working on the project. Conduct weekly training meetings covering:

1. WPC BMP deficiencies and corrective actions
2. BMPs that are required for work activities during the week
3. Spill prevention and control
4. Material delivery, storage, use, and disposal
5. Waste management
6. Non-storm water management procedures

You may obtain copies of the Preparation Manual from the Publication Distribution Unit. The mailing address for the Publication Distribution Unit is:

State of California Department of Transportation
Publication Distribution Unit 1900 Royal Oaks
Drive Sacramento, California 95815

Telephone: (916) 445-3520

The Preparation Manual and other WPC references are available at the Department's "Construction Storm Water and Water Pollution Control" Web site. For the Web site, go to:

http://www.dot.ca.gov/hq/construc/stormwater/stormwater1.htm

If you operate construction support facilities, protect storm water systems or receiving waters from the discharge of potential pollutants by using WPC practices.

Construction support facilities include:

1. Staging areas
2. Storage yards for equipment and materials
3. Mobile operations
4. Batch plants for PCC and HMA
5. Crushing plants for rock and aggregate
6. Other facilities installed for your convenience such as haul roads

If you operate a batch plant to manufacture PCC, HMA, or other material; or a crushing plant to produce rock or aggregate; obtain coverage under the General Industrial Permit. You must be covered under the General Industrial Permit for batch plants and crushing plants located:

1. Outside of the job site
2. Within the job site that serve one or more contracts

Discharges from manufacturing facilities such as batch plants must comply with the general waste discharge requirements for Order No. 97-03-DWQ, NPDES General

Permit No. CAS000001, issued by the SWRCB for "Discharge of Stormwater Associated with Industrial Activities Excluding Construction Activities." For the General Industrial Permit, go to:

http://www.waterboards.ca.gov/

Water Pollution Control Manager

Assign one WPC Manager to implement the WPCP. You may assign a different QSP to prepare the WPCP.

The WPC Manager must comply with the Permit (Order No. 2009-0009-DWQ, NPDES No. CAS000002) for a QSP by having at least one of the following qualifications:

1. Certified Erosion, Sediment and Storm Water Inspector (CESSWI)™ registered through Enviro Cert International, Inc.
2. Certified Inspector of Sediment and Erosion Control (CISEC) registered through CISEC, Inc.
3. Qualifications described in the Permit for a QSD
4. Department approved storm water management training described in the

Department's "Construction Storm Water and Water Pollution Control" Web site

At the job site, the WPC Manager must:

1. Be responsible for WPC work
2. Be the primary contact for WPC work
3. Oversee the maintenance of WPC practices
4. Oversee and enforce hazardous waste management practices
5. Have the authority to mobilize crews to make immediate repairs to WPC practices
6. Ensure that all employees have current water pollution control training
7. Implement the approved WPCP and amend the WPCP when required WPC Manager must oversee:

1. Inspections of WPC practices identified in the WPCP
2. Inspections for visual monitoring

WATER POLLUTION CONTROL PROGRAM

WPCP work includes preparing a WPCP, obtaining WPCP approval, amending the WPCP, and reporting on WPC practices at the job site. The WPCP must comply with the Preparation Manual. The WPCP is required by the provisions in Section 7-1.01G, "Water Pollution," of the Standard Specifications.

You may request, or the Engineer may order, changes to the WPC work. Changes may include the addition of new WPC practices. Additional WPC work will be paid for as extra work under Section 4-1.03D, "Extra Work," of the Standard Specifications.

The WPCP must include WPC practices:

1. For storm water and non-stormwater from areas outside of the job site related to project work activities such as:
   1.1. Staging areas
   1.2. Storage yards
   1.3. Access roads
2. For activities or mobile operations related to contractor obtained NPDES permits
3. Construction support facilities

The WPCP must include a copy of permits obtained by the Department such as Fish & Game permits, US Army Corps of Engineers permits, RWQCB 401

Certifications, and RWQCB Waste Discharge Requirements for Aerially Deposited Lead Reuse.

WPCP Amendments

You must amend the WPCP when:

1. Changes in work activities could affect the discharge of pollutants
2. WPC practices are added by change order work
3. WPC practices are added at your discretion

If you amend the WPCP, follow the same process specified for WPCP approval. Retain a printed copy of the approved WPCP at the job site.

WPCP Schedule

The WPCP schedule must:

1. Describe when work activities will be performed that could cause the discharge of pollutants in storm water
2. Describe WPC practices associated with each construction phase
3. Identify soil stabilization and sediment control practices for disturbed soil areas

IMPLEMENTATION REQUIREMENTS

WPCP Implementation

Monitor the National Weather Service Forecast Office on a daily basis. For forecasts, go to:

http://www.srh.noaa.gov/forecast

Whenever you or the Engineer identifies a deficiency in the implementation of the approved WPCP:

1. Correct the deficiency immediately, unless the Engineer agrees to a later date for making the correction
2. Correct the deficiency before precipitation occurs

If you fail to correct the deficiency by the agreed date or before the onset of precipitation, the Department may correct the deficiency and deduct the cost of correcting the deficiency from payment.

Continue WPCP implementation during any temporary suspension of work activities.

Install WPC practices within 15 days or before predicted precipitation, whichever occurs first.

If actions for your convenience disturb 1 or more acres of soil, you must pay all costs and be responsible for all delays associated with submitting a SWPPP.

Inspection

The WPC Manager must oversee inspections for WPC practices identified in the WPCP:

1. Before a forecasted storm
2. After precipitation that causes site runoff
3. At 24-hour intervals during extended precipitation
4. On a predetermined schedule, a minimum of once a week The WPC Manager must oversee daily inspections of:

1. Storage areas for hazardous materials and waste
2. Hazardous waste disposal and transporting activities
3. Hazardous material delivery and storage activities
4. WPC practices specified under "Construction Site Management" of these special provisions

The WPC Manager must use the Storm Water Site Inspection Report provided in the Preparation Manual.

The WPC Manager must prepare BMP status reports that include the following:

1. Location and quantity of installed WPC practices
2. Location and quantity of disturbed soil for the active or inactive areas

Within 24 hours of finishing the weekly inspection, the WPC Manager must submit:

1. Copy of the completed site inspection report
2. Copy of the BMP status report

Reporting Requirements

If the following occur, notify the Engineer within 6 hours:

1. You identify discharges into receiving waters or drainage systems causing or potentially causing pollution
2. The project receives a written notice or order from a regulatory agency

No later than 48 hours after the conclusion of a storm event resulting in a discharge, a non-stormwater discharge, or receiving the notice or order, submit:

1. Date, time, location, and nature of the activity, type of discharge and quantity, and the cause of the notice or order

2. WPC practices used before the discharge, or before receiving the notice or order

3. Description of WPC practices and corrective actions taken to manage the discharge or cause of the notice

PAYMENT

The contract lump sum price paid for prepare water pollution control program includes full compensation for furnishing all labor, materials, tools, equipment, and incidentals and for doing all the work involved in preparing, obtaining approval of, and amending the WPCP and inspecting water pollution control practices as specified in the Standard Specifications and these special provisions, and as directed by the Engineer.

Payments for WPCP are made as follows:

1. After the Engineer approves the WPCP, the Department includes up to 75 percent of the bid item price in the monthly progress estimate

2. After contract acceptance, the Department pays for the remaining percentage of the bid item price

The contract lump sum price paid for water pollution control includes full compensation for furnishing all labor, materials, tools, equipment, and incidentals and for doing all the work involved in implementing, maintaining, inspecting, and removing water pollution control practices in accordance with the approved WPCP as specified in the Standard Specifications and these special provisions, and as directed by the Engineer.

The Department does not pay for implementation of WPC practices in areas outside the highway right-of-way not specifically provided for in the drawings or in the special provisions.

The Department does not pay for WPC practices installed at your construction support facilities.

WPC practices for which there are separate bid items of work are measured and paid for as those bid items of work.

10-1.04 CONSTRUCTION SITE MANAGEMENT

GENERAL

Summary

This work includes controlling potential sources of water pollution before they come in contact with storm water systems or watercourses.

Control material pollution and manage waste and non-stormwater at the job site by implementing effective handling, storage, use, and disposal practices.

For information on documents specified in these special provisions, refer to the Department's Preparation Manual, Dewatering Guide, and BMP Manual.

Preparation Manual, Dewatering Guide, and BMP Manual are available from the Department's Construction Storm Water and Water Pollution Control web site at:

http://www.dot.ca.gov/hq/construc/stormwater/stormwater1.htm

Definitions and Abbreviations

active and inactive areas: (1) Active areas have soil disturbing work activities occurring at least once within 14 days, and (2) Inactive areas are areas that have not been disturbed for at least 15 days.

BMP Manual: The Department's Construction Site Best Management Practices (BMP) Manual.

CDPH: California Department of Public Health

Dewatering Guide: The Department's Field Guide to Construction Site Dewatering.

ELAP: Environmental Laboratory Accreditation Program

Minor spills: Small quantities of oil, gasoline, paint, or other material that are small enough to be controlled by a first responder upon discovery of the spill.

MSDS: Material Safety Data Sheet

Preparation Manual: The Department's Storm Water Pollution Prevention Plan (SWPPP) and Water Pollution Control Program (WPCP) Preparation Manual.

Semi-significant spills: Spills that can be controlled by a first responder with help from other personnel.

Significant or hazardous spills: Spills that cannot be controlled by construction personnel.

WPC: Water Pollution Control

WPC Manager: Water Pollution Control Manager as defined under "Water Pollution Control" of these special provisions.

Submittals

Submit the following:

1. MSDS at least 5 days before material is used or stored
2. Monthly inventory records for material used or stored
3. Copy of written approval to discharge into a sanitary sewer system at

least 5 days before beginning discharge activities

Quality Control and Assurance

Not Used

MATERIALS

Not Used

CONSTRUCTION

Spill Prevention and Control

Implement spill and leak prevention procedures for chemicals and hazardous substances stored at the job site. If you spill or leak chemicals or hazardous substances at the job site, you are responsible for all associated cleanup costs and related liability.

As soon as it is safe, contain and clean up spills of petroleum products, sanitary and septic waste substances listed under CFR Title 40, Parts 110, 117, and 302.

Minor Spills

Clean up minor spills using the following procedures:

1. Contain the spread of the spill
2. Recover the spilled material by absorption
3. Clean the contaminated area
4. Dispose of the contaminated material promptly and properly

Semi-significant Spills

Clean up semi-significant spills immediately by the following procedures:

1. Contain the spread of the spill
2. Recover the spilled material using absorption whenever a spill occurs on a paved surface or an impermeable surface
3. Contain the spill with an earthen dike and dig up the contaminated soil for disposal whenever a spill occurs on soil
4. If the spill occurs during precipitation, cover the spill with plastic or other material to prevent contaminated runoff
5. Dispose of the contaminated material promptly and properly

Significant or Hazardous Spills

Immediately notify qualified personnel of significant or hazardous spills. Do not let construction personnel attempt to clean up the spill until qualified staff have arrived. Do the following:

1. Notify the Engineer and follow up with a written report
2. Obtain the services of a spills contractor or hazardous material team immediately
3. Notify the local emergency response team by dialing 911 and county officials at the emergency phone numbers kept at the job site
4. Notify the California Emergency Management Agency State Warning Center at (916) 845-8911
5. Notify the National Response Center at (800) 424-8802 regarding spills of Federal reportable quantities under CFR Title 40, Parts 110, 119, and 302
6. Notify other agencies as appropriate, including:
    - 6.1. Fire Department
    - 6.2. Public Works Department
    - 6.3. Coast Guard
    - 6.4. Highway Patrol
    - 6.5. City Police or County Sheriff Department
    - 6.6. Department of Toxic Substances
    - 6.7. California Division of Oil and Gas
    - 6.8. Cal OSHA
    - 6.9. Regional Water Resources Control Board

Report minor, semi-significant, and significant spills to the WPC Manager. The WPC Manager must notify the Engineer immediately. The WPC Manager must oversee and enforce proper spill prevention and control measures.

Prevent spills from entering storm water runoff before and during cleanup. Do not bury spills or wash spills with water.

Keep material or waste storage areas clean, well organized, and equipped with enough cleanup supplies for the material being stored.

Material Management General

Material must be delivered, used, and stored for this job in a way that minimizes or eliminates discharge of material into the air, storm drain systems, and watercourses.

Implement the practices described under "Material Management" of these special provisions while taking delivery of, using, or storing any of the following materials:

1. Hazardous chemicals including acids, lime, glues, adhesives, paints, solvents, and curing compounds
2. Soil stabilizers and binders
3. Fertilizers
4. Detergents
5. Plaster
6. Petroleum materials including fuel, oil, and grease
7. Asphalt components and concrete components
8. Pesticides and herbicides

Employees trained in emergency spill cleanup procedures must be present during the unloading of hazardous materials or chemicals.

If practicable, use less hazardous materials.

Material Storage

Use the following material storage procedures:

1. Store liquids, petroleum materials, and substances listed in CFR Title 40, Parts 110, 117, and 302 as specified by the Department, and place them in secondary containment facilities.
2. Secondary containment facilities must be impervious to the materials stored there for a minimum contact time of 72 hours.
3. Cover secondary containment facilities during non-working days and when precipitation is predicted. Secondary containment facilities must be adequately ventilated.
4. Keep secondary containment facility free of accumulated rainwater or spills. After precipitation, or in the event of spills or leaks, collect accumulated liquid and place into drums within 24 hours. Handle these liquids as hazardous waste under "Hazardous Waste" of these special provisions unless testing determines them to be nonhazardous.
5. Do not store incompatible materials, such as chlorine and ammonia, in the same secondary containment facility.
6. Store materials in the original containers with the original material labels maintained in legible condition. Replace damaged or illegible labels immediately.
7. Secondary containment facilities must have the capacity to contain precipitation from a 24-hour-long, 25-year storm, and 10 percent of the

aggregate volume of all containers, or entire volume of the largest container within the facility, whichever is greater.

8. Store bagged or boxed material on pallets. Protect bagged or boxed material from wind and rain during non-working days and while precipitation is predicted.

9. Provide sufficient separation between stored containers to allow for spill cleanup or emergency response access. Storage areas must be kept clean, well organized, and equipped with cleanup supplies appropriate for the materials being stored.

10. Repair or replace perimeter controls, containment structures, covers, and liners as necessary. Inspect storage areas before and after precipitation, and at least weekly during other times.

Stockpile Management

Use the following stockpile management procedures:

1. Reduce or eliminate potential water pollution from stockpiled material including soil, paving material, and pressure treated wood.

2. Locate stockpiles:

2.1. If within the floodplain, at least 100 feet from concentrated flows of storm water, drainage courses, and inlets unless approved

2.2. If outside the floodplain, at least 50 feet from concentrated flows of storm water, drainage courses, and inlets unless approved

Install WPC practices within 15 days or before predicted precipitation, whichever occurs first.

Active and inactive soil stockpiles must be:

1. Covered with soil stabilization measures, plastic sheeting, or geosynthetic fabric

2. Surrounded with a linear sediment barrier

Portland cement concrete rubble, AC, HMA, AC and HMA rubble, aggregate base or aggregate sub-base stockpiles must be:

1. Covered with plastic sheeting, or geosynthetic fabric

2. Surrounded with a linear sediment barrier Pressure treated wood stockpiles must be:

1. Placed on pallets

2. Covered with impermeable material Cold mix asphalt concrete stockpiles must be:

1. Placed on impervious surface
2. Covered with impermeable material
3. Protected from run-on and runoff

Control wind erosion year round under Section 10, "Dust Control" of the Standard Specifications.

Repair or replace linear sediment barriers and covers as needed to keep them functioning properly. If sediment accumulates to 1/3 of the linear sediment barrier height, remove the sediment.

Waste Management Solid Waste

Do not allow litter or debris to accumulate anywhere at the job site, including storm drain grates, trash racks, and ditch lines. Pick up and remove trash and debris from the job site at least once a week. The WPC Manager must monitor solid waste storage and disposal procedures at the job site.

If practicable, recycle nonhazardous job site waste and excess material. If recycling is not practicable, disposal must comply with Section 7-1.13, "Disposal of Material Outside the Highway Right of Way" of the Standard Specifications.

Furnish enough closed-lid dumpsters of sufficient size to contain any solid waste generated by work activities. When the refuse reaches the fill line, empty the dumpsters. Dumpsters must be watertight. Do not wash out dumpsters at the job site. Furnish additional containers and pick up dumpsters more frequent during the demolition phase of construction.

Solid waste includes:

1. Brick
2. Mortar
3. Timber
4. Metal scraps
5. Sawdust
6. Pipe
7. Electrical cuttings
8. Non-hazardous equipment parts
9. Styrofoam and other packaging materials
10. Vegetative material and plant containers from highway planting
11. Litter and smoking material, including litter generated randomly by the public

12. Other trash and debris

Furnish and use trash receptacles at the job site yard, field trailers, and locations where workers gather for lunch and breaks.

Hazardous Waste

Use hazardous waste management practices if waste is generated at the job site from the following substances:

1. Petroleum products
2. Asphalt products
3. Concrete curing compound
4. Pesticides
5. Acids
6. Paints
7. Stains
8. Solvents
9. Wood preservatives and treated posts
10. Roofing tar
11. Road flares
12. Lime
13. Glues and adhesives
14. Materials classified as hazardous by California Code of Regulations, Title 22, Division 4.5; or listed in CFR Title 40, Parts 110, 117, 261, or 302

The WPC Manager must oversee and enforce hazardous waste management practices. Minimize the production of hazardous materials and hazardous waste at the job site. If damaged, repair or replace perimeter controls, containment structures, and covers.

If hazardous material levels are unknown, use a laboratory certified by ELAP under CDPH to sample and test waste to determine safe methods for storage and disposal.

Separate potentially hazardous waste from nonhazardous waste at the job site. Hazardous waste must be handled, stored, and disposed of under California Code of Regulations, Title 22, Division 4.5, Section 66262.34; and in CFR Title 49, Parts 261,

262, and 263.

Store hazardous waste in sealed containers constructed and labeled with the contents and date accumulated under California Code of Regulations, Title 22, Division 4.5; and in CFR Title 49, Parts 172, 173, 178, and 179. Keep hazardous waste containers in temporary containment facilities under "Material Storage" of these special provisions.

Furnish containers with adequate storage volume at convenient locations for hazardous waste collection. Do not overfill hazardous waste containers. Do not mix hazardous wastes. Do not allow potentially hazardous waste to accumulate on the ground. Store containers of dry waste that are not watertight on pallets. Store hazardous waste away from storm drains, watercourses, moving vehicles, and equipment.

Clean water based or oil based paint from brushes or equipment within a contained area and in a way that does not contaminate soil, watercourses, and storm drain systems. Handle and dispose of the following as hazardous waste: paints, thinners, solvents, residues, and sludges that cannot be recycled or reused. When thoroughly dry, dispose of the following as solid waste: dry, latex paint and paint cans, used brushes, rags, absorbent materials, and drop cloths.

Dispose of hazardous waste within 90 days of being generated. Use a licensed hazardous waste transporter to take hazardous waste to a Class I Disposal Site. Submit a copy of uniform hazardous waste manifest forms within 24 hours of transporting hazardous waste.

The WPC Manager must inspect the following daily:

1. Storage areas for hazardous materials and wastes
2. Hazardous waste disposal and transporting activities
3. Hazardous material delivery and storage activities

Contaminated Soil

Identify contaminated soil from spills or leaks by noticing discoloration, odors, or differences in soil properties. Soil with evidence of contamination must be sampled and tested by a laboratory certified by ELAP.

If levels of contamination are found to be hazardous, handle and dispose of the soil as hazardous waste.

Prevent the flow of water, including ground water, from mixing with contaminated soil by using one or a combination of the following measures:

1. Berms
2. Cofferdams
3. Grout curtains
4. Freeze walls
5. Concrete seal course

If water mixes with contaminated soil and becomes contaminated, sample and test the water using a laboratory certified by ELAP. If levels of contamination are found to be hazardous, handle and dispose of the water as hazardous waste.

Concrete Waste

Use practices that will prevent the discharge of portland cement concrete, AC, or HMA waste into storm drain systems or watercourses.

Collect and dispose of portland cement concrete, AC, or HMA waste at locations where:

1. Concrete material, including grout, is used
2. Concrete dust and debris result from demolition
3. Sawcutting, coring, grinding, grooving, or hydro-concrete demolition of portland cement concrete, AC, or HMA creates a residue or slurry
4. Concrete truck or other concrete-coated equipment is cleaned at the job site

Sanitary and Septic Waste

Do not bury or discharge wastewater from sanitary or septic systems within Department right-of-way. The WPC Manager must inspect sanitary or septic waste storage and monitor disposal procedures at least weekly. Sanitary facilities that discharge to the sanitary sewer system must be properly connected and free from leaks. Place sanitary facilities at least 50 feet away from storm drains, watercourses, and flow lines.

Obtain written approval from the local health agency, city, county, and sewer district before discharging from a sanitary or septic system directly into a sanitary sewer system, and submit a copy to the Engineer. Comply with local health agency provisions while using an on-site disposal system.

Liquid Waste

Use practices that will prevent job site liquid waste from entering storm drain systems or watercourses. Liquid wastes include the following:

1. Drilling slurries or fluids
2. Grease-free or oil-free wastewater or rinse water
3. Dredgings, including liquid waste from drainage system cleaning
4. Liquid waste running off a surface including wash or rinse water
5. Other non-stormwater liquids not covered by separate permits Hold liquid waste in structurally sound, leak proof containers such as:

1. Roll-off bins

2. Portable tanks

Liquid waste containers must be of sufficient quantity and volume to prevent overflow, spills and leaks.

Store containers:

1. At least 50 feet from moving vehicles and equipment
2. If within the floodplain, at least 100 feet from concentrated flows of storm water, drainage courses, watercourses, and storm drain inlets unless approved
3. If outside the floodplain, at least 50 feet from concentrated flows of storm water, drainage courses, watercourses, and storm drain inlets unless approved

Remove and dispose of deposited solids from sediment traps under "Solid Waste" of these special provisions unless the Engineer approves another method.

Liquid waste may require testing to determine hazardous material content before disposal.

Drilling fluids and residue must be disposed of outside the highway right-of-way.

If an approved location is available within the job site, fluids and residue exempt under California Code of Regulations, Title 23, Section 2511(g) may be dried by evaporation in a leak proof container. Dispose of remaining solid waste under "Solid Waste" of these special provisions.

Non-Storm Water Management Water Control and Conservation

Manage water used for work activities to prevent erosion or discharge of pollutants into storm drain systems or watercourses. Obtain approval before washing anything at the job site with water that could discharge into a storm drain system or watercourse. Report discharges immediately.

If water is used at the job site, implement water conservation practices. Inspect irrigation areas. Adjust watering schedules to prevent erosion, excess watering, or runoff. Shut off water source to broken lines, sprinklers, or valves, and repair breaks within 24 hours. If possible, reuse water from waterline flushing for landscape irrigation. Sweep and vacuum paved areas; do not wash them with water.

Direct job site water runoff, including water from water line repair, to areas where it can infiltrate into the ground and not enter storm drain systems or watercourses. Do not allow spilled water to escape water truck filling areas. If possible, direct water from off- site sources around the job site. Minimize the contact of off-site water with job site water.

Illegal Connection and Discharge Detection and Reporting

Inspect the job site and the site perimeter before starting work for evidence of illegal connections, discharges, or dumping. After starting work, inspect the job site and perimeter on a daily schedule.

Whenever illegal connections, discharges, or dumping are discovered, notify the Engineer immediately. Take no further action unless ordered by the Engineer. Assume unlabeled or unidentifiable material is hazardous.

Look for the following evidence of illegal connections, discharges, or dumping:

1. Debris or trash piles
2. Staining or discoloration on pavement or soils
3. Pungent odors coming from drainage systems
4. Discoloration or oily sheen on water
5. Stains or residue in ditches, channels or drain boxes
6. Abnormal water flow during dry weather
7. Excessive sediment deposits
8. Nonstandard drainage junction structures
9. Broken concrete or other disturbances near junction structures

Vehicle and Equipment Cleaning

Limit vehicle and equipment cleaning or washing at the job site except what is necessary to control vehicle tracking or hazardous waste. Notify the Engineer before cleaning vehicles and equipment at the job site with soap, solvents, or steam. Contain and recycle or dispose of resulting waste under "Liquid Waste" or "Hazardous Waste" of

these special provisions, whichever is applicable. Do not use diesel to clean vehicles or equipment, and minimize the use of solvents.

Clean or wash vehicles and equipment in a structure equipped with disposal facilities. If using a structure is not possible, clean or wash vehicles and equipment in an outside area. The outside area must be:

1. Paved with AC, HMA, or concrete paving
2. Surrounded by a containment berm
3. Equipped with a sump to collect and dispose of wash water
4. If within the floodplain, located at least 100 feet from concentrated flows of storm water, drainage courses, watercourses, and storm drain inlets unless approved
5. If outside the floodplain, located at least 50 feet from concentrated flows of storm water, drainage courses, watercourses, and storm drain inlets unless approved

When washing vehicles or equipment with water, use as little water as possible. Hoses must be equipped with a positive shutoff valve.

Discharge liquid from wash racks to a recycle system or to another approved system. Remove liquids and sediment as necessary.

The WPC Manager must inspect vehicle and equipment cleaning facilities:

1. Daily if vehicle and equipment cleaning occurs daily
2. Weekly if vehicle and equipment cleaning does not occur daily

Vehicle and Equipment Fueling and Maintenance

If practicable, perform maintenance on vehicles and equipment off the job site.

If fueling or maintenance must be done at the job site, designate a site, or sites, and obtain approval before using. Minimize mobile fueling or maintenance.

If vehicle and equipment fueling and maintenance must be done at the job site, areas for the following activities must be:

1. On level ground
2. Protected from storm water run-on
3. If within the floodplain, located at least 100 feet from concentrated flows of storm water, drainage courses, watercourses, and storm drain inlets unless approved
4. If outside the floodplain, located at least 50 feet from concentrated flows of storm water, drainage courses, watercourses, and storm drain inlets unless approved

Use containment berms or dikes around the fueling and maintenance area. Keep adequate quantities of absorbent spill cleanup material and spill kits in the fueling and maintenance area and on fueling trucks. Dispose of spill cleanup material and kits immediately after use. Use drip pans or absorbent pads during fueling or maintenance.

Fueling or maintenance activities must not be left unattended. Fueling nozzles must be equipped with an automatic shutoff control. Vapor recovery fueling nozzles must be used where required by the Air Quality Management District. When not in use, nozzles must be secured upright. Do not top-off fuel tanks.

Recycle or properly dispose of used batteries and tires.

The WPC Manager must inspect vehicle and equipment maintenance and fueling areas:

1. Daily when vehicle and equipment maintenance and fueling occurs daily
2. Weekly when vehicle and equipment maintenance and fueling does not occur daily

The WPC Manager must inspect vehicles and equipment at the job site for leaks and spills on a daily schedule. Operators must inspect vehicles and equipment each day of use.

If leaks cannot be repaired immediately, remove the vehicle or equipment from the job site.

Material and Equipment Used Over Water

Place drip pans and absorbent pads under vehicles or equipment used over water. Keep an adequate supply of spill cleanup material with the vehicle or equipment. If the vehicle or equipment will be idle for more than one hour, place drip pans or plastic sheeting under the vehicle or equipment on docks, barges, or other surfaces over water.

Furnish watertight curbs or toe boards on barges, platforms, docks, or other surfaces over water to contain material, debris, and tools. Secure material to prevent spills or discharge into water due to wind.

Structure Removal Over or Adjacent to Water

Do not allow demolished material to enter storm water systems or watercourses. Use approved covers and platforms to collect debris. Use attachments on equipment to catch debris on small demolition activities. Empty debris catching devices daily and handle debris under "Waste Management" of these special provisions.

The WPC Manager must inspect demolition sites within 50 feet of storm water systems or watercourses daily.

Paving, Sealing, Sawcutting, Grooving, and Grinding Activities

Prevent the following materials from entering storm drain systems or water courses:

1. Cementitious material
2. Asphaltic material
3. Aggregate or screenings
4. Grinding grooving, or sawcutting residue
5. Pavement chunks
6. Shoulder backing
7. Methacrylate

Cover drainage inlets and use linear sediment barriers to protect downhill watercourses until paving, sealing, sawcutting, grooving, or grinding activities are completed and excess material has been removed. Cover drainage inlets and manholes during the application of seal coat, tack coat, slurry seal, or fog seal.

If precipitation is predicted, limit paving, sawcutting, and grinding to places where runoff can be captured.

Do not start seal coat, tack coat, slurry seal, or fog seal activities if precipitation is predicted during the application or curing period. Do not excavate material from existing roadways during precipitation.

Use a vacuum to remove slurry immediately after slurry is produced. Do not allow slurry to run onto lanes open to traffic or off the pavement.

Collect residue from portland cement concrete grinding and grooving activities with a vacuum attachment on the grinding machine. Do not leave any residue on the pavement or allow the residue to flow across the pavement.

If approved, material excavated from existing roadways may be stockpiled under "Stockpile Management" of these special provisions.

Do not coat asphalt trucks and equipment with substances that contain soap, foaming agents, or toxic chemicals.

When paving equipment is not in use, park over drip pans or plastic sheeting with absorbent material to catch drips.

Thermoplastic Striping and Pavement Markers

Thermoplastic striping and preheating equipment shutoff valves must work properly at all times. Do not preheat, transfer, or load thermoplastic within 50 feet of drainage inlets or watercourses. Do not fill a preheating container above a level that is 6 inches below the top. Truck beds must be cleaned daily of scraps or melted thermoplastic.

Do not unload, transfer, or load bituminous material for pavement markers within 50 feet of drainage inlets or watercourses. Release all pressure from a melting tank before removing the lid to fill or service. Do not fill a melting tank above a level that is 6 inches below the top.

Collect bituminous material from the roadway after marker removal.

Pile Driving

Keep spill kits and cleanup material at pile driving locations. Pile driving equipment must be parked over drip pans, absorbent pads, or plastic sheeting with absorbent material. If precipitation is predicted, protect pile driving equipment by parking on plywood and covering with plastic.

Store pile driving equipment when not in use. Stored pile driving equipment must be:

1. Kept on level ground
2. Protected from storm water run-on
3. If within the floodplain, at least 100 feet from concentrated flows of storm water, drainage courses, watercourses, and storm drain inlets unless approved

4. If outside the floodplain, at least 50 feet from concentrated flows of storm water, drainage courses, watercourses, and storm drain inlets unless approved

If practicable, use vegetable oil instead of hydraulic fluid.

The WPC Manager must inspect the pile driving area for leaks and spills:

1. Daily when pile driving occurs daily
2. Weekly when pile driving does not occur daily

Concrete Curing

Do not overspray chemical curing compound. Minimize the drift by spraying as close to the concrete as possible. Cover drainage inlets before applying the curing compound.

Minimize the use and discharge of water by using wet blankets or similar methods to maintain moisture while curing concrete.

Concrete Finishing

Collect and dispose of water and solid waste from high-pressure water blasting. Cover drainage inlets within 50 feet before sandblasting. Minimize drift of dust and blast material by keeping the nozzle close to the surface of the concrete. The blast residue may contain hazardous material.

Inspect concrete finishing containment structures for damage before each day of use and before predicted precipitation. Remove liquid and solid waste from containment structures after each work shift.

Sweeping

Sweeping must be done using hand or mechanical methods such as vacuuming.

Monitor paved areas and roadways within the job site for sediment and debris generating activities such as:

1. Clearing and grubbing
2. Earthwork
3. Trenching
4. Roadway structural section work
5. Vehicles entering and leaving the job site
6. Soil disturbing work
7. Work that causes offsite tracking of material

If sediment or debris is observed, perform sweeping:

1. Within:

    1.1. 8 hours of predicted rain

    1.2. 24 hours unless the Engineer approves a longer period

2. On paved roads at job site entrances and exit locations

3. On paved areas within the job site that flow to storm drains or receiving waters

You may stockpile collected material at the job site. Remove collected material including sediment from paved shoulders, drain inlets, curbs and dikes, and other drainage areas. If stockpiled, dispose of collected material at least once per week.

You may dispose of sediment within the job site that you collected during sweeping activities. Protect disposal areas against erosion.

Remove and dispose of trash collected during sweeping under Section 7-1.13, "Disposal of Material Outside the Highway Right of Way" of the Standard Specifications.

Dewatering

Dewatering consists of discharging accumulated storm water, ground water, or surface water from excavations or temporary containment facilities.

If dewatering and discharging activities are specified under a work item such as "Temporary Active Treatment System" or "Dewatering and Discharge," perform dewatering work as specified in the section involved.

If dewatering and discharging activities are not specified under a work item and you will be performing dewatering activities, you must:

1. Submit a Dewatering and Discharge Plan under Section 5-1.02, "Plans and Working Drawings," of the Standard Specifications and "Water Pollution Control" of these special provisions at least 10 days before starting dewatering activities. The Dewatering and Discharge Plan must include:

    1.1. Title sheet and table of contents

    1.2. Description of dewatering and discharge activities detailing locations, quantity of water, equipment, and discharge points

    1.3. Estimated schedule for dewatering and discharge (start and end dates, intermittent or continuous)

    1.4. Discharge alternatives such as dust control or percolation

    1.5. Visual monitoring procedures with inspection log

2. Conduct dewatering activities under the Departments' s "Field Guide for Construction Dewatering."

3. Ensure that any dewatering discharge does not cause erosion, scour, or sedimentary deposits that could impact natural bedding materials.

4. Discharge the water within the project limits. Dispose of the water in the same way as specified for material in Section 7-1.13 "Disposal of Material Outside the Highway Right of Way" of the Standard Specification if it cannot be discharged within project limits due to site constraints.

5. Do not discharge storm water or non-stormwater that has an odor, discoloration other than sediment, an oily sheen, or foam on the surface. Notify the Engineer immediately upon discovering any such condition.

The WPC manager must inspect dewatering activities:

1. Daily when dewatering work occurs daily

2. Weekly when dewatering work does not occur daily

PAYMENT

The contract lump sum price paid for construction site management includes full compensation for furnishing all labor, materials, tools, equipment, and incidentals and for doing all the work involved in spill prevention and control, material management, waste management, non-stormwater management, and dewatering and identifying, sampling, testing, handling, and disposing of hazardous waste resulting from your activities, as specified in the Standard Specifications and these special provisions, and as ordered by the Engineer.

10-1.05 TRAFFIC CONTROL SYSTEM - The provisions in the first paragraph of Section 12-2.02 of the Standard Specifications, relating to the division of costs for furnishing flagmen, transporting flagmen, and to provide passage through the work, including pilot car costs, shall be revised as follows:

The Contractor shall bear all traffic control costs for work performed during the allotted working days for the contract. Payment will be as per lump sum item for traffic control system included in the contract. If a contract change order changes the character of the traffic control system plan or allocates additional working days, the provisions of Section 12-2.02 shall apply to the changes in traffic control necessary because of the contract change order. Flagging costs shall be borne by the County for the additional working days.

If the Contractor does not provide the traffic control and it becomes necessary for the Engineer to notify the Contractor of his duties according to the Standard Specifications and these special provisions, the Contractor shall pay **$200 per 15-minute period or portion thereof** to the County for all the time required to acquire the traffic control, including pilot car.

Such payment shall commence at the time notice of the improper traffic control condition is given to the Contractor or his authorized representative by the Engineer

and shall terminate when the condition is corrected. Such payment will be deducted from the Contractor's payment.

In addition thereto, when it is necessary for the Engineer to perform the work, the Contractor shall pay the actual cost for the performance thereof. Such amount will be deducted from the Contractor's payment. This will be in addition to any penalties imposed in these special provisions.

The provisions in this section will not relieve the Contractor from his responsibility to provide such additional devices or take such measures as may be necessary to comply with the provisions in Section 7-1.09, "Public Safety," of the Standard Specifications.

One-way traffic shall be controlled through the project in accordance with the California Manual MUTCD and Caltrans Standard Plans T-11 and T-13 entitled "Traffic Control System for Lane Closure on Multilane Conventional Highways" and "Traffic Control System for Lane Closure on Two Lane Conventional Highways," and these special provisions. Night closure will not be permitted.

Caltrans Standard Plans T-11 and T-13 may be accessed at the following website:

www.dot.ca.gov/hq/esc/oe/project_plans/HTM/06_plans_disclaim_US.htm

When traffic is under one way control on unpaved areas, the cones shown along the centerline on the plan need not be placed.

The Contractor shall prepare and submit to the County Construction Engineer for his approval, a traffic control system plan indicating the means and methods he will employ to institute and maintain traffic control for all phases of the work within the project. The traffic control system plan shall be submitted to the County Construction Engineer a minimum of **five (5) working days** prior to the preconstruction conference.

Traffic will be controlled by flagmen by eyesight, radio (walkie talkie) or baton. In the event these methods do not work satisfactorily, as determined by the Engineer, a pilot car will be required.

The Engineer may require a pilot car to be used during earthwork operations in preparation of the grading plane or other operations when the Contractor’s's operations cover an area beyond the line of sight, or beyond the range of radios or when the baton method does not function satisfactorily.

Full compensation for furnishing and operating the pilot car, (including driver, radios, and any other equipment and labor required) shall be considered as included in the contract lump sum price paid for traffic control system and no further payment will be made therefor.

Full compensation for furnishing all labor, tools, materials, equipment, and incidentals and for doing all the work involved in traffic control system as specified in these special provisions and the Standard Specifications shall be considered as included in the contract lump sum price paid for traffic control system and no further compensation will be made therefor.

All work specified in Section 7-1.08 of Standard Specifications shall be performed by the Contractor. The provisions as stated in the last paragraph on page 59

(beginning with "After the surface...) of Section 7-1.08 of the Standard Specifications shall remain unchanged. All other provisions required by Section 7-1.08 of the Standard Specifications shall be paid for and included in the contract lump sum price paid for traffic control system and no further compensation shall be made therefor.

10-1.06 CLEARING AND GRUBBING - Clearing and grubbing shall conform to the provisions in Section 16, "Clearing and Grubbing," of the Standard Specifications and these special provisions.

Improvements to buildings remaining either wholly or partially within the highway right of way, including, but not limited to, sheds, stables, buildings, foundations, and slabs above ground, shall be demolished and removed as part of the work are included under the Demolition portion of work.

Existing vegetation outside the areas to be cleared and grubbed shall be protected from injury or damage resulting from the Contractor's operations.

Activities controlled by the Contractor, except cleanup or other required work, shall be confined within the limits of construction unless otherwise directed by the Engineer

The County reserves the right to salvage materials from the improvements prior to the date set for opening of bids.

The general locations of these improvements are listed in other locations of the technical specifications.

The Contractor shall not dispose of the improvements or materials therefrom by sale, gift or in any manner whatsoever to the general public at the site, provided however, that this provision shall not be construed as limiting or prohibiting the sale or disposal of the improvements or materials at the site to duly licensed contractors or material vendors, and provided that the materials are removed from the improvement by the State's Contractor. Removal of buildings as a unit, or in sections capable of reassembly as a structure, is expressly prohibited.

Vegetable growth from clearing and grubbing operations may not be disposed of in embankments and become the property of the Contractor upon removal.

Full compensation for demolition, removal, and disposal of the facilities specified herein shall be considered as included in the contract lump sum price paid for clearing and grubbing and no additional compensation will be allowed therefor.

10-1.07 FINISHING PROJECT SITE - Finishing project site shall conform to the provisions in Section 22, "Finishing Roadway," of the Standard Specifications and these special provisions.

The contract lump sum price paid for finish project site shall include full compensation for furnishing all labor, materials, tools, equipment and incidentals, and for doing all the work involved in finish project site as shown on the plans, and as specified in these special provisions and the Standard Specifications and as directed by the Engineer, and no additional compensation will be allowed therefor.

10-1.08 CONCRETE SLAB - Concrete Slab shall conform to the provisions of Section 51 "Concrete Structures" of the Standard Specifications and these Special Provisions.

Concrete slabs shall be constructed of Class 3 concrete containing not less than 506 pounds of cement per cubic yard, to the dimensions shown on the Plans, as Specified in these Special Provisions, and as directed by the Engineer. Concrete placed below or outside of the limits shown or specified for the slabs shall not be paid for.

Class 3 concrete shall conform to the requirements for portland cement concrete contained in these Special Provisions.

Full compensation for furnishing all labor, materials, tools, equipment, and incidentals, and for doing all the work involved in constructing concrete, including any necessary excavation, disposal of removed materials clearing and grubbing, saw cutting, and backfill, Portland cement concrete, and water, complete in place as shown in THE Plans and, these Specifications and as directed by the Engineer shall be considered to be included in the unit price in Electrical bid item and no additional compensation will be allowed therefor.

10-1.09 MOBILIZATION – Mobilization shall conform to the provision in Section 11 “Mobilization” of the Standard Specifications

DIVISION 2

SECTION 01005

SPECIFICATIONS

PART 1 GENERAL

1.1 GENERAL

A. The Contractor shall keep on the job a copy of the Plans and Specifications and shall at all times give the Owner and Engineer access thereto.

B. Anything mentioned in the Specifications and not shown on the Plans or shown on the Plans and not mentioned in the Specifications shall be of like effect as if shown or mentioned in both.

C. The Contractor shall not take advantage of any errors, discrepancies or omissions which may exist in the Plans and Specifications but shall immediately call them to the attention of the Engineer whose interpretation or correction thereof shall be conclusive.

D. In case of conflict between portions of the Contract Documents, the order of precedence of Contract Documents shall be:

First:	Permits from other agencies as may be required by law.	
Second:	Addenda	
Third:	General Requirements	(Division 1)
Fourth:	Technical Specifications	(Division 2)
Fifth:	State Standard Specifications	
Sixth:	Plans	
Seventh:	Reference Documents	

E. Change Orders, supplemental agreements and approved revisions to Plans and Specifications will take precedence over documents listed above. Detailed Plans shall have precedence over general Plans.

F. Whenever any conflict appears in any portions of the Contract Documents, it shall be resolved by application of the order of precedence.

1.2 GENERAL REQUIREMENTS AND TECHNICAL SPECIFICATIONS

A. For definitions of the Specifications categorized as General Requirements (Section 1 - 10) and Technical Specifications refer to Section 01090 – Definitions and Abbreviations.

1.3 REFERENCE DOCUMENTS

A. For a definition of Reference Documents and State Standard Specifications refer to Section 01090 – Definitions and Abbreviations.

B. Throughout the following Specification sections, references are made to various widely published, standard and commercial specifications, manuals, or codes of technical societies, organizations, or associations. These specifications are intended to amplify the descriptions of materials, equipment, and construction systems. The Contractor shall caution each of his Subcontractors to become familiar with the contents of the pertinent portions of these Reference Documents. The following Reference Documents are the most widely used, and are cited or referred to in each of the following sections of these Specifications.

1. American Society of Testing Materials (ASTM), latest editions.

2. American National Standards Institute (ANSI), latest editions.

3. American Standards Associations (ASA), latest editions.

4. American Concrete Institute (ACI), latest editions.

5. Federal Specifications, latest editions.

6. California Building Code, latest edition.

7. California Plumbing Code, latest edition.

8. California Electric Code, latest edition.

9. Construction Safety Orders of the Division of Industrial Relations, latest edition.

C. Each citation of a Reference Document shall be construed to refer to the latest published revision of such specification as of the date of the invitation for bids and to such portions of it that relate and apply directly to the material or installation called for on this job. The Engineer will give no consideration to any claimed ignorance as to what a cited Reference Document contains, since such Subcontractor on a project of this scope is deemed to be experienced and familiar with his own trade to be experienced and familiar with his own trade's generally accepted, published standards of quality.

D. Whenever references are made to any of the abovementioned Reference Documents or testing methods in the governing Building Codes, the requirements of those Reference Documents shall govern, insofar as they are not in contravention with maxima or minima prescribed by documents designated in the Building Code.

1.4 LIST OF DRAWINGS

A. The Work shall conform to the following Drawings:

TITLE	SHEET NUMBERS
Cover Sheet	G1
Legend & Notes	G2
Civil	
Overall Site Plan	C1
Treatment Plant Plan	C2
Section and Details	C3
Electrical:	
Legend & Notes	E0.0
Demolition Plot Plan	E1.0
Proposed Plot Plan	E2.0
Electrical Plan	E3.0
Single Line Diagram	E3.1

1.5 OCCUPATIONAL SAFETY AND HEALTH ACT

A. The applicable standards of the American National Standards Institute and the National Fire Protection Association that have been adopted are hereby made a part of these Specifications as a whole and as mentioned in the various sections.

B. Any errors, ambiguities, or inconsistencies of these standards with either the local codes, the Specifications, or the Drawings will be brought to the attention of the Engineer.

1.6 COMPLIANCE WITH ALL LAWS AND CODES

A. Contractor shall conform to and abide by all local city, county, state and federal laws, rules, regulations, including industrial safety laws. Such laws shall be considered as an essential part of these Specifications and, in the absence of definite requirements herein, the provisions of such rules and regulations shall be observed by the Contractor. If the Drawings and/or Specifications are at variance therewith, Contractor shall so notify Engineer promptly. Should the Contractor perform any work contrary to such laws, ordinances, rules and regulations he shall bear all costs arising therefrom.

B. Where these Specifications, however, call for or describe materials workmanship or construction of a better quality, higher standard, or larger size than is required by said rules and regulations, the provisions of these Specifications shall take precedence over said rules and regulations. Contractor shall furnish, without any extra charge, all additional labor or materials, or both, when required for compliance with these rules and regulations.

PART 2

Not Used.

PART 3

Not used.

END OF SECTION

SECTION 01011

DESCRIPTION OF WORK

PART 1 GENERAL

1.1 WORK INCLUDED

A. The Work consists of furnishing all labor, materials, and equipment necessary to modify and improve the existing Water Works District 38 Wastewater Collection and Pump Station Facilities. The work shall include demolition, removal of existing facilities, construction of new facilities, and mechanical, structural and electrical items, and incidentals for complete and usable facilities.

B. The Sky Harbor Wastewater Facilities, in Water Works District 38, are located near the community of Friant, California.

C. The primary components are generally described as follows:

1. Furnish and install submersible jet aerator and submersible mixer in existing aeration basin, remove existing aerator. Clean aeration basin and clarifier, rehabilitate as needed.

2. Furnish and install new sludge chain and scraper collector consisting of, but not limited to, chain, flight, sprockets, stub shafts, and drive units;

3. Furnish and install two new effluent pumps, remove and salvage existing pumps.

4. Replace electrical equipment.

5. Miscellaneous items including all civil, structural, mechanical and electrical/instrumentation work and items necessary to complete the work.

6. Incidental items necessary to complete the work including mobilization, project closeout, temporary and bypassing facilities, quality control and similar construction activities; bonds, insurance, permits, licenses and fees required to complete the project.

7. The County will be responsible for initial dewatering and sludge removal from the aeration and settling tanks. Sludge will be removed within 1 foot of the bottom of the tanks. The Contractor is responsible for removal of the remaining sludge, including cleaning the concrete walls and floor to allow for visual inspection by the County prior to installation of equipment by the Contractor.

8. The Contractor shall coordinate the operation of the treatment plant with the County for the duration of construction. The Contractor will be responsible for installing and operating a temporary bypass of the concrete treatment plant structure and treatment system (if required) as described herein. After

initial dewatering and sludge removal is complete, the Contractor is responsible for operation of temporary bypass and treatment until all work is accepted by the County. After improvements have been accepted, the temporary bypass and treatment system will be removed by the Contractor and the County will resume operation of the plant.

PART 2 PRODUCTS

Not Used

PART 3 EXECUTION

3.1 WORK INVOLVED WITH EXISTING TREATMENT SYSTEM

A. The Contractor shall coordinate his operation with the County's wastewater treatment plant operator and be responsible for maintaining continuous operation of the WWTP during construction of the improvements. The Contractor shall request permission of the Owner or Owner's representative before implementation of the Contractor's planned procedures for each specific alteration of existing facilities and before the alteration begins. The Contractor shall not begin an alteration until specific permission has been granted by the County in each case. The County will coordinate the Contractor's planned procedure with the treatment facility operator. The making of connections to existing facilities or other operations that interfere with the operation of the existing system shall be coordinated with the County, completed as quickly as possible and with as little delay as possible.

B. Any operational functions of the existing system that are required to facilitate Contractor's operation will be done by the plant personnel only.

C. Plant operation and maintenance personnel will cooperate in every way practicable to expedite Contractor's operation; however, if it is necessary for the proper operation or maintenance of portions of the system, the Contractor shall reschedule his operations so there shall be no conflict with necessary operations or maintenance of the system.

D. Existing materials and equipment removed not designated to be salvaged for the County in the execution of the Work shall become the property of the Contractor, shall be removed from, and disposed of, off the site by the Contractor in an acceptable and lawful manner at no extra cost to the County.

E. Work involved with the existing system is indicated in the Contract Documents.

3.2 STAGING AND BYPASS REQUIREMENTS

A. The following is an illustration of two potential methods of staging the Contractor's operation during the construction of the improvements. The Contractor shall have the sole responsibility of developing a staging and bypass to be approved by the County.

The Contractor will truck the bypassed sewage and sludge to Brighten Crest Wastewater Plant. There will be no charge to the Contract for discharging the sewage to one of the sewer manholes/lift station as designated by the County (Approximate location LAT 36° 58' 27" N, LONG 119° 40' 07" W). Depending on the time of the year that this project is being constructed some available manholes are within developed area, hence, odor control will be required when sewage is being disposed at these locations.

B. Option 1: Setup bypass pumping and temporary pond storage

1. The Contractor can furnish temporary bypass pumps, or use the existing influent pumps, to divert the influent flow to the on-site concrete sewer pond for temporary storage by installing temporary bypass piping with necessary containment. The Contractor will not be allowed to use any existing plant pipes to convey water for the bypass.

    a. The plant peak hour flow rate ranges as about 70 gallons per minute (gpm) The Contractor's bypass must be capable of handling a minimum of 70 gpm. The average plant inflow is 4,000 to 5,000 gallon per day

2. The concrete sewer pond may be used for temporary holding of sewage bypassing the plant. The Contractor will be responsible for hauling off sewage and disposing to prevent the pond from overflowing during construction. The pond must be completely emptied after construction is complete and the bypass is removed.

    a. The pond is 48 ft x 48 ft at the top of the berm. It's 8 ft deep with 1:1 side slope on all four sides. The total capacity is estimated to be 65,000 gallons with 2 ft of freeboard. The Contractor is responsible for verifying actual usable storage volume.

3. If the concrete sewer pond is used as a temporary holding pond, the Contractor is responsible for installing an aerator in the pond for temporary aeration and odor control before the sewage is hauled offsite for disposal. The existing floating aerator may be relocated to the concrete sewer pond and used for this purpose.

4. If additional construction time is needed, septic pump truck should be used to ensure enough storage volume is available for the incoming sewage.

C. Option 2: Setup bypass pumping without temporary treatment

1. The Contractor can setup the temporary bypass pump, as described above, to divert sewage flow directly to a covered sewer holding tank or tank truck parked onsite. No sewage would be stored in the concrete sewer pond under this option and no temporary treatment would be required.

D. Empty the Aeration Basin and Complete In-tank Work

1. While the influent sewer is bypassed around the plant, the sewage in the aeration basin will be pumped out and hauled away for disposal arranged by the County. The aeration basin will be emptied to within 1 foot (or less) in depth.

2. The aeration basin shall then be pressure washed by the contractor, inspected by both contractor and the County inspector to determine the extent of repair needed. The cracks of the concrete wall shall be patched according to Section 01900 Explanation of Bid Items. The in-tank demolishing and installation can be completed.

3. Once in basin installation is completed, equipment tested, the influent sewer can be resumed to fill the aeration basin. The sludge in the sludge holding basin and bottom of clarifier shall be pumped into aeration basin as seeding. The aeration basin has approximately 6 days of storage time for influent sewer.

E. Clarifier Work

1. The supernatant in the clarifier can be decanted without disturbing the sludge layer using a submersible pump. The supernatant can be pumped to effluent tank, for temporary storage or disposal if the effluent quality is satisfactory.

2. The remaining mixed liquor and sludge will be pumped to aeration basin as seeding. The clarifier has a dimension of 30 ft x 10 ft x 11 ft deep, total about 25,000 gallons plus the sludge hopper.

3. The clarifier basin can then be pressure washed, inspected and patched as necessary. The in-tank demolishing and installation can be completed.

F. Resume Treatment

1. When the clarifier scraper mechanism is installed, the treatment process can be resumed.

2. Depending on the performance of the treatment process, the previously stored sewage in the sewer pond and effluent in the effluent tank can be pumped back into aeration basin for further treatment. The effluent tank shall be pressure washed and pumped out before the treatment system starts discharging.

G. Effluent Pumps

1. Effluent Pumps can be replaced either before or after the aeration basin and clarifier construction. It can be done without emptying the effluent tank.

H. Electrical

1. Most of the new electrical cabinets, conduits, conductors and junction boxes can be constructed prior to the bypass and mechanical construction without interrupting the normal operation.

2. The switch-over to the new electrical system can be done during the aeration basin construction where new aerator and mixer will be powered after the transition. Contractor shall coordinate with PG&E regarding the switch-over to avoid delays. Temporary power provisions (either a temporary MCC or generator) shall be provided by the Contractor to maintain WWTP operation during the work.

END OF SECTION

SECTION 01040

COORDINATION OF WORK

PART 1 GENERAL

1.1 RESPONSIBILITY OF CONTRACTOR

A. If any part of the Work depends on proper execution or results upon the work of others, the Contractor shall inspect and promptly report to the Engineer any apparent discrepancies or defects in such work of others that render it unsuitable for such proper execution and results. Failure of the Contractor to so inspect and report shall constitute an acceptance of the work of others as fit and proper except as to defects which may develop in the work of others after execution of the Work by the Contractor.

1.2 WORK INVOLVED WITH EXISTING SYSTEM

A. Existing materials and equipment removed not designated to be salvaged for Owner in the execution of the Work shall become the property of the Contractor, shall be removed from, and disposed of, off the site by the Contractor in an acceptable and lawful manner.

1.3 COORDINATION OF WORK

A. The Contractor shall maintain overall coordination for the execution of the Work. Based on the Construction Schedule prepared in accordance with these Specifications, he/she shall obtain from each of his subcontractors a similar schedule and shall be responsible for all parties maintaining these schedules or for coordinating required modifications.

B. As part of the construction schedule required in the contract, the Contractor shall include a schedule of construction operation as it relates to the operation of the treatment plant.

END OF SECTION

SECTION 01052

ENGINEER'S STATUS DURING CONSTRUCTION

PART 1 GENERAL

1.1 OWNER'S REPRESENTATIVE

A. Engineer will be Owner's representative during the construction period. The duties and responsibilities and the limitations of authority of Engineer as Owner's representative during construction are set forth in the Contract Documents and will not be changed without written consent of Owner and Engineer.

1.2 VISITS TO SITE

A. Engineer will make visits to the Site at intervals appropriate to the various stages of construction as Engineer deems necessary in order to observe as an experienced and qualified personnel the progress that has been made and the quality of the various aspects of Contractor's executed Work. Based on information obtained during such visits and observations, Engineer, for the benefit of Owner, will determine, in general, if the Work is proceeding in accordance with the Contract Documents.

B. Engineer's visits and observations are subject to all the limitations on Engineer's authority and responsibility set forth in Section 01052, 1.5. Particularly, but without limitation, during or as a result of Engineer's visits or observations of Contractor's Work Engineer will not supervise, direct, control, or have authority over or be responsible for Contractor's means, methods, techniques, sequences, or procedures of construction, or the safety precautions and programs incident thereto, or for any failure of Contractor to comply with Laws and Regulations applicable to the performance of the Work.

C. Review of the Work by the Engineer shall not relieve the Contractor of the obligation to fulfill all conditions of the Contract.

D. No oral or telephonic agreement or conversation with any officer, agent or employee of the Owner or the Engineer, or with the Engineer, either before or after execution of the Contract, shall affect or modify any of the terms or obligations contained in any of the Contract Documents.

E. The Contractor shall pay the Owner for all overtime review in accordance with existing resolutions or fee schedules of the Owner, unless the charges for such inspection have been specifically waived in the Contract Documents. Overtime charges will be made for all reviews on Saturdays, Sundays and State holidays, and hours worked by the reviewer other than those of the normal working day.

1.3 AUTHORIZED VARIATIONS IN WORK

A. Engineer may authorize minor variations in the Work from the requirements of the Contract Documents which do not involve an adjustment in the Contract Price or the Contract Times and are compatible with the design concept of the completed Project as a functioning whole as indicated by the Contract Documents. These may be accomplished by a Change Order and will be binding on Owner and also on Contractor, who shall perform the Work involved promptly. If Owner or Contractor believes that a Change Order justifies an adjustment in the Contract Price or Contract Times, or both, and the parties are unable to agree on entitlement to or on the amount or extent, if any, of any such adjustment, a Claim may be made therefore as provided within the Contract Documents.

1.4 REJECTING DEFECTIVE WORK

A. Engineer will have authority to reject Work which Engineer believes to be defective, or that Engineer believes will not produce a completed Project that conforms to the Contract Documents or that will prejudice the integrity of the design concept of the completed Project as a functioning whole as indicated by the Contract Documents. Engineer will also have authority to require special inspection or testing of the Work, whether or not the Work is fabricated, installed, or completed. Neither this authority nor the Engineer's good faith judgment to reject or not reject any work shall subject the Engineer to any liability or cause of action by the Contractor, subcontractors, or any other suppliers or persons performing work on the Contract.

1.5 LIMITATIONS ON ENGINEER'S AUTHORITY AND RESPONSIBILITIES

A. Engineer will not supervise, direct, control, or have authority over or be responsible for Contractor's means, methods, techniques, sequences, or procedures of construction, or the safety precautions and programs incident thereto, or for any failure of Contractor to comply with Laws and Regulations applicable to the performance of the Work. Engineer will not be responsible for Contractor's failure to perform the Work in accordance with the Contract Documents.

B. Engineer will not be responsible for the acts or omissions of Contractor or of any Subcontractor, any Supplier, or of any other individual or entity performing any of the Work.

C. Engineer's review of the final Application for Payment and accompanying documentation and all maintenance and operating instructions, schedules, guarantees, bonds, certificates of inspection, tests and approvals, and other documentation required to be delivered will only be to determine generally that their content complies with the requirements of, and in the case of certificates of inspections, tests, and approvals that the results certified indicate compliance with the Contract Documents.

END OF SECTION

SECTION 01090

DEFINITIONS AND ABBREVIATIONS

PART 1 GENERAL

1.1 DEFINITIONS AND TERMS

A. Whenever in these Specifications, or in other Contract Documents, the following terms are used, the intent and meaning shall be interpreted as follows:

1. Board: Board of Supervisors, County of Fresno.

2. Calendar Day: Every day shown on the calendar.

3. Contract Documents: The written agreement covering performance of the work, including, Public Contract Code Sections 10162, 10232, and 20104, Indemnity Agreement, Contract Agreement, Contract Bonds, General Requirements (Division 1), Technical Specifications (Division 2 through Division 16), Plans, Profiles and Drawings, Addenda or Change Orders (if any), and Appendix.

4. Contractor: Refer to Special Provisions Section 1.

5. Contract Price: The total amount of money for which the Contract is awarded.

6. Contract Unit Price: The Contractor's original bid for a single unit of an item of work in the Proposal.

7. Contract Time: The number of calendar days for completion of the Work, including authorized time extensions. In the event a calendar date is specified for Project completion in lieu of a number of calendar days, the Work shall be completed by that calendar date. The Contract Time shall be computed by excluding the first and including the last day; and if the last day be Sunday or a legal holiday, that shall be excluded.

8. County: County of Fresno

9. Engineer: Director of the Department of Public Works and Planning of Fresno County, acting either directly or through properly authorized agents, such agents acting within the scope of the particular duties entrusted to them.

10. Equipment: (Construction) - All machinery and equipment, together with the necessary supplies for upkeep and maintenance, and also tools and apparatus necessary for the proper construction and acceptable completion of work. (Installed) - All material or articles used in equipping a facility as furnishings or apparatus to fulfill a functional design.

11. General Requirements: All specifications contained in Division 1.

12. Notice: Any notice allowed or required to be given by the Owner may be given by the Engineer.

13. Owner: County of Fresno.

14. Person: Any individual, association, partnership, corporation, trust, joint venture or other legal entity.

15. Plans: The drawings, profiles, cross-sections, working drawings and supplemental drawings, or reproduction thereof, approved by the Engineer, which show the location, character, dimensions or details of the work.

16. Proposal: The offer of a Bidder when submitted on the Proposal form; properly signed and guaranteed.

17. Reference Documents: Bulletins, Rules, Methods of Analysis or Test, Codes, Standards, and Specifications of public or private agencies, Engineer Societies, or Industrial Associations. Reference shall be to the latest edition thereof, including Amendments, which are in effect and published at the time the Request for Bids is issued, unless a specific edition is identified, in which case reference shall be to such specific edition. Reference Documents are intended to amplify the descriptions of materials, equipment, and construction systems and are to be considered a part of the Contract Documents insofar as the various sections thereof are referred to hereinafter. Examples of Reference Documents are Federal Specifications, State Standard Specifications, and those of American Society of Testing Materials (ASTM), American National Standards Institute (ANSI), American Standards Associations (ASA), and American Concrete Institute (ACI).

18. Salvage: The protection storage, and/or removal of specified existing equipment, parts or materials during the work for retention and later use by the Owner.

19. Sanitary Sewer: Any conduit and appurtenances intended for the reception and transfer of sewage.

20. Special Provisions: Any or all of the specifications defined in this document and any addendums thereof. They are divided into three general categories: General Requirements (Division 1), Technical Specifications (Division 2), and Reference Documents.

21. Specifications: Reference Specifications, Contract Documents, General Conditions, Supplementary Conditions, Technical Provisions and any addendums thereof.

22. State: County of Fresno.

23. State Standard Plans: State of California, Business and Transportation Agency, Department of Transportation, Caltrans, Standard Plans, latest revision.

24. State Standard Specifications: Reference Specifications are those entitled "Standard Specifications, State of California, Business and Transportation Agency, Department of Transportation, latest edition of the 2006", hereinafter referred to as the State Standard Specifications. These Specifications are to be considered a part of the Contract Documents insofar as the various sections thereof are referred to hereinafter. (Also see Standard Specifications and Reference Specifications).

25. Storm Sewer: Any conduit and appurtenances intended for the reception and transfer of storm water.

26. Street: Any public road, highway, parkway, freeway, alley, walk or right-of-way.

27. Surety: Any individual, firm or corporation bound with and for the Contractor for the acceptable performance, execution and completion of the Work, and for the satisfaction of all obligations incurred.

28. Technical Specifications: All special provisions contained in Division 2.

29. Utility: Tracks, overhead of underground wires, pipelines, conduits, ducts or structures, sewers of storm drains owned, operated or maintained in or across a public right-of-way or private easement.

30. Water Main: Any conduit and appurtenances intended for the distribution of water.

31. Work: That which is proposed to be constructed, or done under the Contract or permits, including the furnishing of all labor and materials.

32. Working Day: As defined in Section 8-1.06 of the State Standard Specifications.

1.2 REFERENCED STANDARDS

A. The standards referred to, except as modified, shall have full force and effect as though printed in this Specification, and shall be the latest edition or revision thereof in effect on the bid opening date, unless a particular edition or issue is indicated. Copies of these standards are not available from the County.

1.3 LIST OF ABBREVIATIONS

A. Abbreviations and terms, or pronouns in place of them, shall be interpreted as follows:

AA	Aluminum Association
AABC	Associated Air Balance Council
AAMA	Architectural Aluminum Manufacturers Association
AASHTO	American Association of State Highway and Transportation Officials
ABMA	American Boiler Manufacturers Association
ACI	American Concrete Institute
ACPA	American Concrete Pipe Association

ADC	Air Diffusion Council
AEIC	Association of Edison Illuminating Companies
AFBMA	Antifriction Bearing Manufacturers Association
AGA	American Gas Association
AGMA	American Gear Manufacturers Association
AHA	American Hardboard Association
AI	Asphalt Institute
AIA	American Institute of Architects
AISC	American Institute of Steel Construction
AISI	American Iron and Steel Institute
AITC	American Institute of Timber Construction
AMCA	Air Moving and Conditioning Association
ANSI	American National Standards Institute
APA	American Plywood Association
API	American Petroleum Institute
APWA	American Public Works Association
ARI	American Refrigeration Institute
ASA	(now U.S.A.S.I., USA Standards Institute) Association & its Standard Specifications
ASAHC	American Society of Architectural Hardware Consultants
ASCE	American Society of Civil Engineers
ASHRAE	American Society of Heating, Refrigerating, and Air-Conditioning Engineers
ASME	American Society of Mechanical Engineers
ASSE	American Society of Sanitary Engineers
ASTM	American Society for Testing and Materials
AWG	American Wire Gage
AWI	Architectural Woodwork Institute
AWPA	American Wood-Preservers' Association
AWS	American Welding Society
AWWA	American Water Works Association
BHMA	Builders Hardware Manufacturers Association
BIA	Brick Institute of America (formerly SCPI)
CAL/OSHA	California Occupational Safety and Health Administration
CALTRANS	California Department of Transportation
CBC	California Building Code
CCR	California Codes of Regulations
CDA	Copper Development Association
CEC	California Electrical Code
CFR	Code of Federal Regulations
CISPI	Cast Iron Soil Pipe Institute
CMAA	Crane Manufacturers Association of America
CMC	California Mechanical Code
CPC	California Plumbing Code
CRA	California Redwood Association
CRSI	Concrete Reinforcing Steel Institute
CS	Commercial Standard (U.S. Department of Commerce)
DHI	Door and Hardware Institute
DIPRA	Ductile Iron Pipe Research Association
EEI	Edison Electric Institute
EJCDC	Engineers' Joint Contract Documents Committee
EPA	Environmental Protection Agency

FED SPEC	Federal Specification
FCI	Fluid Controls Institute
FGMA	Flat Glass Marketing Association
FIA	Factory Insurance Association
FM	Factory Mutual
FSA	Fluid Sealing Association
FTI	Facing Tile Institute
HEI	Heat Exchange Institute
HMI	Hoist Manufacturers Institute
HPMA	Hardwood Plywood Manufacturers Association
HTI	Hand Tools Institute
ICBO	International Conference of Building Officials
I-B-R	Institute of Boiler and Radiator Manufacturers
IEEE	Institute of Electrical and Electronics Engineers
IES	Illuminating Engineering Society
IFI	Industrial Fasteners Institute
IPCEA	Insulated Power Cable Engineers Association
ISA	Instrument Society of America
JIC	Joint International Conference (Hydraulic Institute)
MHI	Materials Handling Institute
MIL	Military Specification
MMA	Monorail Manufacturers Association
MSS	Manufacturers' Standardization Society
NAAMM	National Association of Architectural Metals Manufacturers
NACE	National Association of Corrosion Engineers.
MBBPVI	National Board of Boiler and Pressure Vessel Inspectors
NBHA	National Builders Hardware Association
NCSPA	National Corrugated Steel Pipe Association
NEC	National Electrical Code
NECA	National Electrical Contractors Association
NEMA	National Electrical Manufacturers Association
NEMI	National Elevator Manufacturing Industry
NFPA	National Fire Protection Association
NIST	National Institute of Standards and Technology
NLA	National Lime Association
NPC	National Plumbing Code
NPT	National Pipe Thread
NRCA	National Roofing Contractors' Association
NRMCA	National Ready Mixed Concrete Association
NSC	National Safety Council
NSF	National Sanitation Foundation
NTMA	National Terrazzo and Mosaic Association
NWMA	National Woodwork Manufacturers Association
OSHA	Occupational Safety and Health Administration
PCA	Portland Cement Association
PCI	Prestressed Concrete Institute
PDI	Plumbing and Drainage Institute

PFI	Pipe Fabrication Institute
PS	Product Standard
RTI	Resilient Tile Institute (formerly AVATI)
SAE	Society of Automotive Engineers
SCPRF	Structural Clay Products Research Foundation
SI	International Systems of Units (Metric)
SIGMA	Sealed Insulating Glass Manufacturers Association
SFPA	Southern Forest Products Association
SJI	Steel Joist Institute
SMA	Screen Manufacturers Association
SMACNA	Sheet Metal and Air Conditioning Contractors National Association
SPFA	Steel Plate Fabricators Association
SPI	Society of the Plastics Industry
SPTA	Southern Pressure Treaters Association
SSI	Scaffolding and Shoring Institute
SSPC	Steel Structures Painting Council
SSPWC	Standard Specifications for Public Works Construction (Greenbook)
UL	Underwriters' Laboratories
UPC	Uniform Plumbing Code
USBR	U.S. Bureau of Reclamation
USGS	United States Geological Survey
WCLA	West Coast Lumbermen's Association (Std. Grading and Dressing Rule)
WCLIB	West Coast Lumber Inspection Bureau
WIC	Woodwork Institute of California
WRI	Wire Reinforcement Institute, Inc.
WWPA	Western Wood Products Association

PART 2 PRODUCTS

Not used.

PART 3 EXECUTION

Not used.

END OF SECTION

SECTION 01300

SUBMITTALS

PART 1 GENERAL

1.1 GENERAL SUBMITTAL REQUIREMENTS

A. The Contractor shall submit to the Engineer such schedules, reports, drawings, lists, literature samples, instructions, directions, and guarantees as are specified or reasonably required for construction, operation, and maintenance of the Work. The Contractor's attention is directed to the individual Specification sections in these Contract Documents that may contain additional and special submittal requirements.

B. Reference: Section 8-1.05 Submittals

C. Reference: Section 10-1.01 Order of Work

1.2 SCHEDULE

A. Within five (5) days of approval of Contract by the Owner, Contractor shall submit a Construction Schedule as set forth in this section. The Construction Schedule shall indicate the time of starting and completion of each major structure or phase of the Work and such intermediate phases as will serve for well-defined chronological order on the Construction Schedule. The schedule shall also indicate the anticipated date of receipt of major items of equipment, and all items of equipment receipt and installation of which is critical to the scheduled progress of the project. The Construction Schedule shall be prepared in Critical Path Method format.

B. The Engineer will return the Construction Schedule to the Contractor. The Contractor shall modify the schedule to include any modifications, or changes resulting from alternates selected by the Owner and final phasing and scheduling of work items or control points.

C. The Contractor shall complete these modifications within five (5) calendar days from date the schedule is returned to him and shall resubmit it for review. Upon receiving written notice from the Engineer that the schedule, as revised, has been accepted, it will then become the Construction Schedule by which the Contractor shall construct the Work and shall be subject to progress reporting, revision, and updating procedures implemented during the course of construction as specified elsewhere in this DIVISION 1.

D. The initial Construction Schedule shall contain no Contract changes or delays which may have occurred during the interim submittal period. Changes shall be entered at the first update revision as specified hereinafter under Revisions to Construction Schedule.

E. At any time during the progress of the project, if Contractor's progress has fallen behind the accepted Construction Schedule, Contractor shall take such corrective steps as may be required, including but not limited to, increasing the number of personnel, shifts, overtime operations, days of work, and amount of construction equipment until such time as the Work is back on schedule. He shall also submit at the next progress meeting such supplementary schedule or schedules as may be deemed necessary to demonstrate the manner in which the approved rate of progress will be regained.

1.3 WEEKLY ACTIVITIES PLAN

A. If requested, on the last working day of every week Contractor shall submit to Engineer, Contractor's Plan of Activities for the following three (3) weeks. The Plan of Activities shall describe the activity and location of the activity.

1.4 REVISIONS TO CONSTRUCTION SCHEDULE

A. The Contractor shall submit a revised Construction Schedule within five (5) days of the occurrence of any of the following:

1. When delay in completion of any activity or group of activities indicates an overrun of the Contract time or control point requirement, by 30 working days or ten percent (10 percent) of the remaining duration, whichever is less.

2. Delays due to work stoppage are encountered which make replanning or rescheduling of the work necessary.

3. The schedule does not represent the actual prosecution and progress of the project as being performed in the field.

B. Acceptance of the revised Construction Schedule and all supporting data is contingent upon compliance with other related requirements specified elsewhere in this DIVISION 1 – General Requirements and in any other Contract Documents, or requirements by the Engineer.

C. The cost of revisions to the Construction Schedule resulting from Contract changes will be included in the cost for the change in the Work, and will be based on the complexity of the revision or Change Order, man-hours expended in analyzing the change, and the total cost of the change.

D. The cost of revision to the Construction Schedule not resulting from authorized changes in the Work shall be the responsibility of the Contractor.

1.5 ADMINISTRATIVE SUBMITTALS

A. The Contractor is reminded of his obligation, as required by law, to make required submittals to applicable federal, state or local agencies. Failure to comply with this requirement may result in the withholding of progress payments and make the Contractor liable for other prescribed action and sanctions.

B. The Contractor shall submit for information to the Engineer a copy of all letters relative to the Contract, reports, certifications, certified payrolls, etc. submitted directly to a federal, state, or other governing agency as described in the Special Provisions, and these Specifications.

C. During the performance of the Contract, the Contractor shall maintain on a daily basis, and submit to the Engineer as requested, full and correct information as to the number of persons employed in connection with each subdivision of the work, the classification, cost, source, and amount of each class of materials delivered, equipment received, and major construction equipment used in each subdivision of the work.

1.6 TECHNICAL SUBMITTALS

A. General:

1. Requirements in this section are in addition to any specific requirements for submittals specified in other divisions and sections of these Contract Documents.

1. Each submittal shall contain material pertaining to no more than one equipment or material item, and shall have the specification section and applicable paragraph number clearly identified. Each submittal shall be sequentially numbered starting with the first one delivered. Resubmittals shall include the number of the original submittal plus the suffix ".1" for the first resubmittal, ".2" for the second resubmittal, etc. (e.g. submittal 3.0, 3.1, 3.2, etc.) Submittals not conforming to these requirements will be rejected.

2. Designation of work "by others," if shown on shop drawings, shall mean that the work will be the responsibility of the Contractor rather than the subcontractor or supplier who has prepared the shop drawings.

3. Submittals will be acted upon by the Engineer as promptly as possible, and returned to the contractor not later than the time allowed. The Contractor shall provide in his Construction Schedule the time for this review. If the Contractor is required by the Engineer to resubmit data, then the time required for the Contractor to prepare and resubmit such data, and the required time for Engineer review, shall not be a cause for delay in contract completion or a cause for an extension of contract time delay shall be assigned solely to the Contractor.

4. After a submittal has been reviewed and accepted, no changes or substitutions in that submittal will be allowed.

5. Shop Drawings and submittals will be reviewed for general conformance with the drawings and specifications. The intent of the review is to determine if the Contractor is submitting materials and equipment which are in general conformance with the Contract Documents. Detailed review of dimensions, sizes, space requirements, coordination with other equipment, and other construction details is not performed. Engineer’s review of submittals shall not relieve Contractor from responsibility for errors,

omissions, or deviations, nor responsibility for compliance with the Contract Documents. The Contractor shall indicate on the submittal transmittal form any deviation, the reasons, and how the submittal deviates from the contract requirements.

B. Submittal Procedure:

1. The Contractor shall submit to the Engineer for his review electronic form submittals as specified in Section 8-1.05 of these specified on , unless otherwise described in various sections. Shop drawings shall be submitted in sufficient time to allow the Engineer ten (10) regular working days for examining the shop drawings.

2. Shop drawings shall be accurate and complete, and shall contain all required information, including satisfactory identification of items in relation to the Contract Drawings and Specifications.

3. Shop drawings shall be submitted only by the Contractor, who shall indicate by a signed stamp on the shop drawings, or other approved means, that Contractor has checked and approved the shop drawings, and that the work shown is in accordance with Contract requirements and has been checked for dimensions and relationship with work of all other trades involved. Incomplete shop drawings and shop drawings that have not been checked by the Contractor will be returned to the Contractor for resubmission in the proper form.

4. After Review by the Engineer, the submittal will be returned to the Contractor appropriately stamped. If major changes or corrections are necessary, the shop drawing shall be rejected and returned to the Contractor with the need for such changes or corrections indicated. The Contractor shall correct and resubmit rejected shop drawings in the same manner and quantity as specified for the original submittal. If changes are made by the Contractor (in addition to those requested by the Engineer) on the resubmitted shop drawings, such changes shall be clearly explained in a transmittal letter accompanying the resubmitted shop drawings.

5. The review of shop drawings and catalog cuts by the Engineer shall not relieve the Contractor from responsibility for correctness of dimensions, fabrication details, coordination with other work, space requirements, or for deviations from the Contract Drawings or Specifications, unless the contractor has called attention to such deviations in writing by a letter accompanying the shop drawings and the Engineer approves the change or deviation in writing at the time of submission; nor shall review by the Engineer relieve the Contractor from the responsibility for errors in the shop drawings.

6. The Contractor agrees that shop drawing submittals processed by the Engineer do not become Contract Documents and are not Change Orders; that the purpose of the shop drawing review is to establish a reporting procedure and to permit the Engineer to monitor the Contractor's progress and understanding of the design.

C. Shop Drawing Requirements:

1. General: Shop drawings referred to herein shall include shop drawings, catalog cuts, information schematic diagrams, and other submittals for both shop and field-fabricated items. The Contractor shall submit, as applicable, the following for all prefabricated or manufactured structural items, material, and equipment:

   a. For structures, submit all shop, setting, equipment, miscellaneous iron and reinforcement drawings and schedules necessary for construction. The foregoing shall include detailed "pour drawings" which shall show the sequence of concrete placement, and the type, quantity and location of all embedment items (sleeves, anchor bolts, etc.)

   b. For exposed and buried pipelines, submit a detailed layout of the pipeline with details of bends and fabricated specials, and furnish any other details necessary.

   c. For electrical submittals, submit detailed information to show power supply requirements, MCC and control panel elevations, wiring diagrams, control and protection schematics, shop test data, operation and maintenance procedures, outline drawings, and manufacturer's recommendation of the interface/interlock among the equipment.

   d. For mechanical equipment submit all data pertinent to the installation and maintenance of the equipment including shop drawings, anchorage requirements, manufacturer's recommended installation procedure, detailed installation drawings, performance data, test data and curves, operation and maintenance manuals, and other details necessary.

   e. For architectural fabrication submit all data pertinent to the installation of the fabrications, including shop drawings, manufacturer's recommended installation procedure, detailed installation drawings, and other details necessary for operation and maintenance.

   f. Installation or placing drawings for equipment, drives, and bases, include dimensions, size and location of connections to other work, and weight of equipment.

   g. Supporting calculations for equipment and associated supports, or hangers required or specified to be designed by equipment manufacturers. Include seismic restraint information and details.

   h. Complete manufacturer's specifications, including materials description and paint system.

i. Seismic design calculations and restraint details for equipment and piping supports.

j. Samples of finish colors for selection.

D. Seismic Loading Design Provisions:

1. All equipment supports that are not specifically detailed on the Drawings or specified herein shall be the responsibility of the equipment manufacturers and shall be designed by a structural engineer registered in the State of California. The design shall be in accordance with the seismic provisions of the latest edition of the Uniform Building Code.

E. Record Drawings:

1. The Contractor shall deliver to the Engineer one complete set of final Record Drawings before the contract will be considered complete by the Owner. The Record Drawings will consist of a drafted marked-up set of Contract Record Drawings. Sketch mark-up on drawings will not be acceptable.

2. The Contractor shall keep an up-to-date set of marked-up Contract Record Drawings on a full-size set of the Contract Drawings. During the progress of the work, the Contractor shall record and mark-up any changes from or additions to the work described in the Plans and Specifications. All information recorded on the Contract Record Drawings shall be clearly legible.

3. At the end of the work, prior to Project Closeout, the Contractor shall provide the Engineer with the Contract Record Drawings, showing all "as-built" conditions.

4. Final payment will not be made to the Contractor until such time as the Record Drawings are satisfactorily submitted.

F. Review by Engineer:

1. Upon review by the Engineer of each of the Contractor's submissions, the material will be returned to the Contractor with actions defined as follows:

a. NO EXCEPTIONS TAKEN: Accepted subject to its compatibility with further submittals and additional partial submittals for portions of the work not covered in this submittal. Does not constitute approval or deletion of specified or required items not shown in the partial submittal.

b. MAKE CORRECTIONS NOTED: Same as 1.a., except that minor corrections as noted shall be made by the Contractor. No resubmittal required.

c. REVISE AND RESUBMIT: Rejected because of major inconsistencies or errors which shall be resolved or corrected by the

Contractor prior to subsequent review by the Engineer. Resubmittal required.

d. SUBMIT SPECIFIED ITEM: Minor item in submittal missing or incomplete. Submit data, specifications, drawings covering specified item only. Submittal shall be referenced to the main submittal under review.

e. REJECTED: Submitted material does not conform to Plans and Specifications in major respect, i.e.: wrong item, wrong size, model, capacity, or material. Resubmittal required.

G. Requests for Information

1. Requests for Information about the Contract Documents shall be directed by Contractor to Engineer using a Request for Information (RFI) form. Such requests will not be accepted by the Engineer from a Subcontractor or Supplier.

2. A separate form shall be used for each specific item for which information is required. Requests for Information for more than one item using a single RFI form will be permitted only when the items are so functionally related that expediency indicates review of the group of items as a whole.

3. The Engineer will reply to the Contractor's Request for Information within 5 regular working days following receipt by the Engineer.

H. Operation and Maintenance (O&M) Manuals:

1. The Contractor shall furnish five (5) copies of a complete set of instruction manual for installation, operation, maintenance, and lubrication requirements for each component of mechanical and electrical equipment or system in accordance with Section 01700, Contract Closeout.

PART 2 PRODUCTS

Not used.

PART 3 PART 3 - EXECUTION

Not used.

END OF SECTION

SECTION 01500

TEMPORARY FACILITIES

PART 1 GENERAL

1.1 GENERAL

A. The Contractor shall provide all temporary facilities and utilities required for completion of the Work as well as safety precautions and programs. No attempt is made to set out in detail the Contractor's means or methods necessary to accomplish the tasks involved. Recognition of these temporary facilities and activities is provided only to allow the Contractor to identify necessary additional costs in planning the Work. The following items are of concern to the Owner and are representative of the temporary facilities, utilities and activities which are solely the Contractor's responsibility.

1.2 TEMPORARY UTILITIES

A. Electrical Service

1. The Contractor shall arrange with the local utility to provide adequate temporary electrical service to provide all power for heating, lighting, operations of Contractor's plant or equipment and for any other use by Contractor. The Contractor shall then provide adequate jobsite distribution facilities conforming to applicable codes and safety regulations. Except for power required for the final 7-day plant test previously specified, the Contractor shall provide, at his own cost, all electric power required for construction, testing, general and security lighting, and all other purposes whether supplied through temporary or permanent facilities.

2. Contractor may need to provide temporary generators or temporary connection to maintain operation of the treatment plant while utility service is interrupted.

B. Water

1. The Contractor shall pay for and shall construct all facilities necessary to furnish water for his use during construction.

2. Water used for human consumption shall be kept free from contamination and shall conform to the requirements of the State and local authorities for potable water.

C. Temporary Lighting

1. The Contractor shall provide temporary lighting in all work areas sufficient to maintain a lighting level during working hours not less than the lighting level required by California OSHA standards. As permanent lighting facilities are completed they may be used in lieu of temporary facilities, provided

however, that bulbs, lamps, or tubes of such facilities used by the Contractor shall be replaced prior to final acceptance of the Work.

D. Heating and Ventilation

1. The Contractor shall provide means for heating and ventilating all work areas as may be required to protect the Work from damage by freezing, high temperatures, weather, or to provide a safe environment for workers. Unvented direct fired heaters shall not be used in areas where freshly placed concrete will be exposed to the combustion gases until at least two hours after the concrete has attained it initial set.

E. Sanitary Facilities

1. The Contractor shall provide suitable and adequate sanitary conveniences as specified in these special provisions.

2. With respect to sanitation facilities, if the Work is Federally funded the Contractor shall cooperate with and follow directions of representatives of the Public Health Service and the State. State and County Public Health Service representatives shall have access to the Work, whether it is in preparation or progress, and the Contractor shall provide facilities for such access and inspection.

1.3 BYPASS AND TEMPORARY STORAGE

A. On-site sewer pond can be used as a temporary holding basin for raw sewage bypassed from the influent pump station. Existing floating aerator shall be setup to aerate the basin for odor control.

B. Sewage shall be hauled off for disposal as necessary during the construction.

C. Additional storage tank(s) can be provided by the Contractor and set up on site if needed.

1.4 ACCIDENT PREVENTION

A. Precaution shall be exercised by the Contractor at all times for the protection of persons (including Owner, Engineer, Regulatory Agency employees) and property owners. The safety provisions of applicable laws, and of building and construction codes shall be observed. Machinery, equipment and other hazards shall be guarded or eliminated.

B. First aid facilities and information posters conforming at least to the minimum requirements of the Occupational Safety and Health Administration shall be provided in a readily accessible location or locations.

C. The Contractor shall make all reports as are, or may be, required by any authority having jurisdiction, and permit all safety inspections of the work being performed under this Contract. Before proceeding with any construction work, the Contractor

shall take the necessary action to comply with all provisions for safety and accident prevention.

1.5 TEMPORARY CONSTRUCTION FACILITIES

A. Construction hoists, elevators, scaffolds, stages, shoring, and similar temporary facilities shall be of ample size and capacity to adequately support and move the loads to which they will be subjected. Railings, enclosures, safety devices, and controls required by law or for adequate protection of life and property shall be provided.

B. Temporary supports shall be designed with an adequate safety factor to assure adequate load bearing capability. The Contractor shall submit design calculations prepared by a professional registered engineer for staging and shoring prior to application of loads.

C. Barriers shall be placed around all excavations and at such places as may be necessary along excavations to warn all pedestrian and vehicular traffic of such excavations from one hour before sunset each day to one hour after sunrise of the next day until such excavation is entirely refilled, compacted, and paved. All excavations shall be barricaded in such a manner as to prevent person from falling, walking, or otherwise entering any excavation in any street, roadway, parking lot, treatment plant, or any other area, public or private.

D. The Contractor shall adequately identify and guard all hazardous areas and conditions by visual warning devices and, where necessary, physical barriers. Such devices shall, as a minimum, conform to the requirements of Cal/OSHA.

E. At such time or times any temporary construction facilities and utilities are no longer required for the work, the Contractor shall notify the Engineer of his intent and schedule for removal of the temporary facilities and utilities, and obtain the Engineer's approval before removing the same. As approved, the Contractor shall remove the temporary facilities and utilities from the site as his property and leave the site in such condition as specified, as directed by the Engineer, and/or as indicated on the Plans.

1.6 PROTECTION OF EXISTING ITEMS

A. The Contractor shall protect all existing structures, trees, shrubs, and other items on the project site that are to be preserved, by substantial barricades or other devices commensurate with the hazard, from injury or destruction by vehicles, equipment, workmen, or other agents.

B. Contractor will be held responsible for any damage to existing structures, roadways and walkways, Work; materials; or equipment because of his operations and shall repair or replace any damaged structures, roadways, and walkways, work, materials, or equipment to the satisfaction of, and at no additional cost to, the Owner.

1.7 PROJECT SECURITY

A. The Contractor shall make adequate provision for the protection of the Work area against fire, theft, and vandalism, and for the protection of the public against exposure to injury. Contractor shall make sure the gate is secured before leaving the site.

B. In locations where the probability of such acts is reasonably remote, this fencing requirement may be limited to the temporary offices and storage areas. The Contractor shall bear the responsibility for protection of plant and material on the site of the Work.

C. Sufficient number of fire extinguishers of the type and capacity required to protect the Work and ancillary facilities, shall be provided in readily accessible locations.

D. In the event all or a part of the site is to be permanently fenced, this permanent fence or a portion thereof may be built to serve for protection of the Work site, provided however that any portions damaged or defaced shall be replaced prior to final acceptance.

E. Temporary openings in existing fences shall be protected to prevent intrusion by unauthorized persons. During night hours, weekends, holidays, and other times when no work is performed at the site, the Contractor shall provide temporary closures or guard service to protect such openings. Temporary openings shall be fenced when no longer necessary.

1.8 ACCESS ROADS AND STAGING AREA

A. The Contractor shall build and maintain adequate access roads to and on the site of the Work to provide for delivery of material and for access to existing and operating plant facilities on the site. For a road to be considered adequately maintained, it shall be reasonably dust free.

B. Adequately maintained access roads shall be maintained to all storage areas and other areas to which frequent access is required. Similar roads shall be maintained to all existing facilities on the site of the Work to provide access for maintenance and operation. Where such temporary roads cross, buried utilities that might be injured by the loads likely to be imposed, such utilities shall be adequately protected by steel plates or work planking, or bridges shall be provided so that no loads shall discharge on such buried utilities.

C. The Contractor can use the project site for the storage of equipment and materials, but must first obtain written authorization from the County of Fresno. The Contractor shall file with the Engineer a wet-signed written release absolving the County of Fresno from any and all responsibility in connection with the stockpiling or materials or parking storage of equipment within the limits of the project site.

D. Additionally, the Contractor can make his own arrangements for space that may be required outside of the project site and bear all associated costs. The Contractor shall first obtain written authorization from the property owner whose property the materials are to be stockpiles or equipment parked/stored, and the property owner

must sign a written release absolving the County of Fresno from any and all responsibility in connection with the stockpiling of materials or parking/storage of equipment on said property. **Failure by the Contractor to provide written authorization shall result in the withholding of all funds due to the Contractor until said authorization is received by the County.**

E. The Contractor is required to obtain all permits required by all applicable regulatory agencies and to comply with all applicable codes, regulations and zoning ordinances prior to establishing a storage yard for materials and/or equipment. The Contractor shall provide copies of all permits acquired to the Engineer.

F. The Contractor shall provide any additional temporary storage required for the protection of equipment and materials as recommended by manufacturers of such materials.

G. Storage and protection:

1. Materials and equipment shall be stored in accordance with supplier's written instructions, with seals and labels intact and legible. Exposed metal surfaces of valves, fittings and similar materials shall be coated with accordance with manufacturers recommendations to prevent corrosion.

2. Storage shall be arranged to provide access for inspection. The Contractor shall periodically inspect to assure materials and equipment are undamaged and are maintained under required conditions.

1.9 SPECIAL CONTROLS

The Contractor shall take all reasonable means to minimize inconvenience and injury to the public by dust, noise, diversion of storm water, or other agencies under his control.

A. Dust Control

1. The Contractor shall take whatever steps, procedures, or means as are required to limit dust generated by his operations during the Work. Dust shall be controlled to the standards of the local governing agency or, in the absence of local standards, to the satisfaction of the Engineer. Dust control shall extend to any unpaved road that the Contractor or any of his subcontractors are using, to excavation or fill areas, to demolition operations, and to other activities. Control shall be by sprinkling, use of dust palliatives, modification of operations, or any other means acceptable to the local governing agency or, in the absence of same, the Engineer.

2. When sandblasting, spray painting, spraying of insulation, or other activities inconveniencing or dangerous to property or the health of employees, the public or construction workers, are in progress, the area of activity shall be enclosed adequately to contain the dust, over spray, or other hazard. In the event there are no permanent enclosures of the area, or such enclosures are incomplete or inadequate, the Contractor shall provide suitable temporary enclosures as required by the Engineer to meet field conditions

in accordance with the recommendations of the owner-furnished equipment supplier and the contractor's equipment supplier requirements.

B. Noise Abatement

1. Operations shall be performed in a manner to minimize unnecessary noise generation. Special measures shall be taken to suppress noise generated by repair and service activities during the night hours. Refer to section 05-1.36 in special provision for sound control requirements.

C. Drainage Control

1. In excavation, fill, and grading operations care shall be taken to disturb the pre-existing drainage pattern as little as possible. Particular care shall be taken not to direct drainage water onto private property or into streets or drainage ways inadequate for the increased flow. Drainage means shall be provided to protect the Work.

PART 2 PRODUCTS

Not Used.

PART 3 EXECUTION

Not Used.

END OF SECTION

SECTION 01502

PROTECTION OF UNDERGROUND FACILITIES & SURVEY MONUMENTS

PART 1 GENERAL

1.1 UNDERGROUND FACILITIES

A. Shown or Indicated*:* The information and data shown or indicated in the Contract Documents with respect to existing underground facilities at or contiguous to the Site is based on information and data furnished to Owner or Engineer by the owners of such underground facilities, including Owner, or by others.

1. Owner and Engineer shall not be responsible for the accuracy or completeness of any such information or data; and

2. The cost of all of the following will be included in the Contract Price, and Contractor shall have full responsibility for:

   a. Reviewing and checking all such information and data,

   b. Locating all Underground Facilities shown or indicated in the Contract Documents,

   c. Coordination of the Work with the owners of such underground facilities, including Owner, during construction, and

   d. The safety and protection of all such underground facilities and repairing any damage thereto resulting from the Work.

B. Not Shown or Indicated

1. If an underground facility is uncovered or revealed at or contiguous to the Site which was not shown or indicated, or not shown or indicated with reasonable accuracy in the Contract Documents, Contractor shall, promptly after becoming aware thereof and before further disturbing conditions affected thereby or performing any Work in connection therewith (except in an emergency), identify the owner of such underground facility and give written notice to that owner and to Owner and Engineer. Engineer will determine the extent, if any, to which a change is required in the Contract Documents to reflect and document the consequences of the existence or location of the underground facility. During such time, Contractor shall be responsible for the safety and protection of such underground facility.

2. If Engineer concludes that a change in the Contract Documents is required, a Change Order will be issued to reflect and document such consequences. Change Order work will be paid for as described in Section 4-1.03 of the Standard Specifications and these Special Provisions.

C. Contractor shall develop and execute a work-plan, subject to Engineer's approval to protect underground facilities.

D. The Contractor shall expose, prior to staking and trenching, all existing utilities and existing facilities which may control proposed facility grades, and alignment. Two working days notice shall be given to the Engineer prior to commencing this work.

E. Full compensation for all costs involved in locating, verifying, protecting, exposing, and otherwise providing for utilities shall be included in the amounts bid for the various items of work, and no separate payment shall be made therefore.

F. Per Government Code Section 4215, the Contractor shall be compensated as Extra Work for the costs of locating, repairing damage not due to the failure of the Contractor to exercise reasonable care, and removing or relocating such utility facilities not indicated in the plans and specifications with reasonable accuracy, and for equipment on the project necessarily idled during such work.

G. Per Government Code Section 4215, the contractor shall not be assessed liquidated damages for delay in completion of the project, when such delay was caused by the failure of the owner or the owner of the utility to provide for removal or relocation of such utility facilities.

1.2 PROTECTION

A. The Contractor shall not interrupt the service function or disturb the supporting base of any Utility by disrupting any facility identified in the Plans and Specifications without authority from the Owner or order from the Engineer. Where protection of such facilities is required to ensure support of utilities, the Contractor shall, unless otherwise provided, furnish and place the necessary protection at the Contractor's expense.

B. The Contractor shall be prepared at all times with labor, equipment and materials to make repair on damaged mains or Utility facilities. The Contractor shall immediately notify the Engineer and the Utility owner if he disturbs, disconnects or damages any Utility. The Contractor shall bear the costs of repair or replacement of any Utility facility described with reasonable accuracy in the Plans and Specifications that is damaged by the Contractor. No extra compensation will be made for the repair of any services or mains damaged by the Contractor, nor for any damage incurred if the neglect or failure of providing protective barriers, lights and other devices or means required to protect such existing utilities or facilities described with reasonable accuracy in the Plans and Specifications.

1.3 RELOCATION

A. When the Plans or Specifications provide for the Contractor to alter, relocate or reconstruct a Utility, or landowner facility (pipeline, fence, etc.) all costs for such work shall be absorbed in the Contractor's Bid or paid for at the unit price indicated. Temporary or permanent relocation or alteration of utilities desired by the Contractor for his own convenience shall be his responsibility, and he shall make all arrangements and bear all costs. The Contractor may, for his own convenience or to expedite the work, agree with the Owner of any Utility to

disconnect and reconnect interfering service connections. The Owner shall not be involved in any such agreement.

1.4 REFERENCE POINTS

A. Surveying and Permanent Survey Markers

1. The Contractor shall notify the Engineer at least seven (7) days before starting work in order that the Engineer may take necessary measures to insure the preservation of survey markers (monuments and bench marks). The Contractor shall not disturb permanent survey markers without the consent of the Engineer and shall bear the expense of replacing any that may be disturbed without permission.

   a. Replacement of control stakes and markers shall be done only by the Engineer.

   b. If disturbing of markers cannot be avoided, the Owner shall pay the cost of replacing said markers.

2. When a change is made in the finished elevation of the pavement of any roadway in which a permanent survey monument is located, the Engineer will adjust the monument cover to the new grade unless otherwise specified.

B. Lot Stakes

1. The Contractor shall preserve property line and corner survey markers except where their destruction is unavoidable and the Contractor is proceeding in accordance with accepted practice. Markers that otherwise are lost or disturbed by his operations shall be replaced at the Contractor's expense by a Registered Civil Engineer or Licensed Land Surveyor.

END OF SECTION

SECTION 01700

CONTRACT CLOSEOUT

PART 1 GENERAL

1.1 GENERAL

A. It is the intent of these Contract Documents that the Contractor shall deliver a complete and operable facility capable of performing its intended functions and ready for use.

1.2 CLEANING

A. Throughout the period of construction the Contractor shall keep the Work site free and clean of all rubbish and debris, and shall promptly remove from the site, or from property adjacent to the site of the Work, all unused and rejected materials, surplus earth, concrete, plaster, and debris, excepting select material which may be required for refilling or grading.

1.3 FINAL SITE CLEAN-UP

A. Upon completion of the Work, and prior to final acceptance, the Contractor shall remove from the vicinity of the Work all paint, surplus material, and equipment belonging to him or used under his direction during construction.

1.4 FINAL BUILDING CLEAN-UP

A. On all building projects and wherever else applicable, besides general broom cleaning, the following special cleaning shall be performed at completion of the Work:

1. Marks, stains, fingerprints, and other soil and dirt shall be removed from painted, decorated, or stained work.

2. Hardware shall be cleaned and polished of all traces; this shall include removal of stains, dust, dirt, paints, and blemishes.

3. Spots, soil, paint, plaster, and concrete shall be removed from tile; tile work shall be washed afterwards.

4. Fixtures and equipment shall be cleaned and stains, paint, dirt, and dust shall be removed.

1.5 WASTE DISPOSAL

A. The Contractor shall dispose of surplus materials, waste products, demolition materials, and debris. The Contractor shall transport and dispose of waste materials in accordance with applicable laws and regulations.

1.6 PROJECT RECORD DOCUMENTS

A. The Contractor shall maintain at the site, available to the Owner and Engineer, one copy of the Contract Documents, Drawings, Shop Drawings, Change Orders, and other modifications in good order and marked to record all changes made during construction. These Documents shall be delivered to the Engineer upon completion of the Work.

B. Record documents shall be reviewed during progress meetings to ascertain that all changes have been recorded.

C. Store Record Documents separate from documents used for construction.

1.7 TOUCH-UP AND REPAIR

A. The Contractor shall touch-up or repair finished surfaces on structures, equipment, fixtures, or installations that have been damaged prior to final acceptance. Surfaces on which such touch-up or repair cannot be successfully accomplished shall be completely refinished or in the case of hardware and similar small items, the item shall be replaced. Such items shall include, but not be limited to, the following:

1. Road surfaces

2. Structure concrete surfaces

3. Equipment exposed surfaces

4. Piping exposed surfaces

1.8 EQUIPMENT START-UP

A. After all acceptance tests have been completed by the Contractor and Owner but prior to final acceptance, the Contractor shall recheck all equipment for proper alignment and adjustment, check oil levels, re-lubricate all bearings and wearing points, and in general assure that all equipment is in proper condition for regular continuous operation.

1.9 OPERATION AND MAINTENANCE (O&M) MANUALS

A. Operation and maintenance instructions shall include, as a minimum, the following data for each item of mechanical, electrical, and instrumentation equipment: All equipment manufacturers shall be made aware of these requirements and all associated costs shall be included in the costs for furnishing the equipment or system.

1. An itemized list of all data provided.

2. Name and location of the manufacturer, the manufacturer's local representative, the nearest supplier, and spare parts warehouse.

3. Equipment function, normal operating characteristics, and limiting conditions.

4. Recommended maintenance procedures during storage of equipment prior to installation and after installation but prior to start-up.

5. Recommended installation, adjustment, start-up, calibration, and troubleshooting procedures.

6. Recommended lubrication, lubrication intervals, and an estimate of yearly quantity needed.

7. Recommended step-by-step procedures for all modes of operation. Operating instructions for startup, routine and normal operation, regulation and control, shutdown, and emergency conditions. Instructions shall include keystrokes and procedures required for adjusting control setpoints for equipment operation.

8. Complete internal and connection wiring diagrams.

9. Electrical equipment maintenance

10. Test data and performance curves, where applicable

11. Recommended preventive maintenance procedures and schedule.

12. Complete parts lists, by generic title and identification number, with exploded views of each assembly.

13. Recommended spare parts and any special tools required.

14. Disassembly, overhaul, and reassembly instructions.

B. Following completion of an item, instructions and procedures shall be modified by the Contractor to reflect field changes. In addition, the O&M Manuals shall contain reproducible prints of the Contract record wiring diagrams, schematics, and installation drawings required under the Electrical and Instrumentation Specifications. Information not applicable to equipment installed in the work shall be excluded.

C. Individual Manuals shall be broken into sections and indexed. The sections shall include Mechanical Equipment, Automatic and Special Valves, Control Systems, Electrical, and others as necessary. Under each section there shall be a description of the operation and maintenance, lubrication schedules, and installation instructions of each item. Sections shall be labeled and each item shall be sub-labeled. No acceptance of equipment will be made until the individual manual has been approved. Contractor's copy of the individual manual shall be available at the site of the Work for use by field personnel and the Engineer during start-up and testing of the equipment.

1.10 MASTER SETS

A. Before final acceptance of the project, the Contractor shall provide five (5) master sets of operation and maintenance instructions each consisting of a collection of the individual manuals previously submitted and approved. The master sets shall be arranged in hard-leaf, 3-ring binders. Each volume of each master set shall contain only those materials which can be held between the rings.

B. Manuals and other data shall be printed on heavy, first quality paper, 8 ½ by 11 inch size with standard 3-hole punching. Drawings and diagrams shall be reduced to 8 ½ by 11 inches or 11 by 17 inches. Where reduction is not practicable, larger drawings shall be folded separately and placed in envelopes which are bound into the manuals. Each envelope shall bear suitable identification on the outside

C. No progress payment in excess of ninety five percent (95%) of the Contract amount shall be made until all such instructions have been received from the Contractor.

D. Each volume of each master set shall include the following:

1. Embossed title on the outside front leaf and the spine:

   Operation and Maintenance Manuals
   Sky Harbor Wastewater Treatment Facility
   Waterworks District 38

2. A plastic laminated (both sides) table of contents listing all items contained therein and their location.

3. Tabbed and labeled dividers separating the individual operation and maintenance manuals contained in the volume. Dividers shall be keyed to the table of contents.

4. A list of manufacturer's local representatives for the major equipment items contained in the volume.

5. Submit one copy of completed volumes in final form 15 days prior to final inspection. This copy will be returned after final inspection, with Engineer comments. Revise content of documents as required prior to final submittal.

6. Submit final volumes revised, within ten days after final inspection.

1.11 FINAL EQUIPMENT CHECK

A. After test operation and before final acceptance, or acceptance for the final 7-day test run by the Owner, each piece of machinery shall be lubricated and all components and couplings checked for proper alignment and adjustment.

B. Submit written certification that Contract Documents have been reviewed, Work has been inspected, and that Work is complete in accordance with Contract Documents and ready for Engineer's inspection.

C. Provide submittals to Owner that are required by governing or other authorities.

D. Submit final Application for Payment identifying total adjusted Contract Sum, previous payments, and sum remaining due.

1.12 MANUFACTURER'S CERTIFICATES OF PROPER INSTALLATION

1. The Contractor shall submit manufacturers' certificates of proper installation for all items of equipment.

1.13 WARRANTIES

A. Execute and assemble documents from subcontractors, suppliers, and manufacturers.

B. Provide Table of Contents and assemble in binder with durable plastic cover.

C. Submit prior to final Application for Payment

D. For items of Work delayed beyond date of Substantial Completion, provide updated submittal within ten days after acceptance, listing date of acceptance as start of warranty period.

PART 2 PRODUCTS

Not used.

PART 3 EXECUTION

Not used.

END OF SECTION

SECTION 01900

EXPLANATION OF BID ITEMS

1. GENERAL

The Contract payment for the specified items of work as set forth in the Bid Schedule shall be full compensation for furnishing all labor, materials, methods or processes, implements, tools, equipment and incidentals and for doing all work involved as required by the provisions of the Contract Documents for a complete in place and operational system.

A. Unless otherwise specified in the Technical Specifications, quantities of work shall be determined from measurements or dimensions in a horizontal plane. All measurements shall be made in accordance with United States Standard Measures. All materials shall be measured on the basis of "in place" quantities and paid for using the units listed in the bid schedule. For materials specified to be measured in place in a structure, the actual volume within the neat lines of the structure, as shown on the contract drawings, will be the basis for computing quantities.

B. After the work has been completed, the Engineer will make field measurements of unit price items in order to determine the quantities of the various items as a basis for payment. On all unit price items, the contractor will be paid for the actual amount of the work performed in accordance with the contract documents, as computed from field measurements.

C. Work or quantities not listed in the description of bid items are considered incidental to other construction and will not be measured and paid for.

2. BID ITEMS

Bid Item 1 **Construction Project Information Sign:** The lump sum payment for Construction Project Information Sign shall include, but not be limited to: furnishing and installing the sign as described in Section 10-1.02 in the Special Provisions.

Bid Item 2 **Prepare Water Pollution Control Program:** The lump sum payment for preparing the water pollution control program shall include the work involved as described in Section 10-1.03 in the Special Provisions.

Bid Item 3 **Water Pollution Control:** The lump sum payment for preparing the water pollution control program shall include the work involved as described in Section 10-1.03 in the Special Provisions.

Bid Item 4 **Construction Site Management:** The lump sum payment for Construction Site Management shall include but not be limited to the items described in Section 10-1.04 in the Special Provisions.

Bid Item 5 **Traffic Control System:** The lump sum payment for Traffic Control System shall include but not be limited to the items described in Section 10-1.05 in the Special Provisions.

Bid Item 6 **Clearing and Grubbing:** The lump sum payment for Clearing and Grubbing shall include but not be limited to the items described in Section 10-1.06 in the Special Provisions.

Bid Item 7 **Mobilization:** The lump sum payment shall include the cost of mobilization, as paid per Section 11 “Mobilization” of the Standard Specifications and as described in Section 10-1.09 in the Special Provisions

Bid Item 8 **Miscellaneous Facilities and Operations:** The lump sum payment shall include the cost of worker protection; maintaining drainage; protection and support of existing facilities; bypass pumping and piping setup; temporary storage setup outside of the storage pond (if needed); special connection fittings and pipe restrainers; thrust blocks; saw cutting; abandon and pot holing and locating existing utilities; dissemble of temporary facilities; cleanup of storage facility used, general project clean up; and all costs for miscellaneous work shown and described in the Contract documents, not included in other bid items.

Bid Item 9 **Submersible Jet Aerator:** The lump sum payment for the aerator shall include, but not be limited to: furnishing and installing submersible jet aerator; and full compensation for furnishing all labor, tools, equipment, anchors, structural steel and misc steel, and painting, and for doing all work involved in installing the aerator as detailed in the Plans and Specifications.

Bid Item 10 **Submersible Mixer:** The lump sum payment for the mixer shall include, but not be limited to furnishing and installing of new submersible mixer and requisite guide bar; and full compensation for furnishing all labor, tools, equipment, anchors, structural steel and misc steel, and painting, and for doing all work involved in installing the mixer as detailed in the Plans and Specifications.

Bid Item 11 **Chain and Scraper Sludge Collector Unit:** The lump sum payment for the Chain and Scraper Sludge Collector Unit shall include, but not be limited to: removal of existing Chain and Scraper Sludge Collector Unit, furnishing and installing new Chain and Scraper Sludge Collector Unit and requisite fittings; and full compensation for furnishing all labor, tools, equipment, anchors, structural steel and misc steel, grout, appurtenances, saw cutting, and painting, for doing all work involved in installing the Chain and Scraper Sludge Collector Unit as detailed in the Plans and Specifications.

Bid Item 12 **Effluent Pumps:** The lump sum payment for the pumps shall include, but not be limited to: removal of existing pumps, furnishing new pumps and requisite valve fittings; and full compensation for furnishing all labor, tools, equipment, valves and appurtenances, pipe support, anchors, grouts, structural steel and misc steel, and painting, for doing all work involved in installing the pumps as detailed in the Plans and Specifications.

Bid Item 13 **Aeration Basin Equipment Removal and Cleanup:** The lump sum payment shall include, but not be limited to: removal of existing vertical aerator, motor, and support, pressure wash concrete basin, and inspect the condition of the concrete.

Bid Item 14 **Concrete Basin Repair**: The unit price payment as measured in linear feet paid for patching and repairing of concrete cracks up to ½” wide as determined by the Engineer. The payment is for the full compensation for furnishing all labor, tools, material and equipment and for doing all work involved in patching, repairing and installing with Quirkrete® Concrete Repair as detailed in the Plans and Specifications.

Bid Item 15 **Septic Waste Removal:** The lump sum payment for sewage pumping, shall include, but not be limited to: waste management pumping and hauling from on-site temporary storage pond or other storage tank as necessary; and full compensation for furnishing all labor, and for doing all work as detailed in the Plans and Specifications. The aeration basin will be emptied by the Owner to less than 1 foot depth.

Bid Item 16 **Electrical:** The lump sum payment for electrical, shall include, but not be limited to: furnishing and installing new electrical switchboard, foundation, conduit, conductors, connection to new and existing equipment, site lighting, etc. as detailed in plans and specification; and full compensation for furnishing all labor, and for doing all work as detailed in the Plans and Specifications for electrical work.

Bid Item 17 **Finish Project Site:** The lump sum payment for finishing the project site shall include but not be limited to Section 10-1.07.

END OF SECTION

SECTION 02050

DEMOLITION

PART 1 GENERAL

1.1 DESCRIPTION

A. The work of this section consists of demolition and removal of existing aerator, pumps, sludge collection system, existing MCC and appurtenances, and miscellaneous debris.

1.2 WORK INCLUDED

A. Repair and restoration of areas damaged due to demolition work.

B. Removal of demolished materials from the site.

C. Remove existing piping and other existing structures, equipments, appurtenances as shown on the Plans to be removed.

D. Properly dispose of all removed materials.

E. Dewatering as needed in order to complete the proposed demolition.

1.3 SEQUENCING

A. Sequence work to minimize interference with wastewater treatment facilities operation.

1.4 REGULATORY REQUIREMENTS

A. Obtain required permits from the County of Fresno. Permits will be paid by the County of Fresno.

B. Dispose of removed materials in an approved disposal or salvage facility.

1.5 REFERENCES

A. Section 16 – Clearing and Grubbing, State Standard Specifications

B. Special Provisions Section 05 & Section 10

1.6 SUBMITTALS

A. As specified in Section 01300 – Submittals

B. Submittals shall be in accordance with the Standard General Conditions and the Supplementary Conditions.

C. Demolition plan including a sequence of operations. The plan shall specifically address methods of demolition, schedule, and sequence of demolition. Demolition shall not proceed until the plan has been approved.

1.7 QUALITY ASSURANCE

A. General: Take all necessary precautions with regard to safety in carrying out the demolition and site work. Erect suitable barriers around open excavations and fulfill all appropriate requirements of CAL/OSHA. Comply with safety requirements for demolition, ANSI A10.6-90.

1.8 PROJECT CONDITIONS

A. Underground utilities exist at this site. Contractor shall take all necessary precautions to protect said utilities. Notify Engineer of any deviation in utility location from that which is shown in the drawings.

B. Keep dust to a minimum at removal site and on haul roads. Use sprinklers or water trucks as necessary or as directed by the Engineer.

C. Ensure safety of persons in demolition area. Provide temporary barricades as required.

D. Excavations may encounter groundwater and require dewatering depending on the time of year and amount of seasonal run-off. Loose sands exposed in excavation sidewalls may be unstable and require shoring or lying back in accordance with OSHA requirements. Flowing sands may also be encountered in excavations below groundwater levels.

1.9 CLOSEOUT SUBMITTALS

A. As specified in Section 01700 – Contract Closeout.

B. Show all capped and abandoned utility terminations and location of remaining facilities on project Record Drawings.

PART 2 PRODUCTS

2.1 MATERIALS

A. Materials and items demolished and not designated for reuse, salvage or transfer to the Owner, as well as all debris, rubbish and other materials resulting from the demolition operations, shall become the property of the Contractor and shall be removed from the site within 48 hours of demolition.

B. Storage or sale of the removed items will not be permitted at the site unless specified by the Owner.

PART 3 EXECUTION

3.1 INSPECTION

A. Prior to demolition, inspect the site conditions, verifying all governing dimensions, notes, and specification. Notify the Engineer of any errors or omissions in the contract documents.

B. Make such explorations and probes as are necessary to ascertain any required protection measures before proceeding with the demolition and removal work.

3.2 PREPARATION

A. Protect existing, appurtenances, structures, which are not to be demolished.

B. Prior to demolition work, all soil erosion control measures and inlet protection barriers shall be in place. Contractor shall provide appropriate measures to prohibit demolition debris and/or soil from entering any watercourse.

1. Protect all buildings, structures, utilities, and vegetation to remain.

3.3 DEMOLITION REQUIREMENTS

A. Conduct demolition to protect and minimize damage to structures and existing improvements.

B. Conduct salvaging to protect and minimize damage to salvaged equipment.

C. Execute the work in a careful, orderly and safe manner, with the least possible disturbance to the public. Cease operations immediately if adjacent work appears to be endangered. Do not resume operations until corrective measures have been taken.

D. Items to be Salvaged: Existing working pump to be salvaged by Owner; all other items to be removed by Contractor.

E. Abandoned Utilities: Remove above ground utilities and terminate as approved by the utility company and the Engineer. Remove necessary portions of underground utilities to within 24 inches of excavation or final grade. Plug abandoned pipes and conduits with concrete plugs. Plugs shall be 6 inches or 2 times the pipe diameter in length, whichever is greater.

1. Water lines shall be capped as close as possible to active mains.

3.4 ORDER OF WORK

A. Contractor shall submit plans to Owner for approval for shut-off duration at least 10 days prior to shut-off.

3.5 PRESERVATION

A. If indicated or required, preserve trees, plants, rock outcroppings, or other features designated to remain. Protect trees and plants from damage; fell trees in a manner which shall not injure standing trees, plants and improvements which are to be preserved.

3.6 PAYMENT

A. Full compensation for furnishing all labor, material, tools, equipment, and incidentals, and for doing all the work involved in demolition, complete in place as shown in the plans and these specifications , and as directed by the Engineer shall be considered as included in the prices paid for the various items of the work and no separate payment will be made therefore.

END OF SECTION

SECTION 02610

PIPE AND FITTINGS

PART 1 GENERAL

1.1 WORK INCLUDED

A. Furnish, install, and test all process and sewer pipe fittings, and appurtenances as indicated and as specified.

1.2 RELATED WORK

A. Section 02640 - Valves and Appurtenances

B. Section 09900 - Painting

1.3 REFERENCES

A. Uniform Plumbing Code, latest edition.

B. American National Standard Institute (ANSI)

C. American Water Works Association Standards, (AWWA) latest edition

1.4 SUBMITTAL REQUIREMENTS

A. Shop drawings, manufacturer's literature, and guarantees shall be submitted for review.

B. Shop drawings of mechanical restrained joint assemblies when used in-lieu of concrete thrust blocks.

C. Submittals shall be in accordance with Section 01300 - Submittals.

D. Submittals shall be in accordance with the Standard General Conditions and the Supplementary conditions.

1.5 QUALITY ASSURANCE

A. All work performed under this section shall meet all recommendations and requirements of Uniform Plumbing Code (UPC), NFPA 24-96, ASTM D2774-94, and all other applicable national, state, local, and propane gas supplier standards and regulations.

PART 2 PRODUCTS

2.1 DUCTILE IRON PIPE

A. General: Ductile iron pipe shall conform to ANSI A21.51 (AWWA C151) and shall be Class 52 unless otherwise noted. Pipe for grooved or flanged joints shall be no less than Class 53.

B. Joints:

1. Flanged joints shall be used and shall be rated for 350 psi.

2. For flanged joints, ends of pipe and fittings shall be provided with flanges conforming to ANSI A21.15 (AWWA C151). Bolts, nuts and gaskets for flanged connections shall conform to ANSI B16.1. Gaskets shall be American Toruseal gaskets per ANSI/AWWA C111/A21.11 or approved equal.

C. Fittings: Flanged fittings shall conform to ANSI A21.15 (AWWA C151).Fittings shall have pressure rating at least equivalent to that of the pipe. Fittings shall have cement-mortar lining equivalent to that of the pipe lining.

D. Coating and Lining: Pipe shall be bituminous seal-coated. Finish coatings shall be as specified in Section 09900 – Painting.

2.2 FLANGED JOINTS

A. Flange shall conform to ANSI/AWWA C115/A21.15.

B. Flange bolts and nuts shall conform to ASTM A307.

C. Gaskets shall be American Toruseal gaskets per ANSI/AWWA C111/A21.11 or approved equal and meet the requirements and recommendations suitable for the service.

PART 3 EXECUTION

3.1 HANDLING AND DISTRIBUTION OF MATERIALS

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

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

C. No more than one week's supply of material shall be distributed in advance of pipe laying operations unless otherwise approved or required.

D. Before laying, pipe shall be inspected for cracked, broken, or defective pieces. Such pieces shall be rejected. Pipe shall be carefully lowered into the trench to prevent damage. All dirt or other foreign matter shall be removed from inside the pipe before lowering into the trench.

END OF SECTION

SECTION 02640

VALVES AND APPURTENANCES

PART 1 GENERAL

1.1 WORK INCLUDED

A. Furnish, install, and test all valves, fittings, and appurtenances as indicated and as specified and as shown on the plans.

1.2 RELATED WORK

A. Section 02610 – Pipe and Fittings

1.3 REFERENCES

A. California Plumbing Code.

B. American Water Works Association Standards published by the American Water Works Association.

C. Section 90, "Portland Cement Concrete", State Standard Specifications.

D. Special Provisions

1.4 SUBMITTALS

A. Shop drawings, manufacturer's literature, and guarantees shall be submitted in accordance with Section 01300 - Submittals.

B. Submittals shall be in accordance with the Standard General Conditions and the Supplementary conditions.

C. Shop drawings, manufacturer's literature, and guarantees shall be submitted in accordance with Standard General Conditions and the Supplementary Conditions.

PART 2 PRODUCTS

2.1 VALVES

A. Check valves for wastewater and sludge piping 4 inch and larger shall be of the unobstructed waterway, quick closing, spring-loaded, swing type with iron body, flanged ends, and bronze trim. Hinge pins shall be stainless steel with both ends extending through bronze-bushed bearings and outside stuffing boxes with grease lubricated packing or O-ring seals. Equal end size check valves shall be American Valve & Hydrant “52SC”, Dresser “M&H Style 259-02”, or Mueller “A2600-6-02”, or Engineer approved equivalent.

PART 3 EXECUTION

3.1 VALVES

A. Valves shall be installed in accordance with the manufacturers' instructions and recommendations.

END OF SECTION

SECTION 03600

GROUT

PART 1 GENERAL

1.1 WORK INCLUDED

A. Epoxy grouting of anchor bolts and reinforcing bars to be installed in hardened concrete.

B. Adhesive bonding of fresh concrete to existing hardened concrete surfaces.

1.2 RELATED WORK

A. Section 05550 - Anchor Bolts and Expansion Anchors

1.3 SUBMITTALS

A. As specified in Section 01300 – Submittals.

B. Submittals shall be in accordance with the Standard General Conditions and the Supplementary conditions.

PART 2 PRODUCTS

A. MATERIALS

1. Nonshrinking Grout		L&M Chemical "Crystex", Gifford-Hill "Supreme", Master Builders "Masterflow 713 Grout" Sauereisen Cements "F-100 Level Fill Grout", U.S. Grout "Five Star Grout", UPCO "Upcon High Flow" or "Upcon Super Flow", or equal.
2. Epoxy Grout		
	a. Adhesive	Moisture insensitive.
	For floors and horizontal surfaces	Adhesive Engineering "Concresive 1539", Rescon "Concrete Bonder R616", or equal.
	For vertical walls or overhead applications nonsagging consistency	Adhesive engineering "Concressive 1440" Rescon "Concrete Bonder R616" or equal.
	b. Aggregate	As recommended by the epoxy grout manufacturer.

3. Epoxy Bonding Adhesive	Sikadur 32, Hi-Mod Master Builders Concresive Standard Liquid or equal.
4. Water	Clean and free from deleterious substances.

A. Non-shrinking grout shall be furnished factory premixed so only water is added at job site. Grout shall be mixed in a mechanical mixer. No more water shall be used than is necessary to produce a flowable grout. Cured grout shall have a minimum compressive strength of 3,500 psi.

B. Epoxy grout shall consist of a two-component liquid epoxy adhesive of appropriate viscosity for the application and location and an inert aggregate filler component. Components shall be packaged separately at the factory and field mixed. All proportioning and mixing of the components shall be in accordance with the manufacturer's recommendations. Cured grout shall have a minimum compressive strength of 3,500 psi.

PART 3 EXECUTION

3.1 PREPARATION

A. The concrete surface to receive non-shrinking grout shall be saturated with water for 24 hours prior to grouting.

B. Where indicated on the drawings, dowels shall be epoxy grouted in holes drilled into hardened concrete. Unless otherwise recommended by the manufacturer, diameters of holes shall be 1/4 inch larger than the maximum dimension of the bolt head, and 1/2 inch larger than the bar diameter. The embedment depth for epoxy grouted dowels shall be as indicated on the Plans.

C. Holes shall be prepared for grouting as recommended by the grout manufacturer.

D. The existing concrete surface to receive fresh concrete shall be clean and sound. The existing surface may be dry or damp, but free of standing water, free of dust, laitance, grease, airing compounds, and disintegrated materials. The existing concrete surface and rebar shall be sandblasted or cleaned by approved mechanical methods.

3.2 INSTALLATION

A. Non-shrinking Grout

1. Placement - Unless otherwise specified or indicated on the Plans, the thickness of grout shall be 1-1/2 inches. Grout shall be placed in strict accordance with the directions of the manufacturer.

2. Edge Finishing - The grout shall be finished smooth in all locations where the edge of the grout will be exposed to view after it has reached its initial set. Except where indicated to be finished on a slope, the edges of grout

shall be cut off flush at the baseplate, bedplate, member, or piece of equipment.

3. Curing – Non-shrinking grout shall be protected against rapid loss of moisture by covering with wet rags or polyethylene sheets. After edge finishing is complete, the grout shall be wet cured for at least 7 days.

4. Epoxy Grout - Dowels shall be clean, dry, and free of grease and other foreign matter at the time of installation. The bars shall be set and positioned and the epoxy grout shall be placed and finished in accordance with the recommendations of the grout manufacturer. Particular care shall be taken to ensure that all spaces and cavities are filled with epoxy grout, without voids.

B. Epoxy Bonding Adhesive: Pre-mix each component as specified by the manufacturer. Mix only that quantity that can be applied within its pot life. Apply as specified by the manufacturer.

END OF SECTION

SECTION 05550

ANCHOR BOLTS AND EXPANSION ANCHORS

PART 1 GENERAL

1.1 WORK INCLUDED

A. The work of this section consists of furnishing and installing all materials and equipment and provide all labor necessary to complete the work shown on the drawings and/or listed below and all other work and miscellaneous items not specifically mentioned but reasonably inferred for a complete installation, including all accessories and appurtenances required for a completed system.

B. Threaded rod anchors for epoxy grouting.

C. Expansion anchors to be installed in hardened concrete.

1.2 RELATED WORK

A. Section 03600 – Grout

1.3 SUBMITTALS

A. As specified in Section 01300 – Submittals.

B. Submittals shall be in accordance with the Special Provisions and Specifications.

PART 2 MATERIALS

2.1 ANCHORS

A. Unless otherwise indicated in the Drawings, drilled anchors shall be 316 stainless steel wedge anchors as manufactured by ITW Red Head Trubolt+, Kwik Bolt TZ by Hilti, or approved equal. Anchors shall have ICC-approved testing.

B. Epoxy anchors in concrete shall be 316 stainless steel threaded rod adhesive anchors. Adhesive shall be ITW Red Head Epcon S7, Hilti HIT RE 500-SD, or approved equal. Epoxy anchor assemblies shall be ICC approved.

2.2 FLAT WASHERS AND NUTS

ANSI B18.22.1; of the same material as anchor bolts and nuts.

PART 3 EXECUTION

3.1 EPOXY ANCHORS

A. Anchor bolts and threaded rod anchors which are to be epoxy grouted shall be clean and free of coatings that would weaken the bond with epoxy.

B. Two nuts, a jam nut, and a washer shall be furnished for anchor bolts and threaded rod anchors to have locknuts; two nuts and a washer shall be furnished for all other anchor bolts.

C. Anti-seize thread lubricant shall be liberally applied to projecting, threaded portions of stainless steel anchor bolts and threaded rod anchors immediately before final installation and tightening of the nuts.

END OF SECTION

SECTION 05990

STRUCTURAL STEEL AND MISCELLANEOUS METALS

PART 1 GENERAL

1.1 WORK INCLUDED

A. Fabricated items from metal shapes, plates, sheets, rods, bars or castings, and other wrought or cast metals except component parts of equipment.

B. Mounting plates for effluent pumps and fastening corner plates for scraper mechanism drive unit.

1.2 RELATED WORK

A. Section 03600 - Grout

B. Section 05550 - Anchor Bolts and Expansion Anchors

C. Section 09900- Painting

1.3 REFERENCS

A. Except as modified herein, all work specified herein shall comply with the applicable requirements of the following standards:

1. California Building Code
2. Aluminum Association
3. American Institute of Steel Construction
4. American Iron and Steel Institute
5. American National Standards Institute
6. American Society of Testing and Materials
7. American Welding Society
8. National Association of Architectural Metal Mfg.
9. The applicable sections of OSHA code

1.4 SUBMITTALS

A. Complete assembly, installation drawings, detailed specifications and data covering materials used and accessories forming part of the furnished product shall be submitted in accordance with Section 01300 - Submittals.

B. All bolted connections and welds shall be properly identified on the detailed shop drawings.

C. Submittals for high strength bolts and load indicator washers shall include statements from the bolt and washer manufacturers certifying satisfactory compliance with the governing standards and the specified tests.

D. Welding procedures, welding procedure qualification records and welder qualifications shall be submitted as required.

1.5 INSPECTION AND TESTING

A. All costs for inspections and tests shall be coordinated and paid by the Contractor. Testing laboratory shall be selected by Contractor and approved by the Engineer.

B. Contractor shall schedule testing with the testing laboratory so that tests and shop inspections may be made in sufficient time for approvals to be given prior to fabrication.

1. Do not fabricate, use or deliver any steel to the site until it has been tested, or accompanied by a certificate of compliance issued by testing laboratory or by fabricator.

2. All welding shall be done by AWS certified welders approved by the Engineer.

3. Copies of all test reports shall be supplied to the Engineer.

1.6 TOLERANCES

A. For materials, fabrications and erection shall not exceed those tolerances as set forth in the "Code of Standard Practice, American Institute of Steel Construction", as adopted and revised to date.

1.7 CLEANING AND STRAIGHTENING

A. All material, before being fabricated, shall be thoroughly wire brushed, cleaned of all scale and rust, and shall be thoroughly straightened by methods that will not injure the material before being worked on. After punching or working the component parts of a riveted member, all twists or bends shall be removed before the parts are assembled. All finished members shall be free from twists, bends or open joints, when erected.

1.8 GAS CUTTING

A. Gas cutting shall be done by machine when possible. All re-entrant corners shall be shaped notch free to a radius of at least one-half inch.

1.9 QUALITY ASSURANCE

A. All welding procedures and operators for welding of steel and aluminum fabrications shall be qualified in accordance with the applicable provisions of AWS, and as set forth in the fasteners section.

1.10 DELIVERY, STORAGE AND HANDLING

A. Materials shall be handled, transported, and delivered in a manner which will prevent bends, dents, significant coating damage, or corrosion. Damaged materials shall be promptly replaced.

B. Structural and miscellaneous metals work shall be stored on blocking so that no metal touches the ground and water cannot collect thereon. The material shall be protected against bending under its own weight or superimposed loads.

PART 2 PRODUCTS

2.1 GENERAL.

A. Structural and miscellaneous metal work shall be fabricated in conformity with dimensions, arrangements, sizes, and weights or thicknesses specified or indicated on the drawings.

2.2 STRUCTURAL STEEL

A. Steel

1.	Shapes (except wide flange), Plates and Bars	ASTM A36.
2.	Wide Flange Shapes	ASTM A992
3.	Sheets	ASTM A366 OR A569, zinc coated.
4.	Checkered Plate	ASTM A786 carbon steel, skid resistant pattern.
5.	Pipe	ASTM A120 OR A53, Type E or S, Grade B.
6.	Bolts and Nuts	ASTM A307 (unfinished).
7.	Bolts and Nuts, High Strength	ASTM A325 Type 1
8.	Nuts, Heavy-Hex	ASTM A563, compatible with bolts
9.	Nuts, Self-Locking	Prevailing torque type; IFI-100, Grade A.
10.	Washers	
	a. Flat	ANSI B18.22.1.
	b. Flat, Hardened	ASTM F436, Type 1.
	c. Lock	ANSI B18.21.1, helical spring type.
11.	Nuts, Self-Locking	Prevailing torque type; IFI-100, Grade A.
12.	Threaded Rods	ASTM A36
13.	Anchor Rods, Hooked or Threaded	ASTM F1554 Grade 55

B. Stainless Steel

1.	Plates	ASTM A167, Type 304, or ASTM A240,Type 316L
2.	Bolts and Nuts	IFI - 104, Grade 303, 304, or 305
3.	Washers	
	a. Flat	ANSI B18.22.1 Type 316
	b. Lock	ANSI B18.21.1, helical spring type, Type 316

C. Shop Coatings

1.	Rust-Inhibitive Primer	Universal type; Cook "391-N-167 Barrier Coat", Koppers "No. 10 Inhibitive Primer", Tnemec 77 Chem-Prime", or Valspar "13-R-28 Chromox Primer." Devoe “Devran 203”
2.	Epoxy Paint	Ameron "Amerlock 400 High Solids Epoxy Coating", Carboline "Carboguard 891", Tnemec "Series N140", or Devoe "Bar Rust 235H"; & “Devflex 4208”.
3.	Coal Tar Paint	Koppers "Bitumastic Super Service Black", Tnemec "46-449 Heavy Duty Black", or Valspar "High-Build Bituminous Coating 35-J-10."
4.	Galvanizing	ASTM A123, A153, A385

D. Except as otherwise specified or indicated on the drawings, all materials and work shall conform to the applicable provisions of the AISC "Steel Construction Manual" and AISC "Specification for the Design, Fabrication and Erection of Structural Steel for Buildings".

E. When required, all fabricating plants providing structural steel under these specifications shall be certified in accordance with the AISC Quality Certification Program for the required certification category.

2.3 HIGH STRENGTH BOLTED CONNECTIONS.

A. Unless otherwise required, bolted connections for structural steel, as defined in the AISC manual, shall be made with ASTM A325 high strength bolts conforming to the "Specifications for Structural Joints Using ASTM A325 or A490 Bolts" as approved by the Research Council on Structural Connections. The method of installation, pre-tensioning procedures, and bolting equipment and tools shall likewise conform to the above referenced ASTM standard.

B. Bolt holes shall have a diameter nominally 1/16 inch larger than the nominal bolt diameter. Bolt holes for one ply only of vertical diagonal bracing connections may be oversized to a diameter nominally 3/16 inch larger than the nominal bolt diameter. If oversized holes are provided in an outer ply, a hardened flat washer shall be installed over each hole during bolting.

C. Beveled washers shall be used when the bearing faces of bolted parts have a slope of 1:20 or greater with respect to a plane perpendicular to the bolt axis. Bolt length shall be increased as needed to accommodate the beveled washers.

D. Except as otherwise required or specified herein, bolted connections shall be bearing type with threads excluded from the shear plane. Slip critical connections shall be used in diagonal bracing connections, where slip critical connections are indicated on the drawings, or where oversize holes or slotted holes parallel to the direction of the load are used.

PART 3 EXECUTION

3.1 SURFACE COATING

A. Shop Painting

1. All structural steel not encased in concrete shall be thoroughly cleaned, wire brushed, removing all scale and given one heavy coat of paint as specified in Section 09 90 00 - Painting.

2. Structural steel parts not in contact, but inaccessible after assembly shall be painted with two coats before assembly as specified in Section 09 90 00 - Painting.

B. Field Painting

1. After erection, all parts where paint has been rubbed or burned off or where skips have occurred in shop painting, all field rivets, bolts and welded areas shall be painted as specified in Section 09900 - Painting.

3.2 INSTALLATION AND FIELD QUALITY CONTROL

A. All posts of railings shall be rigidly attached to concrete structures by approved anchors through railing post base plates. In any section, or run of railing, the center lines of all members shall be in true alignment lying in the same vertical frame.

B. After installation, railings shall be checked for final alignment, using a tightly drawn wire for reference. The maximum misalignment tolerance for railing shall be 1/8 inch in 12 feet. Bent, deformed or otherwise damaged railings shall be replaced.

3.3 ADJUSTING AND CLEANING

A. Items which have been given shop applied protective coatings that become damaged during erection or installation shall be repaired with the same or equivalent coating.

END OF SECTION

SECTION 09900

PAINTING

PART 1 GENERAL

1.1 WORK INCLUDED

A. Field painting including surface preparation, surface protection, clean up, and/or other appurtenant work as indicated in the Contract Documents.

B. All labor, materials, tools and equipment, and incidentals necessary and required for their completion.

C. All pipe, fittings, equipment, and structures are to be field coated except for those specific exceptions contained in this specification or identified on the drawings. The painting schedule included at the end of this specification summarizes the surfaces to be coated, the required surface preparation, and the coating systems to be applied. Coating notes on the drawings are used to show exceptions to the schedules, to extend the limits of coating systems, or to clarify or show details for application of the coating systems.

1.2 RELATED WORK

A. Section 05990 – Structural Steel and Miscellaneous Metals

B. Division 11 – Equipment

C. Division 15 – Mechanical

D. Division 13 - Electrical

1.3 SUBMITTALS

A. Shop Drawings, Product Data, and Samples: as specific in Section 01300 – Submittals.

B. Submittals shall be in accordance with the Standard General Conditions and the Supplementary Conditions.

1. Product technical data including:

a. Acknowledgment that products submitted meet requirements of standards referenced.

b. Performance criteria as required by the Engineer to determine quality.

c. Manufacturer’s installation instructions and environmental parameters.

d. Material Safety Data Sheets.

e. Color samples.

1.4 AIR QUALITY REGULATORY COMPLIANCE

A. All paint shall conform to the applicable air quality regulations at the point of application. Any paint material which cannot be guaranteed by the manufacturer to comply, whether specified by product designation or not, shall not be used.

B. The volatile organic compound (VOC) of coatings materials limits set forth in Rule 460.1 of the San Joaquin Valley Unified Air Pollution Control District shall apply to this project. The manufacturers' products listed in paragraphs 09900-3.01 and 3.02 have been selected on the basis of their apparent compliance with Rule 460.1; however, it shall remain the Contractor's responsibility to ensure that all coatings materials furnished are in compliance with all regulatory agencies.

C. The product listed may meet the VOC requirement in the unthinned (as-shipped) condition but may exceed the VOC requirement if thinned to the manufacturer's allowable recommendations. In this situation, the product is not to be thinned beyond the limit indicated in Rule 460.1, and if the product cannot be suitably thinned for the intended application method or temperature requirements, it will be necessary to use another manufacturer's product subject to acceptance by the Engineer.

D. It shall be the responsibility of the Contractor to ensure the compatibility of the field painting products which will be in contact with each other or which will be applied over shop painted or previously painted surfaces. Paint used in successive field coats shall be produced by the same manufacturer. Paint used in the first field coat over shop or field primed surfaces or previously painted surfaces shall cause no wrinkling, lifting, or other damage to the underlying paint.

E. All paint used for intermediate and finish coats shall be guaranteed by the paint manufacturer to be fumeproof and suitable for sewage plant atmosphere containing hydrogen sulfide. Paint shall be lead-free and mercury-free.

1.5 QUALITY OF WORK

A. All finishes shall be applied by skilled workmen in accordance with the best practices and standards of the painting trade. Brushes, rollers, all equipment, and the techniques used in applying finishes shall be of sufficient quality to assure the specified results. Work not conforming to this Specification shall be corrected by touching up or refinishing as directed by the Engineer.

B. It is the purpose and intent of this Specification to cover the complete paint finishing of all exterior and interior surfaces as scheduled or specified and all surfaces which normally require a paint finish for corrosion resistance, weather protection, finished appearance or utility. Finished surfaces shall be of the type of finish, color sheen film thickness, and quality specified.

1.6 DELIVERY AND STORAGE

A. Painting materials shall be delivered to site in manufacturer's original containers with labels intact and seals unbroken. Painting materials and equipment shall be stored and protected against freezing and mixed in rooms assigned for that purpose. No chemicals, unauthorized thinners, or other materials, not included in the paint formulation shall be added to the paint for any purpose. All necessary precautions shall be taken to prevent fire. Rags or waste soiled with paint shall be removed from premises at end of each day's work, or shall be stored in covered metal containers.

1.7 EQUIVALENT PRODUCTS

A. Whenever a coating is specified using the name of a proprietary product or the name of a particular manufacturer or vendor, the specified coating shall be understood as establishing the type and quality of coating desired.

B. Other manufacturers' products will be accepted provided sufficient information is submitted to allow the Engineer to determine that the coatings proposed are equivalent to those named. Proposed coatings shall be submitted for review in accordance with the Section 01300 - Submittals.

C. Requests for review of equivalency will not be accepted from anyone except the Contractor, and such requests will not be considered until after the contract has been awarded.

D. Specific products for various applications shall be as specified in Part 2. In addition to the products named in Part 2, equivalent products of the following manufacturers will also be acceptable:

Ameron
Carboline
Devoe
PPG (Pittsburgh)
Sherwin-Williams Co.
Sinclair
Tnemec
Valspar

E. Contractor shall provide verification that equivalent products are acceptable for the desired application.

1.8 REFERENCE STANDARDS

A. SSPC – Society of Protective Coatings, Pittsburgh, PA

B. ASTM – American Society For Testing And Materials, West Conshohocken, PA

PART 2 PRODUCTS

2.1 GENERAL

A. All paint shall be the product of a recognized manufacturer exclusively engaged in the manufacture of painting material. All paints for wood and metal surfaces shall be well-ground and shall not skin, liver, curdle, or body excessively in the containers.

B. The paint shall not show laps or unevenness of color or texture. When applied to vertical surfaces, it shall not sag.

C. All exposed surfaces, including sides and edges, shall be painted. Hangers, brackets, fastenings and other miscellaneous items shall be painted with the same system as the adjacent material. Paint systems shall be in addition to shop primers.

D. Paint shall be stored inside and shall be protected against freezing. No adulterant, unauthorized thinner, or other material not included in the paint formation shall be added to the paint for any purpose.

E. Paint used in successive field coats shall be produced by the same manufacturer. Paint used in the first field coat over shop painted or previously painted surfaces shall cause no wrinkling, lifting, or other damage to the underlying paint. Any paint system shall be the product of a single manufacturer.

F. All paint used for intermediate and finish coats shall be guaranteed by the paint manufacturer to be lead-free, mercury-free, and fume-proof. Where paint materials are referenced to Federal or military specifications, the reference shall define the general type and quality required but is not intended to limit acceptable materials to an exact formulation.

G. For each paint type, the Contractor shall follow the paint manufacturer's specific application instructions. Upon the Engineer's request, the Contractor shall furnish the following application instructions.

1. Surface preparation recommendations.

2. Type of primer to be used.

3. Maximum dry and wet mil thickness per coat.

4. Minimum and maximum curing times between coats.

5. Thinner to be used with each paint.

6. Ventilation requirements.

7. Atmospheric conditions during which the paint shall not be applied.

8. Allowable methods of application.

9. Maximum allowable moisture content and minimum age of plaster, concrete and wood surfaces at the time of paint application.

10. Curing time before submergence in water.

H. The minimum number of coats and minimum total dry mil thickness of the system for each surface shall be as specified in the paint schedule.

2.2 PAINTING SCHEDULE

A. A schedule is appended to this section listing the surface preparation, primer, finish and dry mil thickness to be used on each surface to be coated.

2.3 PRIMERS AND PRETREATMENT

A. P-1 Epoxy Primer - Minimum dry thickness 4 mils. Devoe "Bar Rust 235H", Sherwin Williams “Macropoxy 646 FC Epoxy B58-600”, or Tnemec 69-1211 "Hi-Build Expoxoline."

B. P-2 Rust Inhibitive, non-submerged - Minimum dry thickness 3 mils. Devoe "Devran 203 Waterborne Epoxy Primer", Sherwin Williams “Macropoxy 646 FC Epoxy B58-600” or Tnemec 135 "Chem Build."

C. P-3 Rust inhibitive, submerged - Minimum dry thickness 4.0 mils. Devoe "Bar Rust 235H", Sherwin Williams “Macropoxy 646 FC Epoxy B58-600” or Tnemec 136 "Chem Build.”

D. P-4 Primer for Wood – Maximum of 400 sq. ft/gal. Devoe 2010-1200 "Ultra- Hide Durus Exterior Acrylic Primecoat", Sherwin Williams “A-100 Wood Primer B42W41” or Tnemec 151 “Elaso-Grip.”

E. P-5 Wallboard Primer – Maximum of 400 sq. ft/gal. Devoe1060-1200 "Ultra- Hide Latex Primer- Sealer", Sherwin Williams “Preprite 200 Interior Latex Primer B28W200”, or Tnemec 51-792 "PVA Sealer."

F. P-6 High Build Acrylic – Maximum of 100 sq. ft/gal., Tnemec 180 WB Tneme-Crete, Sherwin Williams “Heavy Duty Block Filler B42W46”.

2.4 INTERMEDIATE AND FINISH PAINTS

A. F-1 Epoxy Resin - Minimum dry thickness 5 mils. Devoe "Bar Rust 235H", Sherwin Williams “Macropoxy 646 FC Epoxy B58-600”, or Tnemec 69 "Hi-Build" epoxy.

B. F-2 Gloss Acrylic Emulsion - Minimum dry thickness 2.0 mils Devoe “ Devflex 4208 Waterbone Acrylic Enamel”, Sherwin Williams “Shercryl Hi Performance Acrylic Gloss B66-300”, or Tnemec 1028.

C. F-3 Semi-gloss Acrylic Emulsion - Minimum dry thickness 2.5 mils Devoe “Devvflex 4216 HP Waterborne”, Sherwin Williams “Shercryl Hi Performance Acrylic Semi-Gloss B66-350”, or Tnemec 1029 “Tuf Cryl”.

D. F-4 High Build Epoxy (Substitute for Coal Tar) - Minimum dry thickness 6 mils. Devoe “Devtar 5A HS”, Sherwin Williams “Targuard Coal Tar Epoxy B69B60”, or Tnemec “V69F Black"

E. F-5 Polyurethane O - Minimum dry thickness 2 mils. Devoe “Devthane 379H Aliphatic Urethane Gloss Enamel”, Sherwin Williams “Hi Solids Polyurethane CA B65j-300”, or Tnemec 1075 "Endurasheild."

F. F-6 Acrylic Epoxy – Minimum dry film thickness 4 mils. Tnemec 113 Tneme-Tufcoat, Sherwin Williams “ Waterbased Tile Clad Epoxy B73-100”.

G. F-7 High Build Acrylic – Maximum of 100 sq. ft./gal.Tnemec 180 WB Tneme-Crete, Sherwin Williams “Heavy Duty Block Filler B42W46”.

2.5 ALUMINUM SURFACES

A. All aluminum in contact with steel or concrete: Sherwin Williams “Macropoxy 646 FC Epoxy B58-600 series or approved equivalent.

2.6 SURFACES NOT TO BE PAINTED

A. Except as otherwise required or directed, the following surfaces are to be left unpainted:

1. Exposed surfaces of aluminum.

2. Polished or finished stainless steel. Unfinished stainless steel shall be painted.

3. Nickel or chromium.

4. Galvanized surfaces, except piping, and conduit.

5. Rubber and plastics, including fiberglass reinforced plastics.

6. Precast concrete.

2.7 SYSTEM IDENTIFICATION

A. Above Grade Piping: Provide markers on piping which is either exposed or concealed in accessible spaces. For piping systems, other than drain and vent lines, indicate the fluid conveyed or its abbreviation, either by preprinted marker or stenciled marking and include arrows to show the direction of flow. Comply with ANSI A13.1 for colors. Locate markers at ends of lines, near major branches and other interruptions including equipment in the line, where lines pass through floor, walls or ceilings or otherwise pass into inaccessible spaces, and at 50' maximum intervals along exposed portion of lines. Marking of short branches and repetitive branches for equipment connections is not required.

B. Equipment: All equipment shall be identified with a plastic laminated, engraved nameplate which bears the unit mark number as indicated on the drawings (e.g.

AC-4). Provide 1/2" high lettering, white on black background. Nameplates shall be permanently secured to the unit.

C. Valves: Provide valve tags on all valves of each piping system, excluding check valves, valves within equipment, faucets, stops and shut-off valves at fixtures and other repetitive terminal units. Provide brass tags or plastic laminate tags. Prepare and submit a tagged valve schedule, listing each valve by tag number, location and piping service. Mount in glazed frame where directed.

2.8 PIPING IDENTIFICATION

A. Pipe shall be color coded according to the following schedule. Bands shall be 6 inches wide spaced along the pipe at 5-foot intervals. Depth of water gauges shall be painted as indicated on the Plans.

LETTERS	COLOR OF PIPE	COLOR OF LETTERS
Potable water	Light Blue	Black
Non-Potable water	Light Blue with Black Bands	Black
Grit	Dark Blue with Orange Bands	White
Air	Light Green	Black
Sludge	Light Brown	White
Scum	Dark Brown	White
Drain	Dark Gray	White
Reclaimed water	Purple	Black

B. Electrical conduit shall be painted to match adjacent ceiling or wall surfaces as directed by the Engineer.

C.

Item	Paint Color
Valve handwheels and levers	Red

PART 3 EXECUTION

3.1 PRELIMINARY EXAMINATION

A. Notify the Engineer in writing of any uncorrected defects in surfaces to be painted. Do not proceed with the finishing of surfaces in question until any discrepancies are corrected. No work on any surface shall be started unless the surface has been inspected and approved for painting by the Engineer.

3.2 SURFACE PREPARATION

A. The Contractor shall prepare the surfaces to be coated as specified under the paint schedule. Any surfaces to be coated which are not listed under the paint schedule shall be prepared in accordance with the manufacturer's instructions for the material to be applied.

B. All grease, oil, dirt and other contaminants which may affect the bond between the coating and the surface shall be removed by a cleaning agent which will leave the surface clean and dry.

C. Cleaning and painting operations shall be performed in a manner which will prevent dust or other contaminants from getting on freshly painted surfaces.

D. Surfaces shall be free of cracks, pits, projections, or other imperfections which would prevent the formation of smooth, unbroken paint film, except for concrete block construction where a rough surface is an inherent characteristic.

E. When applying touch-up paint, or repairing previously painted surfaces, the surfaces to be painted shall be cleaned and sanded or wire brushed in such a manner that the edges of adjacent paint are feathered or otherwise smoothed so that they will not be noticeable when painted. All paint made brittle or otherwise damaged by heat or welding shall be completely removed.

F. Hardware items such as bolts, screws, washers, springs, and grease fittings need not be cleaned prior to painting if there is no evidence of dirt, corrosion, or foreign material.

G. All galvanized surfaces shall have a metal conditioner applied prior to the first prime coat.

H. All surfaces to be finished shall be clean and dry before any materials are applied. Use a moisture meter to determine moisture content as follows. The moisture content shall be less than 18% for wood; 8% for concrete or plaster.

1. Metal Surfaces - Where noted, the surface preparation for steel and other metals refer to the specifications for surface preparation by the latest revision of the Steel Structures Painting Council. All metal work shall be cleaned of grease, oil and dirt by solvent cleaning (SSPC-SP1). Do not use hydrocarbon based solvents for cleaning prior to use of acrylic materials.

    a. Method SP-2: Surface shall be wire brushed where required to remove loose rust and dirt, etc. (SSPC-SP2)

    b. Method SP-3: Removal of loose rust, loose mill scale and other detrimental foreign matter to the degree specified by power wire brushing, power impact tools or power sanders. (SSPC-SP3)

    c. Method SP-6: Blast cleaning until at least two-thirds of each element of surface area is free of all visible residues. (SSPC-SP6)

    d. Method SP-10: Sandblast to near-white condition. This method shall remove all rust and scale, but streaks and shadows in the metal will be acceptable. (SSPC-SP10)

2. Wood Surfaces

a. Method W-1: All unprimed millwork delivered to the job site shall be given the specified first coat on all surfaces immediately upon arrival. Give all unprimed woodwork the specified first coat as soon as possible following installation. Prime any wood surface that is to be in contact with concrete, or a caulking material, with the specified first coat material before installation. Unless specified otherwise, all casings and trim, and all woodwork shall be free of oil, dirt, loose fibers, etc., sealed with a sanding sealer recommended by the coating manufacturer, and sanded smooth and dusted thoroughly before application of the priming coat. Give all knots, pitch pockets, and sappy areas a preliminary coat of Dutch Boy Knot Sealer, or approved equivalent, prior to application of the prime coat.

3. Galvanized Surfaces

a. Method G-1: All galvanized surfaces shall be prepared for painting in strict conformity with the instructions of the manufacturer. All galvanized shall be cleaned per SSPC-SP7.

4. PVC Pipe

a. Method V-1: All wax and oil shall be removed from PVC plastic surfaces by wiping with a solvent of the type used for the specified primer.

3.3 PAINT APPLICATION

A. Apply all finishes evenly, free from sags, runs, crawls, brush marks, skips or other defects. Apply products at the proper consistency and do not thin or otherwise alter them except in accordance with the manufacturer's printed directions. All coats shall be applied in such manner as to produce an even film of uniform thickness completely coating all corners and crevices. All painting shall be done by thoroughly experienced workmen.

B. Care shall be exercised during spraying to hold the nozzle sufficiently close to the surfaces being painted to avoid excessive evaporation of the volatile constituents and loss of material into the air, or the bridging over of crevices and corners. Spray equipment shall be equipped with mechanical agitators, pressure gauges, and pressure regulators. Nozzles shall be of proper size. Floors, roofs, and other adjacent areas and installations shall be satisfactorily protected by drop cloths or other precautionary measures. All over-spray shall be removed by approved methods or the affected surface repainted. Care shall be exercised to avoid lapping of paint on the hardware of other unscheduled surfaces.

C. Each coat of material shall be thoroughly dry before the application of a succeeding coat. In no case shall paint be applied at a rate of coverage per gallon which is greater than the maximum rate recommended by the manufacturer. Paint films showing sags, checks, blisters, teardrops, or fat edges will not be accepted. Paint containing any of these defects shall be entirely removed and the surface repainted.

D. Sandpaper enamels and varnishes lightly between coats and dust thoroughly before the application of a succeeding coat.

E. If the finish coat is to be colored, the prime coat and the intermediate coat shall be tinted to have a slight variation in color from each other and from the finish coat.

3.4 PRIMING

A. Edges, corners, crevices, welds, and bolts shall be given a brush coat of primer before the specified spot or touch-up painting of metal surfaces. Special attention shall be given to filling all crevices with paint.

B. Abraded and otherwise damaged portions of shop applied paint shall be repainted. Welded seams and other uncoated surfaces, heads, and nuts of field installed bolts, and surfaces where paint has been damaged by heat, shall be given a coat of the specified primer. This patch, spot, or touch-up painting shall be completed, and shall be dry and hard, before additional paint is applied.

3.5 LATEX PAINT

A. Latex paint shall be applied by brushing or rolling; spraying is not permitted. Latex paint shall not be thinned excessively.

3.6 MIXING AND THINNING

A. Paint shall be thoroughly mixed each time any is withdrawn from the container. Paint containers shall be kept tightly closed except while the paint is being withdrawn.

B. Unless otherwise authorized, all paint shall be factory mixed to proper consistency and viscosity for hot weather application without thinning. Thinning will be permitted only as necessary to obtain recommended coverage at lower application temperatures. In no case shall the wet film thickness of applied paint be reduced, by the addition of paint thinner or otherwise, below that represented by the recommended coverage rate.

3.7 FILM THICKNESS FOR FERROUS METALS

A. It is intended that the dry film thickness and the continuity of painted ferrous metal surfaces be subject to continual field check by the Engineer. Dry film thickness shall be measured by the Contractor, using an approved Thickness Gauge, at locations selected by Engineer. Testing equipment provided shall be provided by Contractor and kept on site.

B. Thickness and Holiday Checking - Thickness of coatings and paint shall be checked with a non-destructive, magnetic type thickness gauge.

C. Holiday Checking of all interior coated surfaces shall be tested with an approved holiday detection device. Non-destructive holiday detectors shall not exceed 100 volts nor shall destructive holiday detectors exceed the voltage recommended by the manufacturer of the coating system. For thicknesses between 10 and 20 mils

(0.25mm and 0.50mm) a non-sudsing type wetting agent such as Kodak Photo-Flo, shall be added to the water prior to wetting the detector sponge. All pinholes shall be marked, repaired in accordance with the manufacturer's printed recommendations and re-tested. No pinholes or other irregularities will be permitted in the final coating. Holiday detection devices shall be operated in the presence of the Engineer.

D. Continuity shall be tested by a low voltage-wet sponge per RPO 188. Contractor shall perform continuity tests as required by the Engineer on surfaces that will be submerged.

3.8 ATMOSPHERIC CONDITIONS

A. Apply all material to dry and properly prepared surfaces when weather conditions are favorable for painting. No materials shall be applied when the temperature of the materials is below 50 degrees F, or when the temperature of the air, surface to be painted or substrate, is below (or likely to fall below) 50 degrees F. Final ruling on the favorability of weather conditions shall be in accordance with the recommendations of the manufacturer and/or the Engineer.

3.9 REPAIRING DAMAGED PAINT ON EQUIPMENT

A. Painted surfaces on equipment, which have become damaged prior to acceptance by the Owner, shall be repainted with the same or equivalent paint used in the original application.

3.10 PROTECTION OF SURFACES

A. Throughout the work the Contractor shall use drop cloths, masking tapes, and other suitable measures to protect all surfaces from accidental spraying, splattering, or spilling of paint. Contractor shall be liable for and shall correct and repair any damaged condition resulting from its operations or from the operations of all those who are responsible to the Contractor during the time its work is in progress and until the work is accepted. In case bituminous paints are spilled or dropped on any material except metals, the spots shall, after surface cleaning, be spot painted with aluminum paint prior to applying the specified paint. Any exposed concrete or masonry not specified to be painted which is damaged by paint shall be either removed and rebuilt or, where so authorized by the Owner, painted with two coats of masonry paint.

3.11 CLEANUP

A. All cloths and cotton waste which might constitute a fire hazard shall be placed in metal containers or destroyed at the end of each work day. Upon completion of the work, all staging, scaffolding and containers shall be removed from the site as approved by the Engineer.

3.12 PAINTING SCHEDULE

		FINISH			
SYSTEM	SURFACE	SURF. PREP.	PRIME COAT	2ND COAT	3RD COAT
1.	New ferrous metal in submerged or damp environment including all submerged mechanical components.	SP-10	P-1	F-1	F-1
2.	All exterior exposed new structural and miscellaneous steel. All exterior exposed surfaces of new piping, pumps, motors, electrical equipment and other unsubmerged mechanical and structural items.	SP-2 or 3	P-2	F-2	F-2
3.	All surfaces of new structural and miscellaneous steel pipe, pumps, motors and electrical equipment panels exposed inside building.	SP-6	P-2	F-3	F-3
4.	All interior exposed new galvanized metalwork including electrical conduit inside buildings, including fittings, boxes, supports and accessories.	G-1	P-2	F-3	F-3
5.	All exterior exposed new galvanized metalwork including roof flashings ad other architectural items.	G-1	P-3	F-2	F-2
6.	Exposed new PVC piping	V-1	F-5	F-5	

7.	All new buried valves and flanged joints and other buried miscellaneous ferrous piping and metal surfaces (excluding cast iron pipe). All exterior surfaces of new cast iron and steel piping exposed in manholes, wet wells and similar locations, including valves, fittings, flanges, bolts, supports, and accessories. Miscellaneous new castings, including manhole rings and covers and manhole steps. (One coat, if not foundry dipped.)	SP-10	F-4	F-4
8.	Interior wood	P-4	F-2	F-2
9.	Exterior wood	P-4	F-3	F-3
10.	Interior drywall	P-5	F-6	
11.	Exterior concrete block	P-6	F-7	
12.	Concrete	P-6	F-7	

END OF SECTION

SECTION 11000

GENERAL EQUIPMENT STIPULATIONS

PART 1 GENERAL

1.1 SCOPE

A. All equipment furnished and installed under this Contract shall conform to the general stipulations set forth in this section except as otherwise specified in other sections.

1.2 COORDINATION

A. Contractor shall coordinate all details of the equipment with other related parts of the Work, including verification that all structures, piping, wiring, and equipment components are compatible. Contractor shall be responsible for all structural and other alterations in the Work required to accommodate equipment differing in dimensions or other characteristics from that contemplated in the Contract Drawings or Specifications.

1.3 MANUFACTURER'S EXPERIENCE

A. Unless specifically named in the Specifications, a manufacturer furnishing equipment of the type and size specified shall have been in successful operation for not less than the past 5 years.

1.4 WORKMANSHIP AND MATERIALS

A. Contractor shall guarantee all equipment against faulty or inadequate design, improper assembly or erection, defective workmanship or materials, and leakage, breakage, or other failure. Materials shall be suitable for service conditions.

B. All equipment shall be designed, fabricated, and assembled in accordance with recognized and acceptable engineering and shop practice. Individual parts shall be manufactured to standard sizes and gages so that repair parts, furnished at any time, can be installed in the field. Like parts of duplicate units shall be interchangeable. Equipment shall not have been in service at any time prior to delivery, except as required by tests.

C. Except where otherwise specified, structural and miscellaneous fabricated steel used in equipment shall conform to AISC standards. All structural members shall be designed for shock or vibratory loads. Unless otherwise specified, all steel which will be submerged, all or in part, during normal operation of the equipment shall be at least 1/4 inch thick.

1.5 LUBRICATION

A. Equipment shall be adequately lubricated by systems which require attention no more frequently than weekly during continuous operation. Lubrication systems

shall not require attention during start up or shutdown and shall not waste lubricants.

B. Lubricants, of the type recommended by the equipment manufacturer, shall be provided in sufficient quantity to fill all lubricant reservoirs and to replace all consumption during testing, startup, and operation prior to acceptance of equipment by Owner.

C. Lubrication facilities shall be convenient and accessible. Oil drains and fill openings shall be easily accessible from the normal operating area or platform. Drains shall allow for convenient collection of waste oil in containers from the normal operating area or platform without removing the unit from its normal installed position.

1.6 ELEVATION

A. The elevation of the site is approximately 540 feet above mean sea level. All equipment furnished shall be designed to meet stipulated conditions and to operate satisfactorily at this elevation.

PART 2 PRODUCTS

2.1 ELECTRIC MOTORS

A. Unless otherwise specified, motors furnished with equipment shall meet the following requirements:

1. High efficiency motors shall be supplied for the motor driven equipment specified to be furnished in this contract. Certification shall be supplied for each size, speed, and type of motor indicating the guaranteed minimum efficiency at full load and that the efficiency tests were done in accordance with IEEE Standard 112, Test Method B, using accuracy improvement by segregated loss determination including stray load loss improvement as specified in NEMA Standard MGI-12.53a.

2. Designed and applied in accordance with NEMA, ANSI, IEEE, AFBMA, and NEC for the duty service imposed by the driven equipment, such as frequent starting, intermittent overload, high inertia, mounting configuration, or service environment.

3. Rated for continuous duty at 40° C ambient, unless the application is well recognized for intermittent duty service as a standard industry practice.

4. Insulated with Class B, Class F, or Class H insulation and designed for a service factor of 1.00, 1.15, or greater.

5. Three phase motors used in conjunction with variable speed drives shall have Class F insulation with a Class B temperature rise at rated nameplate horsepower, and 1.15 service factor.

6. When operating at service factor load, maximum observable temperature rise of insulation and motor parts, as determined by resistance or thermometer methods, shall not exceed the NEMA allowable limits for the type of motor, the type of enclosure, and the particular application with regard to continuous or intermittent duty.

7. To ensure long motor life, nameplate horsepower, regardless of service factor, shall be at least 115 percent of the maximum load imposed by the driven equipment.

8. Designed for full voltage starting.

9. Designed to operate from an electrical system that may have a maximum of 5 percent voltage distortion per IEEE Standard 519.

10. Derated, if required, for the altitude at which the equipment is installed.

11. Clamp-type grounding terminal shall be inside motor conduit box.

12. External conduit boxes shall be oversized at least one size larger than NEMA standard.

13. Totally enclosed motors shall have a continuous moisture drain which also excludes insects.

14. Bearings shall be either oil or grease lubricated.

15. Manufacturer's standard motor may be supplied on integrally constructed, packaged assemblies such as appliances, tools, unit heaters, and similar equipment specified by model number, in applications where a redesign of the unit would be required to furnish motors of other than the manufacturer's standard design. However, in all cases, totally enclosed motors are preferred and shall be furnished if offered by the manufacturer as a standard option.

16. Totally enclosed motors shall be furnished on:

    a. Outdoor equipment

    b. Equipment for installation below grade

    c. Chemical feeding and chemical handling equipment

    d. Equipment operating in wet or dust-laden locations

17. Drip proof motors, or totally enclosed motors at the supplier's option, shall be furnished on equipment in indoor, above-grade, clean, and dry locations.

18. Explosion proof or submersible motors shall be furnished as required by applicable codes, as specified in other sections, or at the supplier's option.

19. Motors shall be rated and constructed as follows:

a. Below 1/2 HP

1) 115 volts, 60 Hz, single phase.

2) Built-in manual-reset thermal protector, or integrally mounted stainless steel enclosed manual motor starter.

b. 1/2 HP and above

1) 460 volts, 60 Hz, 3 phase

2) Where specified or required by the drawings, motors used on 240 volt systems shall be 230 volts, 60 Hz, 3 phase

2.2 DRIVE UNITS

A. The nominal input horsepower rating of each gear or speed reducer shall be at least equal to the nameplate horsepower of the drive motor. Drive units shall be designed for 24 hour continuous service.

1. Gearmotors. Unless otherwise specified, the use of gearmotors will not be acceptable.

2. Gear Reducers. Each gear reducer shall be a totally enclosed unit with oil or grease lubricated, rolling element, antifriction bearings throughout.

3. Helical, spiral bevel, combination bevel-helical, and worm gear reducers shall have a service factor of at least 1.50 based on the nameplate horsepower of the drive motor. Shaft-mounted and flange-mounted gear reducers shall be rated AGMA Class II. Helical gear reducers shall have a gear strength rating to catalog rating of 1.5. Each gear reducer shall bear an AGMA nameplate.

4. The thermal horsepower rating of each unit shall equal or exceed the nameplate horsepower of the drive motor. During continuous operation, the maximum sump oil temperature shall not rise more than 100º F above the ambient air temperature in the vicinity of the unit and shall not exceed 200º

5. Each grease lubricated bearing shall be installed in a bearing housing designed to facilitate periodic regreasing of the bearing by means of a manually operated grease gun. Each bearing housing shall be designed to evenly distribute new grease, to properly dispose of old grease, and to prevent overgreasing of the bearing. The use of permanently sealed, grease lubricated bearings will not be acceptable. An internal or external oil pump and appurtenances shall be provided if required to properly lubricate oil lubricated bearings. A dipstick or sight glass arranged to permit visual inspection of lubricant level shall be provided on each unit.

6. Gear reducers which require the removal of parts or periodic disassembly of the unit for cleaning and manual regreasing of bearings will not be acceptable.

7. Certification shall be furnished by the gear reducer manufacturer indicating that the intended application of each unit has been reviewed in detail by the manufacturer and that the unit provided is fully compatible with the conditions of installation and service.

   a. Variable Speed Drives. Each mechanical variable speed drive shall have a service factor of at least 1.75 at maximum speed based on the nameplate horsepower of the drive motor. A spare belt shall be provided with each variable speed drive unit employing a belt for speed change. Unless specifically permitted by the detailed equipment specifications, bracket type mounting will not be acceptable for variable speed drives.

   b. V-Belt Drives. Each V-belt drive shall include a sliding base or other suitable tension adjustment. V-belt drives shall have a service factor of at least 1.6 at maximum speed based on the nameplate horsepower of the drive motor.

2.3 SAFETY GUARDS

A. All belt or chain drives, fan blades, couplings, and other moving or rotating parts shall be covered on all sides by a safety guard. Safety guards shall be fabricated from 16 USS gage or heavier galvanized or aluminum-clad sheet steel or 1/2 inch mesh galvanized expanded metal. Each guard shall be designed for easy installation and removal. All necessary supports and accessories shall be provided for each guard. Supports and accessories, including bolts, shall be galvanized. All safety guards in outdoor locations shall be designed to prevent the entrance of rain and dripping water.

2.4 EPOXY ANCHOR BOLTS

A. Equipment suppliers shall furnish suitable anchor bolts for each item of equipment. Anchor bolts shall comply with section 05550 anchor bolts and expansion anchors and, unless otherwise specified, shall have a minimum diameter of 3/4 inch.

B. Unless otherwise indicated or specified, anchor bolts for items of equipment mounted on baseplates shall be long enough to permit 1-1/2 inches of grout beneath the baseplate and to provide manufacturer recommended anchorage into structural concrete.

2.5 EQUIPMENT BASES

A. Unless otherwise indicated or specified, all equipment shall be installed on concrete bases at least 6 inches thick. Cast iron or welded steel baseplates shall be provided for pumps, compressors, and other equipment. Each unit and its drive assembly shall be supported on a single baseplate of neat design. Baseplates shall have pads for anchoring all components and adequate grout holes. Baseplates for pumps shall have a means for collecting leakage and a threaded drain connection. Baseplates shall be anchored to the concrete base with suitable anchor bolts and the space beneath filled with grout as specified in the grout section.

2.6 SPECIAL TOOLS AND ACCESSORIES

A. Equipment requiring periodic repair and adjustment shall be furnished complete with all special tools, instruments, and accessories required for proper maintenance. Equipment requiring special devices for lifting or handling shall be furnished complete with those devices.

2.7 SHOP PAINTING

A. All steel and iron surfaces shall be protected by suitable paint or coatings applied in the shop. Surfaces which will be inaccessible after assembly shall be protected for the life of the equipment. Exposed surfaces shall be finished, thoroughly cleaned, and filled as necessary to provide a smooth, uniform base for painting. Electric motors, speed reducers, starters, and other self-contained or enclosed components shall be shop primed or finished with a high-grade, oil-resistant enamel suitable for top coating in the field with an alkydenamel. Coatings shall be suitable for the environment where the equipment is installed.

B. Surfaces to be painted after installation shall be prepared for painting as recommended by the paint manufacturer for the intended service, and then shop painted with one or more coats of the specified primer. Unless otherwise specified, the shop primer for steel and iron surfaces shall be Cook "391-N-167 Barrier Coat", Koppers "No. 10 Inhibitive Primer", Tnemec "77 Chem-Prime", or Valspar "13-R-28 Chromox Primer".

C. Machined, polished, and nonferrous surfaces which are not to be painted shall be coated with rust-preventive compound, Houghton "Rust Veto“ or Rust-Oleum "R-9".

PART 3 EXECUTION

3.1 PREPARATION FOR SHIPMENT

A. All equipment shall be suitably packaged to facilitate handling and protect against damage during transit and storage. All equipment shall be boxed, crated, or otherwise completely enclosed and protected during shipment, handling, and storage. All equipment shall be protected from exposure to the elements and shall be kept dry at all times.

B. Painted surfaces shall be protected against impact, abrasion, discoloration, and other damage. Painted surfaces which are damaged prior to acceptance of equipment shall be repainted to the satisfaction of Engineer.

C. Grease and lubricating oil shall be applied to all bearings and similar items.

D. Each item of equipment shall be tagged or marked as identified in the delivery schedule or on the Shop Drawings. Complete packing lists and bills of material shall be included with each shipment.

3.2 STORAGE

A. Upon delivery, all equipment and materials shall immediately be stored and protected until installed in the Work.

B. Pumps, motors, electrical equipment, and all equipment with antifriction or sleeve bearings shall be stored in weathertight structures maintained at a temperature above 60º F. Equipment, controls, and insulation shall be protected against moisture and water damage. All space heaters furnished in equipment shall be connected and operated continuously.

C. Equipment and materials shall not show any pitting, rust, decay, or other deleterious effects of storage when installed in the Work.

3.3 INSTALLATION AND OPERATION

A. Equipment shall not be installed or operated except by, or with the guidance of, qualified personnel having the knowledge and experience necessary to obtain proper results. When so specified, or when employees of Contractor or his Subcontractors are not qualified, such personnel shall be field representatives of the manufacturer of the equipment or materials being installed.

B. Qualified field representatives shall be provided by the equipment manufacturers as required to perform all manufacturer's field services called for in the Specifications. Manufacturer's field representatives shall observe, instruct, guide, and direct Contractor's erection or installation procedures, or perform an installation check, as required. The field representative shall revisit the site as often as necessary to attain installation satisfactory to Engineer.

C. All equipment installed under this Contract shall be placed into successful operation according to the written instructions of the manufacturer or the instructions of the manufacturer's field representative. All required adjustments, tests, operation checks, and other startup activity shall be provided.

D. Acceptance of Work in connection with the installation of equipment furnished by others will be subject to approval of the field representative. Contractor shall be responsible for planning, supervising, and executing the installation of Work, and the approval or acceptance of Engineer or the field representative will not relieve Contractor of responsibility for defective Work.

3.4 OBSERVATION OF PERFORMANCE TESTS

A. Where the Specifications require the presence of Engineer, initial tests shall be observed or witnessed by Engineer. Owner shall be reimbursed by Contractor for all costs of subsequent visits by Engineer to witness or observe incomplete tests, retesting, or subsequent tests.

3.5 WARRANTY

A. A written manufacturer’s warranty shall be provided for equipment supplied under this contract. The warranty shall be for a minimum of one (1) year or as specified

in accordance with other Sections of the contract documents, after the date the equipment is accepted for use by the Owner by filing of the notice of completion, unless otherwise agreed in writing by Owner. The warranty shall cover all defects or failures of materials, design, or workmanship that occur as the result of normal operation and service.

END OF SECTION

SECTION 11215

VERTICAL TURBINE PUMP

PART 1 GENERAL

1.1 WORK INCLUDED

A. The work required under this section consists of related items necessary and required to complete the work. The Contractor shall provide all items, and operations, including all labor, materials, equipment, and incidentals necessary for completion of work.

B. This section covers the furnishing of vertical turbine pumping unit(s) as required and to the expectations of the Engineer with regard to the manufacture of the equipment.

C. Each pumping unit shall be complete with a pump, electric motor, discharge head, soleplate, anchor bolts, and all other appurtenances specified or required for proper operation. Equipment furnished under this section shall be fabricated and assembled in full conformity with drawings, specifications, engineering data, instructions, and recommendations of the equipment manufacturer, unless exceptions are noted by Engineer.

D. Except as modified or supplemented herein, all vertical turbine pumps shall conform to the applicable requirements of ANSI/AWWA E101 and the Hydraulic Institute Standards.

1.2 RELATED WORK

A. Section 02610 – Pipe and Fittings

B. Section 02640 – Valves and Appurtenances

C. Section 11000 – General Equipment Stipulations

D. Division 16 – Electrical

1.3 SUBMITTAL

A. Submittals as specified Section 01300 - Submittals

B. Submittals shall be in accordance with the Standard General Conditions and the Supplementary conditions.

C. Submittals shall also include certified pump curves indicating head-capacity, efficiency, horsepower, rpm, voltage, current draw and other data. Curves shall be plotted from data recorded from factory test of similar pumps or the pumps being submitted.

D. Complete fabrication and assembly drawings together with detailed specifications and data covering materials, parts, devices and accessories forming a part of the equipment furnished, shall be submitted in accordance with the submittals section. The data and specifications for each pumping unit shall not be limited to the following:

1. Name of manufacturer.
2. Type and model.
3. Design rotative speed.
4. Number of stages.
5. Type of bowl bearings.
6. Number of stages.
7. Type of lineshaft bearings.
8. Size of shafting.
9. Size of pump column.
10. Size of discharge outlet.
11. OD of pump bowls.
12. Weight.
13. Data on shop painting.
14. Maximum overall dimensions.
15. Total Weight.
16. Complete performance curves showing capacity versus head, Net Positive Suction Head required, efficiency, and Brake horsepower BHP with plotted scales consistent with performance requirements.

E. Adequate operation and maintenance information shall be supplied. Operation and maintenance manuals shall be submitted in accordance with the submittals sections. The operation and maintenance manuals shall be in addition to any instruction or parts lists packed with or attached to the equipment when delivered. Operation and maintenance manuals shall include the following:

1. Equipment function, normal operating characteristics, and limiting conditions.
2. Assembly, installation, alignment, adjustment, and checking instructions.

3. Operating instructions for startup, routine, and normal operation, regulation and control, shutdown, and emergency conditions.

4. Lubrication and maintenance instructions.

5. Guide to troubleshooting.

6. Parts lists and predicted life of parts subject to wear.

7. Outline, cross-section, and assembly drawings; engineering data; and wiring diagrams.

8. Test data and performance curves, where applicable.

1.4 QUALITY ASSURANCE

A. Equipment shall be manufactured in the United States.

B. Pumping units shall be designed and supplied by a manufacturer or supplier who is regularly engaged in the business of designing and assembling pumping units for wastewater projects and have provided similar equipment for at least 5 years.

C. Pump shall be manufactured by Weir Floway, Inc. or approved equal

D. Supplier shall be certified to the ISO 9001 standard for design and manufacture of vertical turbine pumps.

E. Equipment shall be manufactured in a facility that recognizes its impact on the environment, and has demonstrated a commitment to the minimizing that impact by achieving ISO 14001 certification.

1.5 PERFORMANCE AND DESIGN REQUIREMENTS

A. Pumping units shall be designed for the performance and design requirements as required, at maximum speed unless otherwise noted.

B. If the pumps are to be run utilizing a variable frequency drive, the pump curve shall be continuously rising and shall be free from dips & valleys from the design point to the shutoff head. The shutoff head shall be at least 115% of the head that occurs at the design point.

C. For design and rating purposes, the water to be pumped shall be assumed to have a temperature of 70°F.

D. Pump performance shall be stable and free from damaging cavitation, vibration, and noise within the operating head range. The performance of each pump with an enclosed impeller shall be based on a radial running clearance between the bowl wearing ring and the impeller of not less than 6 mils, or 0.5 mil per inch of wearing ring diameter, whichever is greater. The performance of each pump with an open impeller shall be based on a radial running clearance between the bowl and the impeller of not less than 15 mils.

E. At any operating speed, the ratio of rotative speed to the critical speed of a unit or its components shall be less than 0.8 or more than 1.2.

F. Each pumping unit shall be designed for the following operating conditions:

Rated total head, feet	650
Capacity at rated head, gpm	120
Maximum speed at rated head, rpm	3,600
Motor horsepower, hp	30
Minimum pump efficiency at rated head	61%
Minimum pump nozzle size, inches	
Suction	4”
Discharge	4”
Minimum hydrostatic test pressure, psi	1.5 x shut off head

G. Pump performance shall be stable and free from cavitation and noise throughout the specified operating head range. All rotating parts shall be accurately machined and shall be in as nearly perfect rotational balance as practicable. The mass of the unit and its distribution shall be such that resonance at normal operating speeds is avoided. In any case, the vibration displacement (peak-to-peak) as measured at any point on the machine shall not exceed 5 mils.

1.6 TESTS

A. SHOP TESTS

1. The pump shall be tested at the factory for capacity, power requirement, and efficiency at minimum head, rated head, shutoff head or point of discontinuity, and at as many other points as necessary for accurate performance curve plotting. All tests and test reports shall be made in conformity with the requirements and recommendations of the Hydraulic Institute Standards.

2. If the pump is not tested with the motor to be installed in the Work, wire-to-water efficiency shall be based on certified motor efficiency data included in the report.

1.7 CONTROLS

A. Controls shall be provided as shown in the drawings and as specified in Division 13 – Electrical.

PART 2 PRODUCTS

2.1 DESCRIPTION

A. Pump shall be manufactured by Weir Floway, Inc. or approved equal

B. Each pumping unit shall be complete with a pump, electric motor, coupling, coupling guard, anchor bolts, and all other appurtenances specified or otherwise required for proper operation. Each pumping unit shall be mounted on a common base. Pumps of the close-coupled type, having the impeller attached directly to the motor shaft, with no pump bearings or flexible coupling, will not be acceptable.

C. Pumping units shall be designed for the performance and design requirements as required, at maximum speed unless otherwise noted.

D. If the pumps are to be run utilizing a variable frequency drive, the pump curve shall be continuously rising and shall be free from dips & valleys from the design point to the shutoff head. The shutoff head shall be at least 115% of the head that occurs at the design point.

E. For design and rating purposes, the water to be pumped shall be assumed to have a temperature of 70°F.

F. Pump performance shall be stable and free from damaging cavitation, vibration, and noise within the operating head range. The performance of each pump with an enclosed impeller shall be based on a radial running clearance between the bowl wearing ring and the impeller of not less than 6 mils, or 0.5 mil per inch of wearing ring diameter, whichever is greater. The performance of each pump with an open impeller shall be based on a radial running clearance between the bowl and the impeller of not less than 15 mils.

G. The pumping application required for this project demands equipment that will operate reliably for many years. Un-scheduled downtime is unacceptable to the client, and it is the objective of this specification to deliver the highest quality equipment that is fit for purpose.

H. At any operating speed, the ratio of rotative speed to the critical speed of a unit or its components shall be less than 0.8 or more than 1.2.

2.2 MATERIALS

Component	**Material**
Pump Bowls	Cast Iron (ASTM A48 c130 - Enamel Lined)
Impellers	838 Bronze – (ASTM B584-90b Alloy 838)
Bowl Assembly Shaft	416 SS - (ASTM A582-88a Type 416)
Bowl Bearings	Bronze - (ASTM B505-91 Alloy 932)
Collets	Steel - (ASTM A108-90a Gr 1215)
Bowl Bolting	304 SS – (ASTM F593 Gr CW1)
Column Pipe Thickness	Standard
Line Shaft	416 SS – (ASTM A582-88a Type 416)
Line Shaft Couplings	416 SS – (ASTM A582-88a Type 416)
Line Shaft Sleeves	304 Stainless Steel
Line Shaft Bearings	Neoprene (Min 70 shore hardness)
Bearing Retainers	Ductile Iron – (ASTM A536-84 Gr 60-40-18)
Discharge Head	Cast Iron - (ASTM A48-90 cl 30)
Sole Plate	Fabricated Steel (A516-Gr 70 plt)
Name Plate	Aluminum
Anchor Bolts	Steel

2.3 PUMP CONSTRUCTION

A. Bowl Assembly

1. The pump bowl assembly shall be Weir Floway Pump model 6LKM or pre-approved equal. The pump bowls shall be constructed of the material as listed under the subsection “materials of construction”. The water passages on bowl sizes 4” through 19” shall be lined with porcelain enamel and larger sizes shall be fusion bonded epoxy lined type (Skotchkote 134) to reduce friction losses. The waterways and diffusion vanes shall be smooth and free from nodules, bumps & dips and shall be cast of high quality free of blow holes, sand holes and other detrimental defects. The bowls shall be accurately machined and fitted with a suction bell with integral cast ribs supporting the suction bearing. The bearings shall be sleeve type of the

material listed in the subsection “materials of construction” and are to be lubricated by the product being pumped. The bearings are to be located above and below each impeller. The suction bearing shall be permanently packed with food grade grease, and shall have a length not less than 2 times the shaft diameter. The bowls are to be of threaded connection for sizes up to & including 8” diameter, and are to be flanged with machined rabbet fit connections for sizes larger than 8” diameter. When applicable, the bowl bolting material shall be as listed in the subsection “materials of construction”.

2. The impellers shall be cast in one piece of the enclosed type, and constructed of the material listed in the subsection “materials of construction”. The impellers shall be statically and dynamically balanced. Unless otherwise stipulated, if the bowl diameter is smaller than 22” diameter the impeller shall be securely fastened to the shaft with taper split bushings (collets) of the material listed in the subsection “materials of construction”. Impellers with bowl diameters larger than 22” shall be double keyed. The impeller shafting shall conform to the material listed in the subsection “materials of construction”. Impellers shall be adjusted vertically by external means and shall have sufficient axial clearance for reliable service in accordance with the specified operating conditions.

B. Column Assembly

1. The outer column pipe diameters 4” thru 14” shall be of ASTM A53 Gr. B steel pipe in interchangeable sections not over 11’ in length. The top and bottom sections of column pipe for product lubricated pumps shall not exceed 5’. The ends of each section shall be faced parallel and machined with 8 straight threads per inch permitting the ends to butt and insuring alignment when connected by standard mill steel couplings. The weight of the column pipe shall be no less than that stated in ANSI/AWWA Specification E101, Section 5.1 “Standard Specifications for Discharge Column Pipe”. The column size shall be such that friction loss will not exceed 5’ per 100’, based on the design capacity of the pump or as listed under the subsection “service conditions”.

2. The column line shaft shall be turned and ground and manufactured of the material listed in the subsection “materials of construction”. They shall be furnished in interchangeable sections not over 10 feet in length. The butting faces shall be machined square to the axis of the shaft with maximum permissible misalignment of the thread axis with the shaft axis 0.002” in 6”. The size of the shaft shall be no less than that determined by ANSI/AWWA-E101 Specifications, Section 5.5 and shall be such that elongation due to hydraulic thrust will not exceed the axial clearance of the impellers in the pump bowls. Maximum run out shall not exceed 0.005” in 10 feet. The line shafts shall be provided with 304 stainless steel sleeves at the location of each line shaft bearing. The line shaft bearings shall be sleeve type provided of the material listed in the subsection “materials of construction”. Line shaft bearing spacing shall be such that shaft first critical frequency shall be safely above or below the operating frequency.

3. Threaded shaft couplings are to be supplied for shafts less than 2-3/4" diameter and shall be sized per ANSI/AWWA E101 section A-4.1.4. They shall utilize left-hand threads to tighten during operation.

4. Bearing retainers shall be of the drop-in type, held in place by compression of the butted ends of the column pipe. The bearing retainers are to be on the material listed in the subsection "materials of construction".

C. Discharge Head

1. The discharge head shall be of close grained, cast iron, ASTM A48 class 30, free of sand holes and other defects, accurately machined with an above surface discharge. The discharge flange shall be machined and drilled to ANSI standards for 250# rating and is to be flat faced. The top of the discharge head shall be machined to accurately locate a standard NEMA P base driver and have a diameter equal to the driver base diameter (BD). The head shaft shall be coupled to the top line shaft beneath the motor to facilitate ease of assembly and maintenance. The discharge head shall be in all respects equal to Floway type "A". All couplings and other moving or rotating parts shall be covered on all sides by an OSHA approved coupling guard. Coupling guards shall be fabricated from 16 USS gage or thicker galvanized or aluminum-clad steel or from 1/2 inch mesh expanded metal. Each guard shall be designed for easy installation and removal. All necessary supports and accessories shall be provided for each guard. The pump shall be furnished with an Aluminum nameplate securely mounted to the discharge head. At a minimum it shall contain information providing (design flow, design TDH, HP, RPM, bowl model number, number of stages, manufacturer serial number, pump type & impeller setting dimension).

2. A threaded coupling constructed of the same material as the top line shaft shall be provided to couple the motor shaft to the pump shaft. Impeller adjustment shall be provided by means of a bronze adjusting nut located on top of the motor and constructed of ASTM B16 alloy C36000. After adjustment the nut shall be positively locked in position to the motor clutch.

3. The high pressure packing box shall be rated for 400PSI discharge pressure and shall be fitted with a high-pressure bypass line. A minimum of six (6) rings of metallic babbitt foil lubricated with special oil and graphite and two (2) lantern rings. Throttle bearing shall be of bronze ASTM B505 alloy 932. The packing gland shall be of stainless steel ASTM A743 GR CF – 8M with stainless steel studs and with brass or stainless steel adjusting nuts. Sealing between the stuffing box and the discharge head shall be accomplished by means of an "O" ring. Packing box is to be secured in place with a minimum of eight cap screws. The packing box shall utilize a split type packing gland to allow ease of packing removal & installation.

D. Factory Testing

1. Each bowl assembly shall be non-witness tested at the factory for capacity, power requirement, and efficiency at minimum head, rated head, shutoff

head or point of discontinuity, and at as many other points as necessary for accurate performance curve plotting. All tests and test reports shall conform to the requirements and recommendations of the Hydraulic Institute Standards. If the pump fails to operate properly or fails to meet the specified conditions or requirements during witnessed shop testing, the pump manufacturer shall modify the pumping unit and perform additional tests. The pump manufacturer shall submit complete pump test reports, including test arrangement, instrumentation calibration data, test procedures, & test data in curve format.

E. Factory Coating

1. The bowl assembly OD, column ID & OD, discharge head ID shall be factory painted with a NSF 61 approved two part epoxy coating, such as Carboguard 891. The coating shall be applied in two coats of 4-6 mils DFT, with a final dry film thickness no less than 10-12 mils. Prior to coating, all surfaces are to receive a commercial blast meeting SSPC-SP10 and shall be primed.

F. Electric Motors

HP	30
Shaft Type	Hollow Shaft
RPM	3,600
Voltage	460
Enclosure	WPI
Efficiency Rating	Standard Efficiency
Non-Reverse Ratchet	Yes
Motor Operation	Constant Speed
Service Factor	1.15

G. Special Tools and Accessories

1. Equipment requiring periodic repair and adjustment shall be furnished complete with all special tools, instruments and accessories, required for proper maintenance. Equipment requiring special devices for lifting or handling shall be furnished complete with those devices

H. Spare Parts

1. If required, to be specified by the engineer and/or owner.

PART 3 EXECUTION

3.1 DELIVERY, STORAGE AND HANDLING

A. The pumps shall be adequately supported during transit to ensure the pumping unit is not subjected to undue stresses.

B. Spare parts shall be furnished as specified. Spare parts shall be suitably packaged with labels indicating the contents of each package. Spare parts shall be delivered to OWNER as directed.

C. Final documentation shall be delivered on compact disk, readable using Acrobat, MS Office, and Solidworks.

3.2 INSTALLATION

A. Each pumping unit shall be leveled, plumbed, aligned, and wedged into position to fit connecting piping. Installation procedures shall be as recommended by the pump manufacturer, the Hydraulic Institute Standards, and as required herein.

B. The pump base shall be fixed, no grouting, after initial fitting and alignment but before final bolting of connecting piping. Special care shall be taken to maintain alignment of pumping unit components. No stresses shall be transmitted to the pump flanges. After final alignment and bolting, pump connections shall be tested for applied piping stresses and the piping shall be adjusted to proper fit.

3.3 TESTING / FIELD QUALITY CONTROL

A. An experience, competent, and authorized representative of the manufacturer shall visit the site of the Work and inspect, check, adjust if necessary, and approve the equipment installation. The representative shall be present when the equipment is placed in operation, and shall revisit the job site as often as necessary until all trouble is corrected and the equipment installation and operation are satisfactory in the opinion of ENGINEER.

B. All costs of these services shall be included in the contract price for the number of days and round trips to the site as required.

C. The equipment manufacturer shall furnish a qualified field installation supervisor during the equipment installation. Such services shall be included in the contract price for the number of days and round trips to the site as required.

D. Manufacturers' installation supervisor shall observe, instruct, guide, and direct the installing contractor's erection or installation procedures. The equipment manufacturer will be provided by the Contractor with written notification 10 days prior to the need for such services.

E. After completion of the installation, each pumping unit shall be field tested to insure compliance with the performance requirements as specified. Each pump shall be continuously operated for a minimum of two (2) hours.

3.4 CERTIFICATION

A. The manufacturer's representative shall furnish a written report certifying that the equipment has been properly installed and lubricated; is in accurate alignment; is free from any undue stress imposed by connecting piping or anchor bolts; and has been operated under full load conditions and that it operated satisfactorily.

3.5 WARRANTY

A. The manufacturer shall warrant their pumps to be free of defects in material and workmanship for a period of three (3) years after the product is first put into operation or forty two (42) months after date of shipment, whichever occurs first.

END OF SECTION

SECTION 11341

CHAIN AND SCRAPER SLUDGE COLLECTOR

PART 1 GENERAL

1.1 WORK INCLUDED

A. The work required under this section consists of related items necessary and required to complete the work. The Contractor shall provide all items, and operations, including all labor, materials, equipment, and incidentals necessary for completion of work.

1.2 RELATED WORK

A. Section 02610 – Pipe and Fittings

B. Section 05550 – Anchor Bolts and Expansion Anchors

C. Section 05990 – Structural Steel and Miscellaneous Metals

D. Section 11000 – General Equipment Stipulations

E. Division 13 – Electrical

1.3 SUBMITTALS

A. As specified in Section 01300 – Submittals.

B. Submittals shall be in accordance with the Standard General Conditions and the Supplementary conditions.

C. Complete specifications, data, detailed drawings of the equipment shall be submitted.

1.4 GENERAL

A. Equipment furnished and installed under this section shall be fabricated, assembled, erected, and placed in proper operating condition in full conformity with drawings, specifications, engineering data, instructions and recommendations of the equipment manufacturer.

B. Chain and Scraper shall be Chain and Scraper Sludge Collect, NCS720S Non-Metallic Chain as manufactured by Siemens Envirex Products, of Waukesha, Wisconsin, Polychem System by Brentwood Industries, or approved equal.

C. Under this item, the Equipment Manufacturer shall furnish and deliver ready for installation, chain and scraper type sludge collecting equipment suitable for installation in one (1) basin. The settling basin is nominally 10 ft wide by 30 ft long with an 11 ft side water depth.

Collector chains shall run over four (4) sets of sprocket wheels at a speed of approximately 2 foot per minutes (fpm) so that the flights will clean the sludge from the tank bottom into sludge hoppers and skim the water surface on the return run, concentrating the floating material in front of the scum pipe skimmer.

D. Design Criteria - The Equipment Manufacturer shall select the collector components based upon design calculations incorporating the following criteria:

1. Operation under wet tank conditions

2. Friction factors - 0.20 to 0.30 (UHMW on UHMW)
   - 0.05 to 0.10 (UHMW on stainless steel-water lubricated)

3. Bearing friction - 0.05 per shaft assembly

4. Shaft deflection - not to exceed 0.033" per foot of shaft length.

5. Average sludge loading – 3 lbs per ft of flight length for longitudinal collectors

In no event shall the collector components be less than specified herein. Alternate manufacturers shall submit complete design calculations in accordance Section 08-1.04, Trade Names and Alternatives, and Section 08-1.06 Value Engineering Change Proposals (VECP) of these specifications.

1.5 SERVICE CONDITIONS

A. The chain and scraper sludge collector shall be designed for intermittent removal of sludge, scum and other floating materials that may accumulate in the settling tank.

PART 2 PRODUCTS

2.1 COLLECTOR CHAIN

A. Collector chain shall be NCS720S non-metallic type having 6-inch pitch links with an average weight of approximately 1.3 lbs/ft. The chain shall have a minimum published working load of 2,600 lbs and a minimum ultimate tensile strength of 6,300 lbs. The chain shall be manufactured of unfilled acetal resin and molded with the barrel and side bars as an integral assembly. The chain shall be assembled with pins not less than 15/16" diameter, manufactured of reinforced nylon resin and designed to provide full dead load bearing capacity throughout the full length of the link side bar hubs. The pins shall have a T-head to engage retainer lugs molded integrally with one link side bar hub as a positive means to prevent pin rotation. The pins shall be locked in position by a retainer ring molded integrally with the opposite side bar hub and provide a positive locking contact around the full periphery of the pin. The pins shall be pressed into the link side bar hubs to exclude abrasives using a tool supplied by the manufacturer.

B. The attachment links shall be of similar construction to the plain chain links, with the flight pusher plate extending the full depth of the flight and molded integrally with the link side bars. The attachment mounting hole spacing shall conform to ASME Standard B29.21M96 and shall accommodate four (4) 3/8" diameter Type 316 stainless steel hex head attachment bolts. Bolts shall be fastened with brass "Nylock" hex locknuts and Type 316 stainless steel cut washers. The attachment link shall be capable of twisting a minimum of 17 degrees across the face of the attachment without failure.

C. Collector chain shall be tested and manufactured per the minimum quality assurance program specified under the Collector Chain Testing Section of this specification.

2.2 FLIGHTS

A. Flights shall be 3" x 8" nominal size fiberglass construction, essentially rectangular in cross section. The member shall have a Moment of Inertia of not less than 1.11 $in.^4$ about its minor axis. The flight shall be of pultruded isopthalic polyester composite construction with a minimum fiberglass content of 50% but no greater than 60%, to insure member strength and total encapsulation of the glass fibers to prevent wicking. The use of extenders in the resin is prohibited.

B. Maximum water absorption shall be no greater than 0.6% after immersion for 48 hrs. at 73.4 degree F (23 degree C) in accordance with ASTM D-570. The flight section shall include a scraper lip on the leading edge of the flight to optimize cleaning of the tank floor. Polypropylene filler blocks shall be furnished to allow the flight to be securely bolted to the chain attachment. Flight spacing shall be approximately 10 ft. for longitudinal collectors. Flights shall be accurately drilled and notched at the factory and banded together for shipment.

2.3 WEARING SHOES

A. Each flight shall be provided with 1/2" thick wearing shoes to run on floor wear strips and on support tracks on the return run. The shoes shall be cast of UHMW-polyethylene material. Wearing shoes running on the floor wear strips shall be located central to the chain attachment. All wearing shoes shall be reversible providing two (2) usable wearing surfaces.

2.4 COLLECTOR CHAIN SPROCKETS

A. Sprockets for the collector chains shall be molded totally of polyurethane having a water absorption rate not to exceed 1.3% at saturation in accordance with ASTM D-570. The sprockets shall be of split construction, shall have the double life tooth profile compatible with non-metallic chain. The sprocket halves shall be assembled on the shafting with two (2) type 316 stainless steel full width clamping bands which exert compressive force around the full periphery of the hub, thereby clamping the sprocket to the shaft where required. The clamping bands shall include provisions to restrict lateral movement. The headshaft sprockets shall have the keyway machined into the hub in such a way as to restrict lateral movement of the key and to insure chain alignment. Wedge dogs of type 316

stainless steel shall be located along the split line near the periphery and so designed to draw the sprocket halves together in diametrical and lateral alignment.

B. Headshaft sprockets shall not be less than 22.23" pitch diameter and have 23 teeth. All cornershaft sprockets shall not be less than 16.61" pitch diameter and have 17 teeth. Driving sprockets shall be keyed firmly to the headshaft, and cornershafts shall have both sprockets securely clamped on the shaft.

2.5 HEADSHAFT

A. Headshaft shall be solid cold-finished steel, straight and true, held in alignment with split UHMW-polyethylene set collars. The headshaft shall contain keyways with fitted keys and shall be sized to transmit the power required. Headshaft shall extend across the full width of the tank and turn in bearings mounted on the tank walls. Shaft and sprockets shall be shipped unassembled to prevent damage to sprockets during shipping and handling. The longitudinal collector headshaft shall be a minimum 4 " diameter.

2.6 SHAFTING SET COLLARS

A. Shafting set collars shall be molded of UHMW-Polyethylene per ASTM-D4020-81, with a minimum tensile strength of 5,600 PSI at 73 degree F. The collars shall be of split construction and shall include a shoulder at each end to contain the clamping band. The two (2) collar halves shall be secured to the shaft by a Type 316 stainless steel clamping band, which exert compressive force around the full periphery of the set collar.

2.7 STATIC IDLER SHAFTS

A. The longitudinal collector idler sprockets shall be mounted on static shafts with bearing sleeves. Shafts shall be supported by minimum 1/4” thick fabricated steel support brackets, attached to the wall with three (3) 3/4" dia. adhesive anchors.

2.8 WALL BEARINGS

A. Headshaft bearings shall be of Type 316 cast stainless steel per ASTM A351, Grade CF8M, water lubricated, self-aligning type, having a polyurethane sleeve. The housing shall be of split design and specially designed to prevent the accumulation of settled solids on its surface. The housing shall have provisions for greasing when the tank is drained. These bearings shall be anchored directly to the concrete wall in a manner that shall permit their easy alignment.

2.9 BEARINGS SLEEVES

A. Static shaft bearing sleeves shall be molded of UHMW-Polyethylene per ASTM-D4020-81, with a minimum tensile strength of 5,600 PSI at 73 degree F. The sleeves shall be of split construction and shall include a shoulder at each end to restrict lateral movement of the sprocket. The two (2) sleeve halves shall be secured to the shaft by two (2) Type 316 stainless steel clamping bands, which

exert compressive force around the full periphery of each shoulder. The shoulders shall include retainer rings to contain the clamping bands.

2.10 RETURN TRACKS

A. Return tracks shall be 3" x 3" x 3/8" fiberglass angles with non-metallic supporting brackets fastened by minimum two (2) anchor bolts to the channel walls. Each bracket shall be designed to cantilever the return track approximately 9" off the channel wall. UHMW-polyethylene wear strips and mounting hardware shall be provided. Support brackets shall be spaced approximately 10 ft. apart.

2.11 DEFLECTOR TRACK ANGLES

A. Deflector track angles, if required, shall be provided to prevent flights from contacting other components within the collector tank. Angles shall be 3" x 3" x 3/8" fiberglass angles attached to the channel wall with non-metallic brackets and fastened with minimum two (2) anchor bolts to the channel walls. UHMW-polyethylene wear strips and mounting hardware shall be provided.

2.12 WEAR STRIPS

A. Removable wear strips shall be provided for the return tracks and deflector angles consisting of 3/8" thick UHMW-polyethylene material in 10 foot sections with each section having five (5) countersunk holes and shall be field fastened with Type 316 stainless steel convex washers, self-drilling and tapping 1/4" dia. stainless steel fasteners. All splices shall be mitered at 45 degrees to allow for a smooth transition of the wear shoes in the direction of flight travel to prevent the shoes from hanging up on an uneven edge.

B. The floor shall have two (2) lines of wear strips and are secured with Type 316 stainless steel convex washers, 1/4" dia. Type 316 stainless steel pan head self-tapping screws and vinyl anchors. Anchors shall be set in pre-drilled holes.

2.13 DRIVE UNIT

A. Each collector mechanism shall be operated by its own drive unit.

B. The motor shall be rated at ½ hp and 1.15 Service Factor, totally enclosed, ball bearing, constant speed, of ample power for starting and continuously operating the mechanism under normal operating conditions without overloading. The motor shall conform to NEMA standards and be suitable for operation on 480 volts, 3 phase, 60 Hertz.

C. The speed reducer shall be of the helical gear type, fully housed, running in oil, with anti-friction bearings throughout. The speed reducer shall be designed based on calculated average sludge load, stated under Design Criteria of this Specification, and have a 1.15 Service Factor. The minimum torque rating shall be 3,980 in-lbs.

D. The drive units shall be assembled by the Manufacturer and shipped as a complete assembly to ensure proper assembly of all components. The motor shall be directly connected to the speed reducer and mounted as a common unit. V-belt drives will not be acceptable.

2.14 DRIVE CHAIN

A. Collector drive chains shall be No. NH78 non-metallic, having 2.609" pitch links with an average weight of 1.4 lbs. per foot. The chain shall have a published working load of not less than 1,750 lbs., based upon strength and fatigue considerations. The chain links shall be manufactured of acetal resin and connected with 7/16" diameter stainless steel pins. The pins shall be constructed to prevent rotation and shall be held in place without the use of pins or cotters. Chains made of glass reinforced resins that require an abrasion resisting bushing to insulate the pin from the link barrel shall not be acceptable.

2.15 DRIVEN SPROCKET

A. The driven sprocket shall consist of a polymeric toothed rim bolted to a split polymeric dished body. The rim and body shall be molded of high performance polyurethane having a water absorption rate not to exceed 1.3% at saturation in accordance with ASTM D-570. The body shall be molded concentric and perpendicular to the bore with the rim mounting holes accurately located to insure concentricity of the sprocket assembly. The body halves shall be assembled on the headshaft with two (2) clamping bands to exert compressive force around the full periphery of the hub, thereby clamping the sprocket assembly to the shaft. Wedge dogs shall be located along the split line near the periphery and so designed to draw the sprocket halves together in diametrical and lateral alignment. The body shall have a machined keyway designed to restrict the lateral movement of the key.

B. The rim shall be molded in four (4) segments and each segment shall be bolted to the body with four (4) 5/8" diameter bolts. The sprocket rim shall be not less than 33.25" pitch diameter and have 40 teeth. All sprocket hardware shall be type 316 stainless steel.

2.16 DRIVE SPROCKET

A. The drive sprocket shall consist of a polymeric plate section bolted to a cast iron driving hub. The sprocket plate section shall be molded of polyurethane as described under the collector chain sprocket section. The sprocket shall be not less than 9.26" pitch diameter and have 11 teeth.

B. The drive sprocket shall be provided with a shear pin device to provide for protection of the drive equipment in the event of excessive loading. Aluminum shear pins shall be provided to transmit torque from the driving hub to the sprocket shear plate with a polymeric gasket located between the shear faces to prevent seizing.

2.17 DRIVE CHAIN TIGHTENER

A. The drive chain arrangement shall include a chain tightener to take up excessive slack in the drive chain. The tightener assembly shall include a stainless steel slide base and mounting bracket with a self-centering and self-lubricated molded polyurethane idler sprocket.

2.18 CHAIN GUARD

A. The drive chain and sprockets located above the operating platform shall be covered with a removable metal guard of No.14 gauge Type 304 stainless steel.

2.19 GENERAL ITEMS

A. All anchor bolts shall be Type (304/316) stainless steel furnished by the Equipment Manufacturer, of ample size and strength for the purpose intended. All anchor bolts shall be set by the General Contractor in accordance with the manufacturer's instructions.

PART 3 EXECUTION

3.1 INSTALLATION

A. The assembly shall be installed and supported on existing concrete walls by brackets using expansion anchors. If necessary, the existing walls shall be modified to accommodate the new equipment. Contractor shall submit a modification plan in accordance with the submittals section.

B. After installation, the assembly shall be adjusted for proper operation in accordance with manufacturer’s instructions.

C. Existing holes from previous unit shall be filled with epoxy grout.

3.2 PERFORMANCE REQUIREMENTS

A. Equipment named and specified herein is intended to establish the type, function and quality required. Equipment of other manufacturers may be accepted if sufficient information is submitted by the Contractor to allow the Engineer to determine that the equipment proposed is equivalent to that named.

B. The basic requirements of this specification are the non-metallic components which eliminate corrosion associated with cast and steel components, and the fiberglass flight design which is critical to mechanism performance. Materials specified herein promote longer life resulting in lower operating and maintenance costs. Substitute equipment which is a "standard product" of the Manufacturer shall be modified, redesigned from the standard or shall be furnished with special features as may be necessary to conform to the requirements of the specification and contract drawings. Material variances shall not be allowed.

3.3 TESTING

A. The Contractor shall include with his bid the services of the Equipment Manufacturer's field service technician for a period of one (1) trip and two (2) days. This service shall be for the purposes of check-out, initial start-up, certification, and instruction of plant personnel. A written report covering the technician's findings and installation approval shall be submitted to the Engineer covering all inspections and outlining in detail any deficiencies noted.

B. The manufacturer’s representative shall provide to Owner’s personnel, a minimum of 1 hour of field instruction on the operations and maintenance of the equipment.

3.4 COLLECTOR CHAIN TESTING

A. Working Load and Attachment Twist

1. The collector manufacturer shall submit certified documentation stating that the collector chain has been endurance tested on an endurance testing apparatus at a minimum published working load of 2,600 lbs. and that the attachment link has been tested to a minimum 17 degrees twist.

2. Endurance test shall consist of running the collector chain on a testing apparatus for a minimum of 120,000 chain/sprocket articulations - equivalent to 5 year collector mechanism operation - at a minimum published working load of 2,600 lbs. Chain speed shall be 20 feet per minute. The testing apparatus shall consist of two parallel shafts at approx. 70-inch centers containing two sets of sprockets on each shaft. Two (2) sets of collector chain shall be tested simultaneously. The test shall demonstrate no galling of barrel interiors, no chain sidebar failure, no pin failure, average barrel outside diameter wear not exceeding 0.0035 inch per year, and average pin wear not exceeding 0.004 inch per year.

3. Attachment link twist shall be tested by wrapping collector chain around a horizontally anchored sprocket with the attachment link placed at the middle of the chain test strand. The chain shall be tensioned and fastened off for safety. A lever arm shall be fastened to the attachment link in a vertical plane. A pull line is set up to pull the lever arm at a tangent to the pitch line arc and 90 degrees to the lever arm. At a point 32 inch from the connection at the attachment to the pull line, a load shall be gradually applied until the attachment link twist across its face is at a minimum 10 degrees. The test shall confirm that no breakage has occurred and that the attachment link returns to its original position with no permanent deformation. This test is equivalent to a maximum flight bow of 11.4 inch at the center of a 20 ft. long flight having an E x I value of 2.44×10^6 lbs-in^2.

B. Proof Load and Ultimate Tensile Strength Testing

1. Certified documentation shall be submitted at drawing submittal stating that the manufacturer of the collector chain has an established quality control

program for materials and manufacture. The program shall consist of proof load and ultimate tensile strength tests.

2. The proof load test shall be of assembled 10 ft. long strands of collector chain tensioned to a minimum 5,000 lbs. for all of the first 20 strands, every fifth strand for the next 20 and every tenth strand of the balance of chain run. Proof load tests shall meet the minimum requirement of holding an applied minimum tension force of 5,000 lbs. for not less then 4 seconds and no more than 10 seconds without failing or permanently deforming the chain. The objective of a chain proof load test is to verify a strand shall withstand a tension load greater than its published working load but less than its ultimate tensile strength.

3. Once per shift, an ultimate tensile strength tests shall be performed on one (1) 3-link strand. Ultimate tensile strength tests shall meet the requirement of applying a tension force at a loading rate of approximately 3,500 lbs/min (+/- 1,500 lbs/min) up to the breaking point of the chain. Chain failure load shall be not less than 6,300 lbs. The objective of a chain ultimate tensile strength test is to verify a strand's tensile breaking strength

3.5 SUBSTITUTE EQUIPMENT

A. If the Contractor desires to offer equipment as a substitute to the specified equipment, Section 08-1.04 and 8-1.06 of the Special Provisions shall be followed.

B. After award and approval of contract, the Contractor will submit material specifications for approval.

C. Descriptive information shall include the following:

1. List of five (5) installation utilizing fiberglass flights, with the specified moment of inertia, which have been in operation for at least two (2) years, giving location and date of initial operation.

2. List of five (5) non-metallic chain installations, of comparable size, in operation for at least five (5) years giving location, date of initial operation, tank size and condition of operation.

3. Design criteria, data or parameters showing strength characteristics of the proposed fiberglass flight.

4. Complete conformance with the requirements specified under Performance and Component Testing Sections of this specification.

5. Five (5) strands of collector chain consisting of three (3) pitches each to be proof load tested to a minimum 5,000 lbs. and tested for ultimate tensile strength to a minimum of 6,300 lbs. by an independent testing laboratory.

Duplicate tests shall be run on five (5) randomly selected strands of chain shipped to the job site. Should any of the samples shipped to the jobsite fail

the proof load or ultimate tensile strength test, an additional five (5) strands shall be selected and subjected to the test procedures. Should any of the additional strands fail, the entire lot of chain will be rejected and stored on site until receipt of acceptable chain from the manufacturer. The cost of testing shall be borne by the manufacturer.

6. Complete equipment description of collector components giving type of material, dimensions and thickness' of each component.

7. General arrangement drawing of collector components

3.6 SPARE PARTS

Manufacturer shall provide following spare parts to store on-site for maintenance.

1. Drive Chain: 1 EA. Full length

2. Shear Pins: 12 per shear pin device

3. Carrying chain with required number of attachments:

   1/10 of chain supplied

4. Flights 3 EA

5. Wearing Shoes: 3 sets for wearing shoes, each set includes two (2) carrying shoes and two (2) return shoes

END OF SECTION

SECTION 11350

SUBMERSIBLE JET AERATORS

PART 1 GENERAL

1.1 WORK INCLUDED

A. Furnish ONE (1) submersible jet aerators complete with electrical cables and lifting cables for aerating the aeration basin.

B. Install submersible jet aerators in the basin with ejector diffuser, air pipe and silencer valve as indicated on the Plans.

C. All labor, materials, equipment and incidentals necessary and required for their completion.

1.2 RELATED WORK

A. Section 09900 – Painting

B. Division 13 – Electrical

1.3 SUBMITTALS

A. Submittals shall be in accordance with the Standard General Conditions and the Supplementary conditions.

B. Submittals shall also include:

1. Oxygen transfer performance.

2. Pumping performance.

1.4 QUALIFICATIONS

A. Aerators shall be provided by an Aerator manufacturer or supplier who had been in the business of supplying wastewater Aerators for a period of not less than 2 years.

1.5 DESIGN REQUIREMENTS

A. Performance and Design Requirements

No. of Units	1
Minimum Oxygen Transfer rate*	7.5 lb O_2/Hr
Aerator installation Depth	14 feet
Motor hp	5

* Under Measurement of Oxygen Transfer in Clean Water (ASCE/EWRI 2-06)

1.6 POWER SUPPLY

A. The power supply shall be 230/460 volts, 60 H_z, 3 phase.

1.7 PAINTING

A. All wetted metal surfaces, including motor, shall be painted with manufacturer's standard corrosion resistant epoxy paint.

1.8 QUALITY ASSURANCE

A. Inspection: All equipment shall be inspected and certified by factory representatives before shipping.

B. Factory Testing: Each aerator shall be fully assembled and tested at the factory prior to shipment. Testing shall be for hydraulic vibration level and shall not exceed 0.5 mils peak-to-peak measured at the motor bearings and at a frequency equal to the motor speed, prior to assembly to the float. After assembly to the float, the rotating elements of the power section will be dynamically balanced to 0.5 mils peak to peak maximum amplitude measured at the motor bearings.

C. Field Testing: Each aerator shall be checked for an effective aeration pattern, with amperage fluctuation not to exceed to a peak to a minimum range of 5 percent of operating amperage.

1. Aerator shall be stable in operation with no noticeable lift or movement.

D. Preparation for Delivery: All aerators shall be fully assembled at the factory and shipped in one piece to the job site. No field assembly of the aerator units will be allowed. Electrical cables shall be attached at the factory. Mooring cables shall be cut to length in the field, assembled and attached in the field.

1.9 WARRANTY

A. Commencing on the date of installation of the equipment, the Contractor will, upon the receipt of notice in writing from the Owner, promptly make all repairs arising out of defective materials, workmanship or equipment.

B. The Owner shall be authorized to make such repairs, if ten (10) days after giving such notice to the Contractor, the Contractor has failed to make or undertake the repairs with due diligence. In the case of an emergency, where, in the opinion of the Owner, the delay could cause serious loss or damage, repairs may be made without notice being sent to the Contractor and the expenses in connection therewith shall be charged to the Contractor.

C. The manufacturer shall provide a 2-year warranty against defect in materials and workmanship for the motor and propeller, and a 10-year warranty on all non-moving parts.

PART 2 PRODUCTS

2.1 DESCRIPTION

A. The model of the aerator should be 37-BER5 by Tsurumi Pump or NS3102.095-463MT JA112-S6 by Flygt or approved equal.

B. Each submersible jet aerator shall include a submersible pump, an air induction pipe, and a jet ejection diffuser, assembled to form a complete unit.

C. Submersible pump shall be 5 horsepower, suitable for continuous operation. The submersible pump shall have cast iron pump body and the impeller shall be Gray Cast Iron or stainless steel, dynamically balanced.

D. The ejection diffuser shall be corrosion resistant stainless steel. All hardware (stainless steel), lifting cable (304 stainless steel), electrical service cable and appurtenances shall be included with the aerators.

E. The motor shaft shall be one piece 17-4 stainless steel.

F. Electrical Cables: Each aerator shall be provided with sufficient lengths of AWG #10-4 four conductors, UL approved underwater electrical cable. The cable shall be attached to the motor at the factory with a Kellum grip.

PART 3 EXECUTION

3.1 INSTALLATION

A. Aerator shall be installed in the basin at the positions indicated on the Plans. The cables shall be of sufficient length for connection to the edge of the basin.

B. Lifting chains shall be provided for lifting the aerator by portable davits.

3.2 FIELD SERVICE

A. The manufacturer shall provide one (1) day of field service by a qualified service engineer to inspect and test for lubrication, alignment, free operation, and to instruct the Owner's personnel in the proper operation and maintenance of the equipment. Instructions for long-term storage and maintenance of the aerators and motors shall be provided.

B. Manufacturer's field engineer or representative shall certify that the aerator has been installed in accordance with the manufacturer's instructions and that trial operation of the aerators has been satisfactorily completed and that the aerators had met performance requirements.

3.3 STARTUP AND TESTING.

A. All cost of testing and instructions shall be at no cost to the Owner.

B. Spare Parts shall include one (1) set of mechanical seal and packing O-ring set.

END OF SECTION

SECTION 11360

SUBMERSIBLE MIXER

PART 1 GENERAL

1.1 WORK INCLUDED

A. Furnish ONE (1) submersible mixer complete with electrical cables and lifting cables for mixing the aeration basin.

B. Install submersible mixer in the basin with guide bar mounting for position and direction adjustment as indicated in the Plans.

C. All labor, materials, equipment and incidentals necessary and required for their completion.

1.2 RELATED WORK

A. Section 09900 – Painting

B. Division 16 – Electrical

1.3 SUBMITTALS

A. Submittals shall be in accordance with the Standard General Conditions and the Supplementary conditions.

B. Submittals shall also include:

1. Shop drawing.

2. Pumping performance.

1.4 QUALIFICATIONS

A. Aerators shall be provided by an Aerator manufacturer or supplier who had been in the business of supplying wastewater Aerators for a period of not less than 2 years.

1.5 DESIGN REQUIREMENTS

A. Performance and Design Requirements

No. of Units	1
Thrust Force	300 – 500 N
Aerator installation Depth	Up to 14 feet
Motor hp	2 – 3 HP

1.6 POWER SUPPLY

A. Power supply shall be 230/460 volts, 60 H_z, 3 phase.

1.7 PAINTING

A. All wetted metal surfaces, including motor shall be painted with manufacturer's standard corrosion resistant epoxy paint.

1.8 QUALITY ASSURANCE

A. Inspection: All equipment shall be inspected and certified by factory representatives before shipping.

B. Factory Testing: Each mixer shall be fully assembled and tested at the factory prior to shipment. Testing shall be for hydraulic vibration level and shall not exceed 0.5 mils peak-to-peak measured at the motor bearings and at a frequency equal to the motor speed, prior to assembly to the float.

C. Field Testing: Each aerator shall be checked for an effective aeration pattern, with amperage fluctuation not to exceed to a peak to a minimum range of 5 percent of operating amperage.

1. Mixer shall be stable in operation with no noticeable lift or movement.

D. Preparation for Delivery: All mixers shall be fully assembled at the factory and shipped in one piece to the job site. No field assembly of the mixer units will be allowed. Electrical cables shall be attached at the factory. Mooring cables shall be cut to length in the field, assembled and attached in the field.

1.9 WARRANTY

A. Commencing on the date of installation of the equipment, the Contractor will, upon the receipt of notice in writing from the Owner, promptly make all repairs arising out of defective materials, workmanship or equipment.

B. The Owner shall be authorized to make such repairs, if ten (10) days after giving such notice to the Contractor, the Contractor has failed to make or undertake the repairs with due diligence. In the case of an emergency, where, in the opinion of the Owner, the delay could cause serious loss or damage, repairs may be made without notice being sent to the Contractor and the expenses in connection therewith shall be charged to the Contractor.

C. The manufacturer shall provide a 1-year warranty against defect in materials and workmanship for the motor and propeller, and a 10-year warranty on all non-moving parts.

PART 2 PRODUCTS

2.1 DESCRIPTION

A. The model of the mixer should be MR33NF/NR 1.5 by Tsurumi Pump or 4630 by Flygt or approved equal.

B. Each submersible mixer shall be installed on a guide bar with a stainless steel cable attached for lifting.

C. The mixer shall be 2 - 3 horsepower, suitable for continuous operation. The submersible pump shall have cast iron pump body and the impeller shall be Gray Cast Iron or stainless steel, dynamically balanced.

D. The propeller shall be high chromium cast iron withstand abrasion from solids in the aeration basin. All hardware (stainless steel), lifting cable (304 stainless steel), electrical service cable and appurtenances shall be included with the mixer.

E. Electrical Cables: Each aerator shall be provided with sufficient lengths conductors, UL approved underwater electrical cable. The cable shall be attached to the motor at the factory with a Kellum grip.

PART 3 EXECUTION

3.1 INSTALLATION

A. Mixer shall be installed in the basin at the positions indicated on the Plans. The cables shall be of sufficient length for connection to junction box.

3.2 FIELD SERVICE

A. The manufacturer shall provide one (1) day of field service by a qualified service engineer to inspect and test for lubrication, alignment, free operation, and to instruct the Owner's personnel in the proper operation and maintenance of the equipment. Instructions for long-term storage and maintenance of the aerators and motors shall be provided.

B. Manufacturer's field engineer or representative shall certify that the aerator has been installed in accordance with the manufacturer's instructions and that trial operation of the aerators has been satisfactorily completed and that the aerators had met performance requirements.

3.3 STARTUP AND TESTING.

A. All cost of testing and instructions shall be at no cost to the Owner.
B. Spare parts shall include all packings and O-rings.

END OF SECTION

SECTION 13300

INSTRUMENTATION AND CONTROLS – GENERAL PROVISIONS

PART 1 - GENERAL

1.01 SCOPE OF WORK

A. The Contractor shall procure the services of a single Process Control System Supplier (PCSS) to furnish and install all materials, equipment, labor and services, except for those services and materials specifically noted, required to achieve a fully integrated and operational system as specified herein and in other Specification Sections listed below.

B. Requirements specified in this Section apply to all equipment specified in the above sections, unless otherwise specified. The work shall include furnishing, installing and testing the equipment and materials detailed in the following Sections:

1. 13302 I&C - Testing
2. 13330 I&C - Control Panels and Panel Mounted Equipment
3. 16482 Motor Control Centers

C. Auxiliary and accessory devices necessary for system operation or performance, such as transducers, relays, signal amplifiers, intrinsic safety barriers, signal isolators, software, and drivers to interface with existing equipment or equipment provided by others under other Sections of these specifications, shall be included whether they are shown on the Drawings or not.

D. Substitutions on functions or type of equipment specified shall not be acceptable unless specifically noted. In order to confirm compatibility between all equipment, coordinate all interface requirements with mechanical and electrical systems and furnish any signal isolation devices that might be required.

E. Equipment shall be fabricated, assembled, installed and placed in operating condition in full conformity with the project Specifications, Drawings, engineering data, instructions, and recommendations of the equipment manufacturer as approved by the Engineer.

F. To facilitate the Receiver's future operation and maintenance, similar products (e.g., differential pressure transmitters, SCADA I/O cards) shall be supplied from the same manufacturer.

G. All equipment and installations shall satisfy applicable Federal, State and local codes.

H. Use the equipment, instrument, and loop numbering scheme that has been developed and shown on the Drawings and specifications in the development of the submittals. Do not deviate from or modify said numbering scheme without the Engineer's approval.

I. The work of this project includes, but is not necessarily limited to the following:

1.02 RELATED WORK

A. Process Flow Diagrams (PFD) are included in the Drawings.

B. Control System Architecture Block Diagram is included in the Drawings.

C. Specific control system and instrumentation materials and requirements are included in related Sections of Division 13.

D. Instrumentation and Controls conduit systems are specified in Division 16.

E. Instrumentation signal cable and alarm and status wiring are specified in Division 16.

1.03 SUBMITTALS

A. General submittal requirements include:

1. Refer to Division 1 for general submittal requirements.
2. Other Division 13 Sections may have additional submittal requirements.
3. Shop drawings shall be submitted as detailed herein. Shop drawings shall demonstrate that the equipment and services to be furnished comply with the provisions of these specifications and shall provide a complete record of the equipment as manufactured and delivered.
4. Submittals shall be complete; giving equipment specifications, details of connections, wiring, ranges, installation requirements, and specific dimensions. Submittals consisting of only general sales literature shall not be acceptable.
5. Submittals shall be bound in separate three-ring binders, with an index and sectional dividers, with all drawings reduced to a maximum size of 11-inch by 17-inch, then folded to 8.5 inch by 11 inch for inclusion within the binder. Maximum binder size shall be 3 inches.
6. The submittal drawings' title block shall include, as a minimum, the PCSS registered business name and address, Receiver and project name, drawing name, revision level, and personnel responsible for the content of the drawing.
7. Incomplete or partial submittals not complying with the submittal arrangements outlined in this Section will be returned without review.
8. Separate submittals shall be made as follows:
    a. Project Plan, Deviation List and Schedule Submittal
    b. Application Development System Submittal
    c. Coordination Meetings Agenda
    d. I/O List Submittal
    e. Field Instrument Submittal
    f. Hardware Submittal and Software Packages Submittal
    g. Panel Layout Drawings and Wiring Diagram Submittal
    h. Testing Plans Submittal
    i. Training Plan Submittal
        1) Preliminary Training Plan Submittal
        2) Final Training Plan Submittal

j. Spares, Expendables, and Test Equipment Submittal

k. Final System Documentation

B. Project Plan, Deviation List, and Schedule Submittal

1. Submit a Project Plan within 21 calendar days from Notice to Proceed date. The Project Plan shall, as a minimum, contain the following:

a. Overview of the proposed control system in clear text format describing the PCSS understanding of the project work, preliminary system architecture drawing, interfaces to other systems, schedule, startup, and coordination.

b. Approach to work in clearly written format describing how the PCSS intends to execute the work. A discussion of switchover, startup, replacement of existing equipment with new, and other tasks as required by these specifications shall be included as applicable.

c. Preliminary HMI software, PLC software, and PLC hardware submittal information, including version numbers, solely to determine compliance with the requirements of the Contract Documents prior to development of system programming. Review and approval of software and hardware systems as part of this Project Plan stage shall not relieve the PCSS of meeting all the functional and performance requirements of the system as specified herein. Substitution of manufacturer or model of these systems after the submittal is approved is not allowed without Engineer approval.

d. Sample formats of the shop drawings to be submitted and in conformance with the requirements of the Specifications. At a minimum include samples of panel fabrication drawings, loop, I/O wiring diagrams, and graphical display presentations.

2. Exceptions to the Specifications or Drawings shall be clearly defined in a separate Deviation List. The Deviation List shall consist of a paragraph by paragraph review of the Specifications indicating acceptance or any proposed deviations, the reason for exception, the exact nature of the exception and the proposed substitution so that an evaluation may be made by the Engineer. The acceptability of any device or methodology submitted as an "or equal' or "exception" to the specifications shall be at the sole discretion of the Engineer. If no exceptions are taken to the specifications or drawings the PCSS shall make a statement as such. If there is no statement by the PCSS, then it is acknowledged that no exceptions are taken.

3. Project schedule shall be prepared and submitted using Primavera, Microsoft Project, or equal scheduling software. Schedule shall be prepared in Gantt chart format clearly showing task linkages for all tasks and identifying critical path elements. PCSS schedule must be based on the General Contractor schedule and must meet all field installation, testing, and start-up milestones in that schedule. The project schedule shall illustrate all major project milestones including the following:

a. All subsequent project submittals shall be scheduled. Include in the time allotment; the time required for Contractor submittal preparation, Engineer's review time, and a minimum of two complete review cycles.

b. Proposed dates for all project coordination meetings.

c. Hardware purchasing, fabrication, and assembly (following approval of related submittals)

d. Software purchasing and configuration (following approval of related submittals)

e. Shipment of all instrument and control system equipment

f. Installation of all instrument and control system equipment

g. Testing/Switchover: Schedule for all testing. Testing/switchover schedule shall include submittal of test procedures a minimum of 30 days prior to commencement of testing. Schedule shall also include submittal of completed test procedure forms for review and approval by the Engineer prior to shipment, startup, or subsequent project work.

h. Schedule for system cutover, startup, and/or going on-line for each major system. At a minimum include the schedule for each process controller and HMI server/workstation provided under this Contract.

i. Schedule for all training; including submittal and approval of O&M manuals, factory training, and site training. A minimum of 1 hours of training must be included.

C. Input/Output (I/O) Address List Submittal

1. Submit a complete system Input/Output (I/O) address list for equipment connected to the control system under this Contract.

2. I/O list shall be based on the P&ID's, the Drawings, the design I/O list (if included within these specifications), and requirements outlined in the Specifications.

3. The I/O list shall be submitted in both a Microsoft Excel readable electronic file format on a CD-ROM and an 8-1/2 inch by 11-inch hard copy.

4. The I/O list shall reflect all active and spare I/O points. Add points to accommodate spare I/O.

5. The I/O list shall be arranged such that each control panel has a dedicated worksheet. At a minimum, I/O worksheet tables shall include the following information:

a. TAG NUMBER(S): The identifier assigned to a device that performs a function in the control system. As part of this information, the loop number of the tag shall be broken out to allow for sorting by loop.

b. DESCRIPTION: A description of the function of the device (text that includes signal source, control function, etc.) Include the text "Spare Points" for all I/O module points that are not connected to equipment.

c. PHYSICAL LOCATION: The Control Panel designation of where the I/O point is wired to.

d. PHYSICAL POINT ADDRESS: Rack, Slot, and Point (or Channel) assignment for each I/O point.

e. LOGICAL POINT ADDRESS: If the PCSS is performing the PLC programming, I/O address of each point. If the PCSS is not performing the PLC programming, then leave this field blank.

f. I/O TYPE: use DO - Discrete Output, DI - Discrete Input, AO - Analog Output, AI - Analog Input, PI - Pulse Input, or PO – Pulse Output.

g. RANGE/STATE: The range in engineering units corresponding to an analog 4-20 mA signal, or, the state at which the value of the discrete points are "1."

h. ENGINEERING UNITS: The engineering units associated with the Analog I/O.

i. ALARM LIMITS: Include alarm limits based on the control descriptions and the Drawings.

6. The I/O list shall be sorted in order by:

a. Physical location

b. I/O Type

c. Loop Number

d. Device Tag

7. After the I/O list is approved, do not modify the PLC I/O addresses without approval by the Engineer.

8. Where multiple mechanical components are provided for process redundancy, their field connections to I/O modules shall be arranged such that the failure of a single I/O module will not disable all mechanical components of the redundant system. This applies to all I/O types.

D. Field Instruments Submittal

1. Submit complete documentation of all field instruments using ISA-S20 data sheet formats. Submit a complete Bill of Materials (BOM) or Index that lists all instrumentation equipment ordered by the loop numbering system as shown in the Contract Documents.

2. Submit separate data sheets for each instrument including:

a. Plant Equipment Number and ISA tag number per the drawings

b. Product (item) name used herein and on the Contract Drawings

c. Manufacturer's complete model number

d. Location of the device

e. Input / output characteristics

f. Range, size, and graduations in engineering units.

g. Physical size with dimensions, enclosure NEMA classification and mounting details in sufficient detail to determine compliance with the requirements of the Contract Documents.

h. Materials of construction for enclosure and wetted parts.

i. Instrument or control device sizing calculations where applicable.

j. Certified calibration data for all flow metering devices.

k. Two-wire or four-wire device type as applicable.

3. Submit index and data sheets in electronic format as well as hard copies on 8-1/2 by 11 inches formats. Electronic format shall be in Microsoft Excel or Word. Submit electronic copy on CD-ROM or DVD disk.

E. Hardware Submittal and Software Packages Submittal

1. For each hardware component indicated below, submit a cover page that lists, at a minimum, date, specification number, product name, manufacturer, model number, Location(s), and power required. Preferred format for the cover page is ISA S20, general data sheet; however, other formats will be acceptable provided they contain all required information.

2. Catalog cuts for supplied Programmable Logic Controller (PLC), process controller equipment, remote telemetry units (RTU), including central processing units, redundancy units, memory, input modules, output modules, modems, network interface modules, mounting racks, and power supplies. Submit descriptive literature for each hardware component that fully describes the units being provided. Any deviation of the hardware systems from the preliminary hardware submittal included in the Process Plan or Applications Development System submittal shall be described in detail.

3. Catalog cuts for HMI servers, HMI workstations, historian servers, memory, printers, mass storage devices, modems, peripherals, power supplies, networking and all other hardware being provided. Submit descriptive literature for each hardware component, which fully describes the units being provided.

4. Complete system architecture diagram showing in schematic form, the interconnections between major hardware components including control centers, panels, power supplies, consoles, computer and peripheral devices, networking equipment, processors, I/O modules, local operator interfaces, and like equipment. The system architecture shall be complete and shall depict all required cables, media type between components, network protocol used at each network level, details on connection requirements such as cable pin- outs, port numbers, and rack slot numbers. The intent of this specification requirement is for the PCSS to develop a diagram that is complete in every aspect to allow purchase of all required equipment by part number, and to allow a qualified technician to interconnect all equipment without having to refer to additional manuals or literature. Minimum sheet size shall be 11"x17" and using a larger sheet size or more than one sheet is acceptable.

5. Submit details of the controller development software package, the local operator graphic panel development software package, and the HMI software application packages to be used for each piece of equipment. Indicate all standard and optional features provided. Confirm in the submittal that the licenses will be assigned to the Receiver at the time of purchase. Any deviation of the software platforms from the preliminary software submittal included in the Project Plan shall be described in detail.

F. Panel Layout Drawings and Wiring Diagrams Submittal

1. Where direct hardwired interfaces exist between the PCSS control panels and vendor provided control panels furnished under other Divisions, the Contractor shall provide to the PCSS the approved shop drawings and submittals in order for the PCSS to provide complete wiring diagrams showing all wiring connections in the I/O system. This includes but is not limited to terminal block numbering,

relay contact information, instruments, equipment, and control panel names. These drawings will be included in the Final Documentation submittal. Leaving this information blank on the Final Documentation drawings is not acceptable.

2. Panel Layout Drawings: Drawings shall be furnished for all panels, consoles, and equipment enclosures specified. Panel assembly and elevation drawings shall be drawn to scale and detail all equipment in or on the panel. Panel drawings shall be 11"x17" minimum in size. As a minimum, the panel drawings shall include the following:

   a. Interior and exterior panel elevation drawings to scale.

   b. Nameplate schedule.

   c. Conduit access locations.

   d. Panel construction details.

   e. Cabinet assembly and layout drawings to scale. The assembly drawing shall include a bill of material on the drawing with each panel component clearly defined. The bill of material shall be cross-referenced to the assembly drawing so that a non-technical person can readily identify any component of the assembly by manufacturer and model number.

   f. Fabrication and painting specifications including color (or color samples).

   g. Submit construction details, NEMA ratings, intrinsically safe barrier information, gas sealing recommendations, purging system details, etc. for panels located in hazardous locations or interfacing to equipment located in hazardous areas.

   h. Heating and cooling calculations for each panel supplied indicating conformance with cooling requirements of the supplied equipment and environmental conditions. Calculations shall include the recommended type of equipment required for both heating and cooling.

   i. Submit evidence that all control panels shall be constructed in conformance with UL 508 and bear the UL seal confirming the construction. Specify if UL compliance and seal application shall be accomplished at the fabrication location or by field inspection by UL inspectors. All costs associated with obtaining the UL seal and any inspections shall be borne by the Contractor and included in the Project Bid Price.

3. Panel Wiring Diagrams: Panel wiring diagrams depicting wiring within and on the panel as well as connections to external devices. If ISA Loop Wiring Diagrams are specified below, equipment external to the control panel and related external connections do not need to be shown on the Panel Wiring Diagrams. Panel wiring diagrams shall include power and signal connections, UPS and normal power sources, all panel ancillary equipment, protective devices, wiring and wire numbers, and terminal blocks and numbering. Field device wiring shall include the device ISA-tag and a unique numeric identifier. The diagrams shall identify all device terminal points that the system connects to, including terminal points where I/O wiring lands on equipment not supplied by the PCSS. Wiring labeling used on the drawings shall match that shown on the Contract Documents or as developed by the PCSS and approved by the Engineer. I/O wiring shall be numbered with rack number, slot number, and point number. Two-wire and four-

wire equipment shall be clearly identified and power sources noted. Submit final wire numbering scheme. Panel drawings shall be 11" x17" minimum in size.

4. ISA Loop Wiring Diagrams: Detailed ISA loop wiring diagrams showing requirements for each loop which is shown on the contract drawings. The Loop Drawings shall be prepared in accordance with ISA Standard S5.4 latest edition with the layout following Figures 5 and 6 (shown in the S5.4 Standard), titled Minimum Required Items Plus Optional items". Loop drawings shall be 11"x17" minimum in size. The information required on the Loop Drawings in order to satisfy the "minimum" and "optional" requirements is as follows:

    a. Minimum Required Items – The following information shall be provided on Loop Drawings in order to meet this requirement:

        1) Identification of the loop and loop components shown on the P&IDs. Other principal components of the loop to be shown and identified under ISA-5.1, "Instrumentation Symbols and Identification".

        2) Word description of loop functions within the title. If not adequate, use a supplemental note. Identify any special features or functions of shutdown and safety circuits.

        3) Indication of the interrelation to other instrumentation loops, including overrides, interlocks, cascaded set points, shutdowns and safety circuits.

        4) All point-to-point interconnections with identifying numbers or colors of electrical cables, conductors, pneumatic multitubes, and individual pneumatic and hydraulic tubing. This identification of interconnections includes junction boxes, terminals, bulkheads, ports, and grounding connections.

        5) General location of devices such as field, panel, auxiliary equipment, rack, termination cabinet, cable spreading room, I/O cabinet, etc.

        6) Energy sources of devices, such as electrical power, air supply, and hydraulic fluid supply. Identify voltage, pressure, and other applicable requirements. For electrical sources, identify circuit or disconnect numbers.

        7) Process lines and equipment sufficient to describe the process side of the loop and provide clarity of control action. Include what is being measured and what is being controlled.

        8) Actions or fail-safe positions (electronic, pneumatic, or both) of control devices such as controllers, switches, control valves, solenoid valves, and transmitters (if reverse- acting). These are to be identified in accordance with ISA-5.1, "Instrumentation Symbols and Identification".

    b. Additional Required Items – The following information shall be provided on Loop Drawings (in a tabular format as shown in Figures 5 and 6 of ISA 5.4) in order to meet this requirement:

        1) Process equipment, lines, and their identification numbers, source, designation, or flow direction.

2) Reference to supplementary records and drawings, such as installation details, P&IDs, location drawings, wiring diagrams or drawings, and instrument specifications.

3) Specific location of each device, such as elevation, area, panel subdivision, rack or cabinet number and location, I/O location.

4) Cross reference between loops that share a common discrete component, such as multipen recorders, dual indicators, etc.

5) References to equipment descriptions, manufacturers, model numbers, hardware types, specifications or data sheets, purchase order numbers.

6) Signal ranges and calibration information, including setpoint values for switches, and alarm and shutdown devices.

7) Software reference numbers, such as I/O addresses, control block types and names, network interfaces, point names.

8) Engraving or legend information that helps identify the instrument or accessory. Per ISA-5.4-1991 11.

9) Accessories, tagged or otherwise identified, such as regulators, filters, purge meters, manifold valves, root valves.

10) References to manufacturer's documentation such as schematics, connection details, operating instructions.

11) Color code identification for conductors or tubes that use numbers for differentiation.

G. Testing Plan Submittals

1. Test Procedure Submittals: Submit the procedures proposed to be followed for each test. Procedures shall include test descriptions, forms, and checklists to be used to control and document the required tests. Include sign-off forms for each testing phase or loop with sign-off areas for the PCSS, Engineer, and Receiver.

2. Test Documentation: Upon completion of each required test, document the test by submitting a copy of the signed off test procedures. Testing shall not be considered complete until the signed-off test procedures have been submitted and favorably reviewed. Submittal of other test documentation, including "highlighted" wiring diagrams with field technician notes, are not acceptable substitutes for the formal test documentation.

3. Each loop shall have a Loop Status signoff form to organize and track its inspection, adjustment and calibration. These forms shall include the following information and check-off items:

   a. Project Name.

   b. Loop Number.

   c. Detailed test procedure indicating exactly how the loop will be tested including all required test equipment, necessary terminal block numbers, and simulation techniques required.

   d. Tag Number for each component.

   e. Check-offs/signoffs for each component.

1) Tag/identification
2) Installation
3) Termination - wiring
4) Termination - tubing
5) Calibration/adjustment

f. Check-offs/signoffs for the loop.
1) Panel interface terminations
2) I/O interface terminations
3) I/O signal operation
4) Inputs/outputs operational: received/sent, processed, adjusted
5) Total loop operation
6) Space for comments.
7) Sign off and date fields for the Contractor, the Engineer, and the PCSS.

4. Each active analog subsystem element shall have a Component Calibration form. These forms shall have the following information including space for data entry:
a. Project Name.
b. Loop Number.
c. ISA Tag Number and I/O Module Address.
d. Manufacturer.
e. Model Number/Serial Number.
f. Summary of Functional Requirements. For example:
1) For Indicators: Scale ranges
2) For Transmitters/Converters: Scale and chart ranges
3) For Computing Elements: Function
4) For Controllers: Action (direct/reverse) control modes (PID)
5) For Switching Elements: Unit range, differential (FIXED/ADJUSTABLE), reset (AUTO/MANUAL)
6) For I/O Modules: Input or output
g. Calibrations; for example:
1) For Analog Devices: Required and actual inputs and outputs at 0, 50 and 100 percent of span.
2) For Discrete Devices: Required and actual trip points and reset points.
3) For Controllers: Mode settings (PID).
4) For I/O Modules: Required and actual inputs or outputs for 0, 50 and 100 percent of span.

h. Space for comments.

i. Sign off and date fields for the Contractor, the Engineer, and the PCSS.

H. Spares, Expendables, and Test Equipment Lists Submittal

1. This submittal shall include for each Subsystem:

a. A list of, and descriptive literature for, spares, expendables, and test equipment as specified in Division 13.

b. A list of, and descriptive literature for, additional spares, expendables, and test equipment recommended by the manufacturer.

c. Unit and total costs for the additional spare items specified or recommended for each subsystem.

I. Final System Documentation

1. The Final System Documentation shall consist of operations and maintenance manuals as specified herein. The manuals shall be bound in three-ring binders, maximum size of three inches, with Drawings reduced to 11 inch by 17 inch, then folded to 8.5 inch by 11 inch for inclusion. Each section shall have a uniquely numbered tab divider, and each component within each section shall have a separate binder tab divider.

2. The operations and maintenance manuals shall, at a minimum, contain the following information:

a. Table of Contents

1) A Table of Contents shall be provided for the entire manual with the specific contents of each volume clearly listed. The complete Table of Contents shall appear in each volume.

b. Instrument and Equipment Lists

1) The following lists shall be developed in Excel and provided not only as a hardcopy in O&M but also electronically on a CD.

2) An instrument list for all devices supplied including tag number, description, specification section and paragraph number, manufacturer, model number, serial number, range, span, location, manufacturer phone number, local supplier name, local supplier phone number, completion year replacement cost, and any other pertinent data.

3) An equipment list for all non-instrument devices supplied listing description, specification section and paragraph number, manufacturer, model number, serial number, location, manufacturer phone number, local supplier name, local supplier phone number, completion year replacement cost, and any other pertinent data.

c. Data Sheets with Vendor Operations and Maintenance Information

1) ISA S20 data sheets shall be provided for all field instruments.

2) Cover page for each device, piece of equipment, and OEM software that lists, at a minimum, date, specification number, product name, manufacturer, model number, Location(s), and power required. Preferred

format for the cover page is ISA S20, general data sheet; however, other formats will be acceptable provided they contain all required information.

3) Final vendor O&M documentation for each device, piece of equipment, or OEM software shall be either new documentation written specifically for this project, or modified standard vendor documentation. All standard vendor documentation furnished shall have all portions that apply clearly indicated with arrows or circles. All portions that do not apply shall be neatly lined out or crossed out. Groups of pages that do not apply at all to the specific model supplied shall be removed.

4) For any component requiring dip switch settings or custom software configuration, that information shall be included along with the corresponding data sheets and O&M information.

d. As-Built Drawings

1) Complete as-built drawings, including all drawings and diagram specified in this section under the "Submittals" section. These drawings shall include all termination points on all equipment the system in connected to, including terminal points of equipment not supplied by the PCSS.

2) As built documentation shall include information from submittals, as described in this Specification, updated to reflect the as-built system. Any errors in or modifications to the system resulting from the Factory and/or Functional Acceptance Tests shall be incorporated in this documentation.

e. Original Licensed Software

1) Submit original software diskettes or CD-ROMs of all software provided under this Contract. Submit original paper based and electronic documentation for all software provided. Submit license agreement information including serial numbers, license agreements, User Registration Numbers and related information. All software provided under this Contract shall be licensed to the Receiver at the time of purchase. Provide media in software sleeves within O&M manual.

f. Electronic O&M Information

1) In addition to the hard copy of O&M data, provide an electronic version of all equipment manuals CDROM or DVD. Electronic documents shall be supplied in Adobe Acrobat format.

2) Provide electronic files for all custom-developed manuals. Text shall be supplied in both Microsoft Office format and Adobe Acrobat format.

3) Provide electronic files for all drawings produced. Drawings shall be in AutoCAD ".dwg" format and in Adobe Acrobat format. Drawings shall be provided using the AutoCAD eTransmit feature to bind external references, pen/line styles, and fonts into individual zip files along with the drawing file.

4) Each computer system hardware device shall be backed up onto CDROM or DVD after Substantial Completion and shall be turned over to the Receiver.

5) If specified in the training section, provide digital copies of all training videos. Videos shall be in a format that is readable by standard DVD players and by standard PC DVD drives. Format and shall be a minimum of 800 by 600 pixels and shall include sound.

3. The cover and edge of each volume shall contain the following information:
   a. Project Name (refer to Contract Documents)
   b. Contract Number (refer to Contract Documents)
   c. Instrumentation and Control System Hardware[or Applications Engineering] Operations and Maintenance Manual
   d. Specification Sections [List appropriate section]
   e. Subcontractor Name
   f. Date
   g. Volume X of Y [Where X is the volume number and Y is the number of volumes]

1.04 REFERENCE STANDARDS

A. Publications are referred to in the text by basic designation only. Where a date is given for reference standards, that edition shall be used. Where no date is given for reference standards, the latest edition in effect at the time of bid opening shall apply.

B. International Society of Automation (formerly the Instrumentation, Systems and Automation Society) (ISA)
   1. ISA S5.2 Binary Logic Diagrams for Process Operations
   2. ISA S5.3 Graphic Symbols for Distributed Control/Shared Display Instrumentation Logic and Computer Systems.
   3. ISA S5.4, Instrument Loop Diagrams
   4. ISA S20, Specification Forms for Process Measurement and Control Instruments, Primary Elements and Control Valves.
   5. ISA RP60.3, Human Engineering for Control Centers
   6. ISA RP60.6, Nameplates, Labels, and Tags for Control Centers

C. National Electrical Manufacturers Association (NEMA)

D. National Fire Protection Agency (NFPA)
   1. NFPA 70, National Electrical Code (NEC)

E. Underwriters Laboratories, Inc. (UL)
   1. UL 508 – Industrial Control Equipment

F. American Society for Testing and Materials (ASTM)
   1. ASTM A269 - Standard Specification for Seamless and Welded Austenitic Stainless Steel Tubing for General Service.

1.05 QUALITY ASSURANCE

A. The Process Control System Supplier (PCSS) shall be a "systems integrator" regularly engaged in the design and the installation of instrumentation systems and their associated subsystems as they are applied to the municipal water and wastewater industry. For the purposes of this Specification Section, a "systems integrator" shall be interpreted to mean an organization that complies with all of the following criteria:

   1. Employs personnel on this project who have successfully completed ISA or manufacturers training courses on general process instrumentation and configuration and implementation of the specific programmable controllers, computers, and software proposed for this project. The Company shall be a member of Control System Integrators Association Certified (CSIA) and key personnel shall hold ISA CCST Level 1 certification or have a minimum of 10 years of verifiable plant startup experience. Key personnel shall include, as a minimum, the lead field technician.

   2. Has successfully completed work of similar or greater complexity on at least three previous projects within the last five years. Successful completion shall be defined as a finished project completed on time, without any outstanding claims or litigation involving the PCSS. Potential references shall be for projects where the PCSS's contract was of similar size to this project.

   3. Has been actively engaged in motor control centers, industrials control panels, and system integration for the type of work specified in this Specification Section for a minimum of five years.

B. The PCSS shall maintain a permanent, fully staffed and equipped service facility within 250 miles of the project site with full time employees capable of designing, fabricating, installing, calibrating, and testing the systems specified herein. At a minimum, the PCSS shall be capable of responding to on-site problems within 12 hours of notice. Provide an on-site response within 4 hours of notification starting at two months before scheduled startup to two months after startup completion.

C. PCSS shall hold a valid UL-508 certification for their panel fabrication facility.

D. Actual installation of the instrumentation system need not be performed by the PCSS's employees; however, the PCSS as a minimum shall be responsible for the technical supervision of the installation by providing on site supervision to the installers of the various components.

1.06 DELIVERY, STORAGE, AND HANDLING

A. Delivery, storage, and handling shall be in accordance with Section 01660 and the manufacturer’s recommended practices.

B. Shipping Precautions

   1. After completion of shop assembly, factory test and approval of all equipment, cabinets, panels and consoles shall be packed in protective crates and enclosed in heavy duty (5 mil) polyethylene envelopes or secured sheeting to provide protection from damage, dust and moisture. Dehumidifiers shall be placed inside the polyethylene coverings. The equipment shall then be skid-mounted for final transport. Lifting rings shall be provided for moving without removing protective covering. Boxed weights shall be shown on shipping tags together with instructions for unloading, transporting, storing and handling at the job site.

2. Manufacturer's special instructions for field handling, storage and installation required for protection, shall be securely attached to the packaging for each piece of equipment prior to shipment. The instructions shall be stored in resealable plastic bags or other means of protection.
3. None of the HMI control and monitoring equipment shall be shipped to the site until the control room areas comply with specified ambient temperature and humidity. Have qualified personnel accept the equipment on delivery and supervise unloading within the control room areas.
4. If any apparatus has been damaged, such damage shall be repaired at no additional cost to the Receiver.

1.07 NOMENCLATURE AND IDENTIFICATION

A. Field Instrument Tags
   1. A permanent stainless steel or other non-corrosive material tag firmly attached and permanently and indelibly marked with the instrument tag number, as indicated in the Drawings, shall be provided on each piece of equipment supplied under this Section. Equipment shall be tagged before shipping to the site.
   2. Provide 1/8-in by 3/8-in, Type 316 stainless steel button head machine screws.
   3. All supplied field instrument transmitters and field instrument transmitter elements shall have a stainless steel identification tag attached to each transmitter and element prior to shipment. Tag shall be attached via stainless steel chain or stainless steel wire (24 gauge inches. Tag shall include the ISA alphanumeric instrument number as indicated in the P&ID, loop, and detail drawings. The alphanumeric instrument number shall be stamped into the tag and shall have a minimum of 3/16-in high alphanumeric characters.

B. Panel Nameplates
   1. See Section 13330.

1.08 WARRANTY

A. Provide warranty per Division 1.

1.09 PROJECT/SITE REQUIREMENTS

A. Environmental Requirements. Refer to the Electrical Drawings for specific environmental and hazardous area classifications.

B. Elevation: Equipment shall be designed to operate at the project ground elevation.

C. Temperature:
   1. Outdoor areas' equipment shall operate [between - 30 to 50 C degrees ambient].
   2. Equipment located in indoor locations shall operate between [10 to 35 C] degrees ambient minimum.
   3. Storage temperatures shall range from [0 to 50 C] degrees ambient minimum.
   4. Additional cooling or heating shall be furnished if required by the equipment as specified herein.

D. Relative Humidity: Air conditioned area equipment shall operate between 20 to 95 percent relative, non-condensing humidity. All other equipment shall operate between 0 to 100 percent relative, condensing humidity.

PART 2 -PRODUCTS

2.01 PRODUCTS GENERAL

A. All instrumentation and electronic equipment shall be of the manufacturer's latest design, utilizing printed circuitry and epoxy or equal coating to prevent contamination by dust, moisture and fungus. The field mounted equipment and system components shall be designed for installation in dusty, humid and slightly corrosive service conditions.

B. All instruments shall be provided with mounting hardware and floor stands, wall brackets, or instrument racks unless otherwise noted. Fasteners for securing control panels and enclosures to walls and floors shall be either hot-dipped galvanized after fabrication or stainless steel. Provide stainless steel fasteners only in corrosive areas rated NEMA 4X on the Drawings. Provide and size anchors in accordance with Division 1 and 5 as required per the seismic calculations. Provide minimum size anchor of 3/8-inch.

C. All indicators shall be linear in process units, unless otherwise noted. All transmitters shall be provided with indicators in process units, accurate to two percent or better.

D. All equipment, cabinets and devices furnished shall be heavy-duty type, designed for continuous industrial service. The system shall contain similar products of a single manufacturer, and shall consist of equipment models, which are currently in production. All equipment provided shall be of modular construction and shall be capable of field expansion.

E. All electronic/digital equipment shall be provided with radio frequency interference protection.

F. Electrical

1. Equipment shall operate on a 60 Hertz alternating current power source at a nominal 120 volts, plus or minus 10 percent, except where specifically noted. Regulators and power supplies required for compliance with the above shall be provided between power supply and interconnected instrument loop. Where equipment requires voltage regulation, constant voltage transformers shall be supplied.

2. With the exception for field device network connected devices, all electronic instrumentation shall utilize linear transmission signals of isolated 4 to 20 mA DC (milliampere direct current) capable of driving a load up to 750 ohms, unless specified otherwise. However, signals between instruments within the same panel or cabinet may be 1-5 VDC (volts direct current).

3. Outputs of equipment that are not of the standard signals as outlined, shall have the output immediately raised and/or converted to compatible standard signals for remote transmission. No zero based signals will be allowed.

4. All switches shall have double-pole double-throw contacts rated at a minimum of 600 VA, unless noted otherwise.
5. Switches and/or signals indicating an alarm, failure or upset condition shall be wired fail- safe to the SCADA system. A fail-safe condition is an open circuit when in an alarm state.
6. Materials and equipment shall be UL approved. Where components are not available with UL approval, integrate the device with ground fault protective devices, isolation transformers, fuses, or other protective equipment necessary to achieve compliance with UL 508 requirements.
7. All equipment furnished shall be designed and constructed so that in the event of power interruption, the systems specified herein shall go through an orderly shutdown with no loss of memory, and shall resume normal operation without manual resetting when power is restored, unless otherwise noted.
8. All transmitter output signals shall include signal and power source isolation.

2.02 ELECTRICAL SURGE PROTECTION

A. General - Surge protection shall be provided to protect the electronic instrumentation system from induced surges propagating along the signal and power supply lines from lightning, utility, or the plant electrical system. The protection systems shall be such that the protective level shall not interfere with normal operation, but shall be lower than the instrument surge withstand level. Protection shall be maintenance free and self-restoring. Devices shall have a response time of less than 50 nanoseconds and be capable of handling a discharge surge current (at an 8x20μs impulse waveform) of at least 8 kA. Ground wires for all instrumentation device surge protectors shall be connected to a low resistance ground in accordance with Section 16060.

B. provide protection of all analog signal (4-20 mA) circuits where any part of the circuit is outside of the building envelope. Circuits shall be protected at both the transmitter and the control system end of the circuit. Protection devices located near the transmitter shall be mounted in a separate enclosure, unless conduit mounted, and shall be Phoenix Contact PT Series, MTL Surge Technologies (Telematic) TP48, Citel TSP-10 series, or equal. Substitution of a single device to protect both 120 VAC and 4-20 mA wires to an instrument is acceptable. Protection devices in control panels shall be MTL Surge Technologies (Telematic) SD Series, Phoenix Contact PT Series, Citel BP1-24, or equal.

C. Provide protection of all 120 VAC power feeds into control panels, instruments, and control room equipment. Surge arresters shall be Transtector ACP-100BW Series, Phoenix Contact "Mains-PlugTrab", MCG Surge Protection 400 Series, or equal.

D. Non-Fiber Based Data Highway or Communications Circuits – Provide protection on all communication and data highway circuits that leave a building or are routed external to a building. Circuit protection shall be provided at both ends of the line. Surge protection devices shall be Phoenix Contact PlugTrab Series, Transtector FSP Series, MTL Surge Technologies (Telematic) NP Series, or equal.

E. Inductive Loads – At a minimum, provide coil surge suppression devices, such as varistors or interposing relays, on all process controller outputs or switches rated 120 VA or less that drive solenoid, coil, or motor loads.

F. Telephone Circuits - At a minimum, provide Telephone Company approved line protection units for all telephone lines used for telemetry or SCADA system use under this Contract.

2.03 TUBING AND FITTINGS

A. All instrument air header takeoffs and branch connections less than 2-in shall be 316 stainless steel.

B. All instrument shut-off valves and associated fittings shall be supplied in accordance with the piping specifications and all instrument installation details. The materials for fittings and valves shall be compatible with process fluids. Where metallic fittings and valves are compatible, wetted materials shall be Type 316 stainless steel.

C. The materials for instrument tubing shall be compatible with process fluids. Where metallic tubing is compatible, tubing shall be fully annealed ASTM A269 Seamless 316 grade free of OD scratches having the following dimensional characteristics as required to fit the specific installation:

1. 1/4-in to 1/2-in O.D. by 0.035 wall thickness
2. 5/8-in to 1-in O.D. by 0.049 wall thickness
3. 1-in O.D. by 0.065 wall thickness
4. 1-1/4-in O.D. by 0.065 wall thickness
5. 1-1/2-in O.D. by 0.083 wall thickness
6. 2-in O.D. by 0.095 wall thickness

D. All process connections to instruments shall be annealed 1/2-inches O.D. stainless steel tubing, Type 316.

E. All tube tracks shall be supported by stainless steel and installed as per manufacturer's installation instructions.

2.04 SPARE PARTS

A. Spare parts of the type and quantity as recommended by the manufacturer shall be furnished for all devices furnished under these sections.

B. All spare parts shall be wrapped in bubble wrap, sealed in a polyethylene bag complete with dehumidifier, then packed in cartons and labeled with indelible markings. Complete ordering information including manufacturer's part number, part ordering information including manufacturer, part number, part name, and equipment name and number(s) for which the part is to be used shall be supplied with the required spare parts. The spare parts shall be delivered and stored in a location directed by the Engineer.

C. As a minimum, furnish the following spare parts for control panels:

1. Relays - Two of each type installed
2. Selector switches/pushbuttons - Two of each type installed including 5 contact blocks.
3. Surge protection devices - One of each type installed.

4. Provide one quart of touch-up paint, for each type and color used for all RTU cabinets, panels, and consoles supplied.

D. The following field Instrument related Spare Parts shall be furnished:

1. Miscellaneous: One year supply of items recommended by the manufacturer of the equipment including all reagents, dissolved oxygen probes, batteries, and calibration standards as needed to operate and maintain the furnished equipment.

PART 3 -EXECUTION

3.01 GENERAL INSTALLATION

A. Instrumentation and accessory equipment shall be installed in accordance with the manufacturer's instructions. The locations of equipment, transmitters, alarms and similar devices indicated are approximate only. Exact locations of all devices shall be as approved by the Engineer during construction. Obtain in the field, all information relevant to the placing of process control equipment and in case of any interference with other work, proceed as directed by the Contractor and furnish all labor and materials necessary to complete the work in an approved manner at no additional cost to the Receiver.

B. All equipment used in areas designated as hazardous shall be designed for the Class, Group and Division as required for the locations as shown on the Drawings and specified in Division 16. All work shall be in strict accordance with codes and local rulings.

C. Unless specifically indicated, direct reading or electrical transmitting instrumentation shall not be mounted on process piping. Instrumentation shall be mounted on instrument racks or stands. All instrumentation connections shall be provided with shutoff and drain valves. For differential pressure transmitters, 5-valve manifolds for calibration, testing and blow down service shall also be provided. For chemical or corrosive fluids, diaphragm seals with flushing connections shall be provided.

D. All piping and tubing to and from field instrumentation shall be provided with necessary unions, calibrations and test tees, couplings, adaptors, and shut-off valves. Process tubing shall be installed to slope from the instrument toward process for gas measurement service and from the process toward the instrument for liquid measurement service. Provide drain/vent valves or fittings at any process tubing points where the required slopes cannot be maintained. Process tubing shall be installed rigidly with supports to prevent significant vibrations.

E. Brackets and hangers required for mounting of equipment shall be provided. They shall be installed as shown and not interfere with any other equipment.

F. The shield on each process instrumentation cable shall be continuous from source to destination and be grounded at only one ground point for each shield.

G. Investigate each space in the building through which equipment must pass to reach its final location. If necessary, ship material in sections sized to permit passing through restricted areas in the building. Provide on-site service to oversee the installation, the placing and location of system components, their connections to the process equipment panels, cabinets and devices, subject to the Engineer's approval. Certify that field wiring associated with his/her equipment is installed in accordance

with best industry practice. Schedule and coordinate work under this section with that of the electrical work specified under applicable Sections of Division 16.

H. Installation of fiber optic cable within control panel and console assemblies. Refer to cable manufacturer's specifications for bend radius. Use cable breakout assembly as recommended by the cable manufacturer. Provide wire basket, strain relief as required to meet manufacturer's strain requirements.

I. Provide local electrical shutoffs and disconnects for all 4-wire field instruments requiring 120 VAC power. Electrical disconnects shall be suitably rated disconnect switches or manual motor starters as specified under Division 16.

J. Loop Tuning - All electronic control stations incorporating PID controllers shall be tuned following field installation and calibration of instrumentation and control system components, but prior to commencement of the specified field tests. Field testing will be immediately ‘failed’ if loop tuning for the entire installed system is not complete.

1. Optimal loop tuning shall be achieved either by auto-tuning software or manually by trial and error, Ziegler-Nichols step-response method, or other documented process tuning method. Assigning common PID factors for identical loops following field tuning of a single typical loop is acceptable. However, tuning documentation shall be submitted for each loop individually as specified in Part 1 of these Specifications.

2. Determine and configure optimal tuning parameters to assure stable, steady state operation of final control elements running under the control of field mounted, dedicated PID controllers or software based PID controllers residing as part of the programmable logic controller system. Each control loop that includes anti-reset windup features shall be adjusted to provide optimum response following startup from an integral action saturation condition.

3. Tune all PID control loops to eliminate excessive oscillating final control elements. Loop parameters shall be adjusted to achieve 1/4 amplitude damping or better. In addition, loop steady state shall be achieved at least as fast as the loop response time associated with critical damping.

4. Loop performance and stability shall be verified in the field following tuning by step changes to setpoint. Submit loop tuning methodology and verification as part of the final system documentation as specified in Part 1.

5. For cascade loops, tune both sets of controllers so that the cascade loop achieves the loop tuning characteristics specified herein.

END OF SECTION

SECTION 13302

I & C – TESTING

PART 1 - GENERAL

1.01 SCOPE OF WORK

A. Furnish all labor and materials required and installed. Complete as shown on the Drawings and as specified herein.

B. This section covers the testing requirements for all devices and systems furnished and installed detailed on the Drawings and in the Loop Diagrams, and as described in the related Sections of Division 13.

C. Refer to Section 13300.

1.02 RELATED WORK

A. Refer to Section 13300.

1.03 SUBMITTALS

A. Refer to Section 13300.

1.04 REFERENCE STANDARDS

A. Refer to Section 13300.

1.05 QUALITY ASSURANCE

A. Refer to Section 13300.

1.06 SYSTEM DESCRIPTION

A. NOT USED

1.07 DELIVERY, STORAGE, AND HANDLING

A. Refer to Section 13300.

1.08 PROJECT/SITE REQUIREMENTS

A. Refer to Section 13300.

1.09 MAINTENANCE

A. Refer to Section 13300.

1.10 WARRANTY

A. Refer to Section 13300.

1.11 NOMENCLATURE AND IDENTIFICATION

A. Refer to Section 13300.

1.12 COORDINATION MEETINGS

A. Refer to Section 13300.

PART 2 -PRODUCTS

2.01 NOT USED

PART 3 -EXECUTION

3.01 TESTING - GENERAL

A. See execution requirements in Section 13300.

B. As part of the requirement of this specification section, it is the responsibility of the PCSS to provide a complete operational control system for Well 3, Well 4 and the existing storage tank. Confirmation of an operational control system is dependent upon results derived from test procedures as specified in this Section. The PCSS shall test all equipment at the factory prior to shipment. Unless otherwise specified in the individual specification sections, all equipment provided by the PCSS shall be tested at the factory as a single fully integrated system.

C. The PCSS shall test the system so that the Receiver and Engineer can verify all the points in the existing control system. The PCSS shall coordinate testing of the ORT and FDT with the Receiver.

D. At a minimum, the testing shall include the following:

1. Unwitnessed Factory Test (UFT).
2. Operational Readiness Test (ORT).
3. Functional Demonstration Test (FDT).
4. 30-day Site Acceptance Test (SAT).

E. Each test shall be in the cause and effect format. The person conducting the test shall initiate an input (cause) and, upon the system's or subsystem's producing the correct result (effect), the specific test requirement will have been satisfied.

F. All tests shall be conducted in accordance with prior Engineer and/or Receiver-approved procedures, forms, and all checklists as submitted by the PCSS under Specification 13300 Part 1.03. Each test to be performed shall be described and a space provided after it for sign-off by the appropriate parties after its satisfactory completion. The PCSS shall include “punchlist” forms with the test procedures to document issues that arise during the testing. Punchlist forms, at a minimum, shall include a specification cross reference; an issues description field; a resolution description field; and a sign-off area for the PCSS, Receiver, and Engineer.

G. Copies of the signed-off test procedures, forms, and checklists will constitute the required testing documentation. The test result forms shall be submitted to the Engineer for approval within 10 days of completion of each test.

H. The PCSS shall provide all special testing materials and equipment. Wherever possible, perform tests using actual process variables, equipment, and data. Where it is not practical to test with real process variables, equipment, and data, provide suitable means of simulation. These simulation techniques shall be defined in the test procedures.

I. The PCSS shall coordinate all required testing with the Contractor, all affected Subcontractors, the Engineer, and the Receiver.

J. The PCSS shall furnish the services of field service engineers, all special calibration and test equipment, and labor to perform the field tests.

K. The Engineer reserves the right to test or retest all specified functions, whether or not explicitly stated on the Test Procedures, as required to determine compliance with the functional requirements of the overall system. Such testing required determining compliance with the specified requirements shall be performed at no additional cost to the Receiver. The Engineer's decision shall be final regarding the acceptability and completeness of all testing.

L. No equipment shall be shipped until the Engineer and/or Receiver has received all test results and approved the system is ready for shipment.

M. Correction of Deficiencies

1. All deficiencies in workmanship and/or items not meeting specified testing requirements shall be corrected to meet specification requirements at no additional cost to the Receiver.

2. Testing, as specified herein, shall be repeated after correction of deficiencies is made until the specified requirements are met. This work shall be performed at no additional cost to the Receiver.

3.02 FACTORY TESTING - UNWITNESSED FACTORY TEST (UFT)

A. Prior to shipment of the equipment, the entire system, except primary elements, final control elements, and field-mounted transmitters, shall be interconnected and tested to ensure the system will operate as specified. All analog and discrete input/output points not interconnected at this time shall be simulated to ensure proper operation of all alarms, monitoring devices/functions, and control devices/functions.

B. All panels, consoles, and assemblies shall be inspected and tested to verify their conformance with related submittals, Specifications, and Drawings.

C. During the tests, all digital system hardware and software shall be operated for at least five days continuously without a failure to verify the system is capable of continuous operation.

D. Tests to be performed shall include, but not be limited to, the following. Each of these tests shall be specifically addressed in the Test Procedure submittal.

1. All panels and enclosures being provided shall undergo a thorough inspection to verify the integrity of the cabinet enclosures, frame structures, paint work and finish, etc. Additionally, the PCSS shall review the panel drawings with the Receiver and/or Engineer to ensure they accurately reflect the panel layout and wiring.

2. Panel wire pull tests shall be performed on all wiring to ensure all wiring has been connected to the appropriate torque to prevent wires from coming loose.

3. For panels provided in new enclosures, heat loading tests shall be performed to ensure proper cooling/ventilation is being provided.
4. UPSs shall be tested with all equipment connected to verify the UPSs have been sized correctly to maintain the specified run time.
5. An I/O point checkout of at least 50 percent of each I/O module shall be performed to verify proper operation of the input/output points. To perform this test, the PCSS shall obtain copies of the PLC configuration files from the Application Engineering Services (AES) Supplier prior to proceeding with the UFT. The verification of the signals will be accomplished via the use of the PLC programming software. At a minimum, the I/O checkout shall consist of four steps.
    a. Digital input signals shall be jumpered within the termination connections of the PLC panels and verification of proper alarming, statuses, etc., shall be performed utilizing the tools available in the PLC programming software.
    b. Analog input signals shall be connected to a signal generator at the termination connections and signals shall be verified at zero percent, 25 percent, 50 percent, 75 percent, and 100 percent of full scale. The appropriate scaled value shall be verified utilizing the tools available in the PLC programming software.
    c. Digital output signals shall be initiated by the user by writing to the signals utilizing the PLC programming software. Verification shall occur in the PLC panel by connecting a digital multimeter to measure the continuity at the terminations, thus verifying the command from the PLC has properly executed the contact closure.
    d. Analog output signals shall be initiated by the user by writing to the signals utilizing the PLC programming software. Verification shall occur in the PLC panel by utilizing a digital multimeter to measure the current/voltage generated at the termination points.

E. All control panels provided or modified under the requirements of the related technical specification sections of Division 13 shall be included in these tests.

F. Upon successful completion of the UFT, the PCSS shall submit a record copy of the test results to the Receiver and Engineer and coordinate the scheduling of the SIT with the AES Supplier.

3.03 FIELD TESTING - OPERATIONAL READINESS TEST (ORT)

A. Following installation of the process control system components and prior to startup and the Functional Demonstration Test, the entire system shall be certified (inspected, wired, calibrated, tested, etc., and documented) that it is installed and ready for the ORT as defined below.

B. Loop/Component Inspections and Tests: The entire system shall be checked for proper installation, calibrated, and adjusted on a loop-by-loop and component-by-component basis to ensure that it is in conformance with related submittals and these Specifications.

C. The Loop/Component Inspections and Tests shall be implemented using Engineer-approved forms and checklists. Each loop shall have a Loop Status Report to organize and track its inspection, adjustment, and calibration. These reports shall

include the following information and check-off items with spaces for sign-off by the system supplier:

1. Project Name, Test Date, PCSS Name, and Lead PCSS Technician Name.
2. Loop Number.
3. Tag Number for each component.
4. Check-offs/sign-offs for each component: Tag/identification; installation; termination (wiring and tubing); scale, range, and setpoint as applicable; and calibration/adjustment (four-point for analog, set point for switches) rising and falling.
5. Check-offs/sign-offs for the loop: Panel interface terminations; I/O interface terminations; I/O signal operation; inputs/outputs operational (received/sent, processed, adjusted); total loop operation; process controller scaling and adjustment; and space for comments.
6. Each active Analog Subsystem element and each I/O module shall have a Component Calibration Sheet. These sheets shall have the following information, spaces for data entry, and a space for sign-off by the PCSS.
    a. Project Name.
    b. Loop Number.
    c. Component Tag Number of I/O Module Number.
    d. Component Code Number Analog System.
    e. Manufacturer (for Analog system element).
    f. Model Number/Serial Number (for Analog system).
    g. Summary of functional requirements shall include, but not be limited to, scale and chart ranges of indicators, recorders, and transmitters/converters; functions of computing elements; and parameters of controllers (i.e., proportional, integral, derivative, reverse/forward acting, etc.).
    h. Calibrations shall include testing of analog input and output signals at zero, 10, 50, and 100 percent of span. Where appropriate, discrete input signals shall include details regarding actual trip points and reset points.
    i. Space for comments.
    j. Space for sign-off by the PCSS.

D. The PCSS shall maintain the Loop Status Reports sheets at the job site and make them available to the Engineer/Receiver at any time.

E. These inspections, calibrations, and tests do not require witnessing. However, the Engineer will review Loop Status Sheets and spot-check the PCSS test process periodically. Any deficiencies found shall be corrected by the PCSS prior to commencement of the Functional Acceptance Test.

F. Prior to checkout of the I/O to the HMI, the PCSS shall thoroughly test all I/O from the field device to the PLC terminals, and verify the PLC is powered up and the PLC is communicating to the SCADA servers. After the PCSS has successfully tested all I/O from the field devices to the PLC terminals, the PCSS and AES Supplier shall jointly test all I/O from the HMI to the field device. Should this test prove to be

unsuccessful, the PCSS and AES Supplier shall test from the HMI to the terminations located in the Receiver's termination cabinet, and the PCSS shall inform the Receiver in writing of the discrepancy with the existing field wire.

G. Computer-Manual (i.e., Remote-Manual) start/stop, open/close commands of all devices controlled by the SCADA system shall be verified jointly by the PCSS and AES Supplier during the ORT. Subsequent to verification of Computer-Manual control, the PCSS may request from the Receiver and Engineer permission to begin replacement of the next PLC. Simultaneously, the AES Supplier may continue with Computer-Automatic testing to confirm the control strategies were implemented as specified.

H. For all panels with enclosures (new and existing) modified by this contract, heat load tests shall be performed to ensure proper cooling/ventilation is being provided.

I. Upon successful completion of the ORT, the PCSS shall submit a record copy of the test results to the Receiver and Engineer and request the scheduling of the FDT as noted in the following section.

3.04 FIELD TESTING - FUNCTIONAL DEMONSTRATION TEST (FDT)

A. Prior to startup and the 30-day Site Acceptance Test, the entire installed instrument and control system shall be certified that it is ready for operation. All preliminary testing, inspection, and calibration shall be complete as defined in the ORT. The FDT will be a joint test by the PCSS and the AES Supplier.

B. Once a process area has been started up and is operating, a witnessed FDT shall be performed on that system to demonstrate that it is operating and is in compliance with these Specifications. A witnessed FDT shall be performed on each process area. Each specified function shall be demonstrated on a paragraph-by-paragraph, loop-by-loop, and site-by-site basis.

C. Loop-specific and non-loop-specific tests shall be the same as specified under WFT, except that the entire installed system shall be tested and all functions demonstrated using live field-based data to the greatest extent possible.

D. Updated versions of the documentation specified to be provided for during the factory tests shall be made available to the Engineer at the job site both before and during the tests. In addition, one copy of all O & M Manuals shall be available for reference at the job site, both before and during testing.

E. The daily schedule specified to be followed during the factory tests shall also be followed during the FDT.

F. During the FDT, a demonstration of communication failure and recovery shall be accomplished. This test shall be scheduled and coordinated with Receiver's personnel to minimize the impact on plant operations.

G. Following initial startup, the entire process control system shall operate for a continuous 100 hours without failure before this test will be started.

H. Punchlist items and resolutions noted during the test shall be documented on the Punchlist/Resolution form. In the event of rejection of any part or function test procedure, the PCSS shall perform repairs, replacement, and/or retest within 10 days.

I. Upon successful completion of the FDT, the PCSS shall submit a record copy of the test results to the Receiver and Engineer and request the scheduling of the SAT as noted in the following section.

3.05 FIELD TESTING - 30-DAY SITE ACCEPTANCE TEST (SAT)

A. After completion of the Operational Readiness and Functional Demonstration Tests, the system shall undergo a 30-day Site Acceptance Test (SAT), under conditions of full plant process operation, without a single non-field-repairable malfunction.

B. During this test plant operations, PCSS personnel personnel shall be present as required to address any potential issues that would impact the overall system operation. The PCSS is expected to provide personnel for this test who have an intimate knowledge of the hardware, software, field wiring and network configuration of the system. The AES Supplier is expected to provide personnel for this test who have an intimate knowledge of the software programming of the system. When PCSS personnel are not on-site, the PCSS shall provide cell phone/pager numbers that Receiver personnel can use to ensure that support staff is available by phone and/or on-site within four hours of a request by operations staff.

C. While this test is proceeding, the Engineer and Receiver's Agent shall have full use of the system. Only plant operating personnel shall be allowed to operate equipment associated with live plant processes. Plant operations shall remain the responsibility of Receiver and the decision of plant operators regarding plant operations shall be final.

D. Any malfunction during the tests shall be analyzed and corrections made by the AES Supplier for software programming issues, and the PCSS for hardware, software, field wiring and network configuration issues. The Engineer and/or Receiver will determine whether any such malfunctions are sufficiently serious to warrant a repeat of this test.

E. Any malfunction during this 30 consecutive day test period which cannot be corrected by the PCSS's personnel within 24 hours of occurrence, or more than two similar failures of any duration, will be considered as a non-field-repairable malfunction. Upon completion of repairs by the PCSS, the SAT will be re-started from the date which the PCSS successfully corrected the malfunction(s) and the Receiver and Engineer have accepted and signed off on the repairs.

F. The PCSS shall perform repairs or replacement within 10 days in the event of rejection of any part or function of the hardware, software, field wiring and network configuration systems.

G. All data base, process controller logic, and graphical interface system errors must be functioning as required per the specifications prior to the start of each test period. The 30-day test will not be considered successful until all data base points and logic functions are tested and verified to be correct.

H. The total availability of the system shall be greater than 99.5 percent during this test period. Availability shall be defined as: Availability in percent = 100 * (Total Testing Time – Down Time) / Total Testing Time

I. Down times due to power outages or other factors outside the normal protection devices or backup power supplies provided shall not contribute to the availability test times above.

J. Throughout the duration of the 30-day SAT, no software or hardware modifications shall be made to the system without prior approval from the Receiver and Engineer.

K. Upon successful completion of the 30-day operation test and subsequent review and approval of complete system final documentation, the system shall be considered substantially complete and the warranty period shall commence.

L. Certification of Installation: Following successful completion of the 30-day test, the PCSS shall issue a Certification of Installation. Certification shall be on PCSS corporate letterhead and signed by an officer of the firm. Certification shall state that the process control system has been completed in conformance with plans and specifications. Certification shall be submitted to the Engineer as specified herein.

END OF SECTION

SECTION 13330

CONTROL PANELS AND PANEL MOUNTED EQUIPMENT

PART 1 - GENERAL

1.01 SCOPE OF WORK

A. Refer to Section 13300.

B. Furnish and install control panels and panel mounted equipment as specified herein and shown on the Drawings.

C. All new panels and panel components shall match existing equipment makes and models wherever possible, so that system additions can be most easily integrated with respect to operation and maintenance training, spare parts inventory, and service contracts. Even when exact matches are not possible, equipment furnished must be fully compatible with the existing system. Color, size, and material of new panels should conform to that of existing panels.

D. Furnish the following panels and consoles. Each panel shall be supplied with full sub- panels and side panels as required.

1.02 RELATED WORK

A. Refer to Section 13300.

1.03 SUBMITTALS

A. Refer to Section 13300.

1.04 COORDINATION MEETINGS

A. Refer to Section 13300.

1.05 REFERENCE STANDARDS

A. Refer to Section 13300.

1.06 QUALITY ASSURANCE

A. Refer to Section 13300.

1.07 DELIVERY, STORAGE AND HANDLING

A. Refer to Section 13300.

1.08 NOMENCLATURE AND IDENTIFICATION

A. Refer to Section 13300.

1.09 MAINTENANCE

A. Refer to Section 13300.

1.10 SPARE PARTS AND TEST EQUIPMENT:

A. Refer to Section 13300.

1.11 WARRANTY

A. Refer to Section 13300.

PART 2 - PRODUCTS

2.01 GENERAL

A. Refer to Section 13300.

2.02 LIGHTNING/SURGE PROTECTION

A. Refer to Section 13300.

2.03 CONTROL PANEL GENERAL REQUIREMENTS

A. The dimensions within this Section and on the Contract Drawings are for general reference only. Ensure that final enclosure sizing and panel arrangements accommodate all required equipment for a fully integrated and operational system as specified herein and in the Contract Documents.

B. Each control panel and terminal cabinet shall bear the UL label. The UL label shall apply to the enclosure, the specific equipment supplied with the enclosure, and the installation and wiring of the equipment within and on the enclosure. If required for UL labeling, provide ground fault protective devices, isolation transformers, fuses and any other equipment necessary to achieve compliance with UL 508 requirement. The Drawings do not detail all UL 508 requirements.

C. All panel doors shall have a lock installed in the door handle, or a hasp and staple for padlocking. Locks for all panels provided under this Contract shall be keyed alike.

D. The devices designated for rear-of-panel mounting shall be arranged within the panel according to respective panel drawings and in a manner to allow for ease of maintenance and adjustment. Heat generating devices such as power supplies shall be located at or near the top of the panel.

E. The panels shall be completely fabricated, instruments and devices installed and wired at the PCSS's facility.

F. All components shall be mounted in a manner that shall permit servicing, adjustment, testing, and removal without disconnecting, moving, or removing any other component. Components mounted on the inside of panels shall be mounted on removable plates and not directly to the enclosure. Mounting shall be rigid and stable unless shock mounting is required otherwise by the manufacturer to protect equipment from vibration. Component mounting shall be oriented in accordance with manufacturer’s recommendations. The internal components shall be identified with suitable plastic or metal engraved nametags mounted adjacent to (not on) each component identifying the component in accordance with the drawing, specifications, and PCSS's data.

G. All exterior panel mounted equipment shall be installed with suitable gaskets, faceplates, etc. required to maintain the NEMA rating of the panel.

H. Nameplates

1. All panels and panel devices shall be supplied with suitable nameplates, which identify the panel and individual devices as required. Unless otherwise indicated, each device nameplate shall include up to three lines with the first line containing the device tag number as shown on the drawings, the second line containing a functional description (e.g., Recirculation Pump No. 1), and the third line containing a functional control description (e.g., Start).

2. Unless escutcheon plates are specified or unless otherwise noted on the Drawings, nameplates shall be 3/32-inch thick, black and white, phenolic with engraved inscriptions. The letters shall be Black [White] against a White [Black] background unless otherwise noted. Edges of the nameplates shall be beveled and smooth. Nameplates with chipped or rough edges will not be acceptable.

3. Nameplate fasteners and mounting shall be epoxy adhesive or stainless steel screws for cabinet mounted nameplates

4. For every panel, provide a panel nameplate with a minimum of 1" high letters. Provide legend plates or 1-in by 3-in engraved nameplates with 1/4-in lettering for identification of door mounted control devices, pilot lights, and meters.

5. Single phenolic nameplates with multiple legends shall be used for grouping of devices such as selector switches and pilot lights that relate to one function.

I. Mounting Elevations

1. ISA Recommended Practice RP60.3 shall be used as a guide in layout and arrangement of panels and panel mounted components. Dimensions shall account for all housekeeping pads that panels will sit on once they are installed.

2. Centerline of indicators and controllers shall be located no lower than 48-inches or higher than 66-inches above the floor on a panel face.

3. Centerline of lights, selector switches, and pushbuttons shall be located no lower than 32-inches or higher than 70-inches above the floor on a panel face.

4. Tops of annunciators shall be located no higher than 86-inches above the floor on a panel face.

5. Installation of panel components shall conform to component manufacturers' guidelines.

2.04 PANEL MATERIALS AND CONSTRUCTION

A. Structure and Enclosure

1. Panels shall be of continuous welded-steel or FRP construction as shown on the Panel Schedule. Provide angle stiffeners as required on the back of the panel face to prevent panel deflection under instrument loading or operation. Internally the panels shall be supplied with a structural framework for instrument support purposes and panel bracing. The internal framework shall permit panel lifting without racking or distortion. Provide removable lifting rings designed to facilitate simple, safe rigging, and lifting of the control panels during installation.

2. Each panel shall be provided with full height, fully gasketed access doors where shown. Doors shall be provided with a three-point stainless steel latch and heavy duty stainless steel locking handle. Panel access doors shall be provided with full length, continuous, piano type stainless steel hinges with stainless steel pins. Front access doors with mounted instruments or control devices shall be of sufficient width to permit door opening without interference from flush mounted instruments.
3. The panels, including component parts, shall be free from sharp edges and welding flaws. Wiring shall be free from kinks and sharp bends and shall be routed for easy access to other components for maintenance and inspection purposes.
4. The panel shall be suitable for top and bottom conduit entry as required by the Electrical Drawings. For top mounted conduit entry, the panel top shall be provided with nominal one-foot square removable access plates, which may be drilled to accommodate conduit and cable penetrations. All conduit and cable penetrations shall be provided with ground bushings, hubs, gasketed locknuts, and other accessories as required to maintain the NEMA rating of the panel and electrical rating of the conduit system.
5. All panels in indoor, dry, non-corrosive environments shall be NEMA 12 unless otherwise noted. All panels in outdoor, wet, and non-chemically corrosive environments shall be NEMA 4 unless otherwise noted. Panels in chemically corrosive environments shall be NEMA 4X unless otherwise noted. All panels located in a hazardous location shall be rated for the type of hazard (e.g., NEMA 7 for Class 1, Division 1).

B. Freestanding and Floor-Mounted Vertical Panels

1. Freestanding and floor-mounted vertical panels shall meet the NEMA classification as shown on the drawings or specified herein. The panels shall be constructed of sheet steel, suitably braced internally for structural rigidity and strength. All NEMA 4X rated panels shall be constructed of 316 stainless steel. Front panels or panels containing instruments shall be not less than 10 gauge stretcher leveled sheet steel, reinforced to prevent warping or distortion.

C. Wall and Unistrut Mounted Panels

1. All wall and Unistrut mounted panels shall meet the NEMA classification as shown on the drawings or specified herein. The panels shall be constructed of not strength. All NEMA 4X rated wall mounted panels shall be constructed of 316 stainless steel.

D. Finish Requirements

1. All sections shall be descaled, degreased, filled, ground and finished. The enclosure when fabricated of steel shall be finished with two rust resistant phosphate prime coats and two coats of enamel, polyurethane, or lacquer finish which shall be applied by either the hot air spray or conventional cold spray methods. Brushed anodized aluminum, stainless steel, and FRP panels will not require a paint finish.
2. The panels shall have edges ground smooth and shall be sandblasted and then cleaned with a solvent. Surface voids shall be filled and ground smooth.

3. Immediately after cleaning, one coat of a rust-inhibiting primer shall be applied inside and outside, followed by an exterior intermediate and top coat of a two-component type epoxy enamel. A final sanding shall be applied to the intermediate exterior coat before top coating.
4. Apply a minimum of two coats of flat white lacquer on the panel interior after priming.
5. Unless otherwise noted, the finish exterior colors shall be ANSI 61 gray with a textured finish.

E. Print storage pockets shall be provided on the inside of each panel. The storage pockets shall be steel, welded on to the door, and finished to match the interior panel color. The storage pocket shall be sufficient to hold all of the prints required to service the equipment, and to accommodate 8.5 inch by 11 inch documents without folding.

F. Where specified on the Panel Schedule, a folding shelf shall be provided on the inside of the door on all free-standing and floor-mounted panels. The shelf shall be suitable for a laptop computer and shall be placed such that an open laptop computer does not interfere with any door-mounted devices. The folded shelf shall not interfere with any internal panel components when the door is closed. The folding shelf shall automatically lock in the horizontal position when raised. The folding shelf shall be approximately 18 inches wide by 12 inches deep and shall have a minimum distributed load rating of 100 pounds. All parts shall be made of heavy gauge steel and shall be painted white or finished to match the interior panel color.

2.05 ENVIRONMENTAL CONTROL

A. All panels shall be provided with louvers, sun shields, heat sinks, forced air ventilation, or air conditioning units as required to prevent temperature buildup inside of panel. The internal temperature of all panels shall be regulated to a range of 45 Deg F to 104 Deg F under all conditions. Under no circumstances shall the panel cooling or heating equipment compromise the NEMA rating of the panel.

B. PCSS shall submit heat dissipation calculations for every control panel.

C. Except for panels mounted with their backs directly adjacent to a wall, louvers shall be in the rear of the panels, top and bottom, and shall be stamped sheet metal construction.

D. For panels mounted with their backs directly adjacent to a wall, louvers shall be on the sides.

E. Forced air ventilation fans, where used, shall provide a positive internal pressure within the panel, and shall be provided with washable or replaceable filters. Fan motors shall operate on 120-volt, 60-Hz power.

F. For panels with internal heat that cannot be adequately dissipated with natural convection and heat sinks, or forced air ventilation, an air conditioner shall be provided.

G. All outdoor enclosures and enclosures located in unheated areas indoors or in areas subject to humidity and moisture shall be provided with an integral heater, fan, and adjustable thermostat to reduce condensation and maintain the minimum internal panel temperature. Mount the unit near the bottom of the enclosure with discharge

away from heat-sensitive equipment. Heater shall be Hoffman DAH [100] [200] [400] [800] Watts, [115] [230] Volt, 50/60 HZ or equal.

2.06 CONTROL PANEL - INTERNAL CONSTRUCTION

A. Internal Electrical Wiring

1. All interconnecting wiring shall be stranded, type MTW, and shall have 600 volt insulation and be rated for not less than 90 degrees Celsius. Wiring for systems operating at voltages in excess of 120 VAC shall be segregated from other panel wiring either in a separate section of a multi-section panel or behind a removable Plexiglas or similar dielectric barrier. Panel layout shall be developed such that technicians shall have complete access to 120 VAC and lower voltage wiring systems without direct exposure to higher voltages.
2. Power distribution wiring on the line side of fuses or breakers shall be 12 AWG minimum. Control wiring on the secondary side of fuses shall be 16 AWG minimum. Electronic analog circuits shall utilize 18 AWG shielded, twisted pair, cable insulated for not less than 600 volts.
3. Power and low voltage DC wiring systems shall be routed in separate wireways. Crossing of different system wires shall be at right angles. Different system wires routed parallel to each other shall be separated by at least 6-inches. Different wiring systems shall terminate on separate terminal blocks. Wiring troughs shall not be filled to more than 60 percent visible fill.
4. Terminations
    a. All wiring shall terminate onto single tier terminal blocks, where each terminal is uniquely and sequentially numbered. Direct wiring between field equipment and panel components is not acceptable.
    b. Multi-level terminal blocks or strips are not acceptable.
    c. Terminal blocks shall be arranged in vertical rows and separated into groups (power, AC control, DC signal). Each group of terminal blocks shall have a minimum of 25 percent spares.
    d. Terminal blocks shall be the compression type, fused, unfused, or switched as shown on the Contract Drawings or specified elsewhere in Division 13.
    e. Discrete inputs and outputs (DI and DO) shall have two terminals per point with adjacent terminal assignments. All active and spare PLC and controller points shall be wired to terminal blocks.
    f. Analog inputs and outputs (AI and AO) shall have three terminals per shielded pair connection with adjacent terminal assignments for each point. The third terminal is for shielded ground connection for cable pairs. Ground the shielded signal cable at the PLC cabinet. All active and spare PLC and controller points shall be wired to terminal blocks.
    g. Wire and tube markers shall be the sleeve type with heat impressed letters and numbers.
    h. Only one side of a terminal block row shall be used for internal wiring. The field wiring side of the terminal shall not be within 6-inches of the side panel or adjacent terminal or within 8-inches of the bottom of free standing panels,

or within 3-inches of stanchion mounted panels, or 3-inches of adjacent wireway.

i. Circuit power from the SCADA cabinet out to field devices (switches, dry contacts etc.) that are used as discrete inputs to the PLC input cards shall be isolated with an isolating switch terminal block with flip cover that is supplied with a dummy fuse. Isolation switch block shall be an Allen Bradley Model 1492-H7 or equal. One isolating switch terminal block per loop numbered piece of equipment and one per spare I/O point is acceptable.

j. All PLC discrete outputs to the field shall be isolated with an isolating fuse switch terminal block with a flip cover and a neon blown fuse indicator. The single circuit fusible terminal block shall be an Allen Bradley 1492-H4 or equal.

5. All wiring to hand switches and other devices, which are live circuits independent of the panel's normal circuit breaker protection, shall be clearly identified as such.

6. All wiring shall be clearly tagged and color coded. All tag numbers and color coding shall correspond to the panel wiring diagrams and loop drawings prepared by the PCSS. All power wiring, control wiring, grounding, and DC wiring shall utilize different color insulation for each wiring system used. The color coding scheme shall be:

   a. Incoming 120 VAC Hot - Black

   b. 120 VAC Hot wiring downstream of panel circuit breaker – Red

   c. 120 VAC Hot wiring derived from a UPS system – Red with Black stripe

   d. Three phase power – Brown, Orange, Yellow, and Green ground or as specified in Division 16.

   e. 120 VAC neutral - White

   f. Ground - Green

   g. DC power or control wiring – Blue

   h. DC analog signal wiring – Black (+), White (-)

   i. Foreign voltage – Yellow

7. Provide surge protectors on all incoming power supply lines at each panel per the requirements of Section 13300.

8. Each field instrument furnished under Division 13 and shown on the Drawings as deriving input power from the control panel(s) shall have a separate power distribution circuit with a circuit breaker or fuse and blown fuse indication. All instruments requiring 120VAC power shall be powered from the UPS source in the panel where the instrument signals lands.

9. Provide 24VDC power supplies to power field instruments and panel devices. 24VDC power supplies shall be as specified in this Section.

10. Use of adhesive backed cable tie mounts is not acceptable. Cable ties shall be permanently fixed to the panel structure, as needed for controlling cable routing within the panel.

11. Wiring trough for supporting internal wiring shall be plastic type with snap-on covers. The side walls shall be open top type to permit wire changing without disconnecting. Trough shall be supported to the subpanel by stainless steel screws. Trough shall not be bonded to the panel with glue or adhesives.
12. Each panel shall have a single tube, fluorescent light fixture, 20 Watt in size, mounted internally to the ceiling of the panel. Light fixture shall be switched and shall be complete with the lamp.
13. Each panel shall have a specification grade duplex convenience receptacle with ground fault interrupter, mounted internally within a stamped steel device box with appropriate cover. Convenience receptacle shall not be powered from a UPS and shall be protected by a dedicated fuse or circuit breaker.
14. Each panel shall be provided with an isolated copper grounding bus for all signal and shield ground connections. Shield grounding shall be in accordance with the instrumentation manufacturer's recommendations.
15. Each panel shall be provided with a separate copper power grounding bus (safety) in accordance with the requirements of the National Electrical Code.
16. Each panel shall have control, signal, and communication line surge suppression in accordance with Section 13300.
17. All microprocessor-based electronic devices in the panel that are powered by 120VAC shall be powered by the UPS (refer to appropriate Section in Division 13).
18. Each panel shall be provided with a circuit breaker to interrupt incoming power. Provide a minimum of two (2) spare 20-amp breakers.
19. Additional electrical components including transformers, motor starters, switches, circuit breakers, etc. shall be in compliance with the requirements of Division 16.

B. Pneumatic Tubing

1. Refer to Section 13300.
2. Pneumatic tubing shall be a minimum of 1/4-inch O.D. 316 stainless steel with compression fittings. All tubing shall be rigidly supported and run in horizontal or vertical planes.
3. All pneumatic equipment shall be provided with separate shut-off valves. Flexible polyethylene tubing shall be used on all devices mounted on hinged doors, etc.
4. A screened vent shall be provided on all enclosures using pneumatic instruments.
5. All pneumatic tubing shall be routed in separate bundles or wireways, and shall be separated from all electrical wiring by a minimum of 3-inches.

C. Relays not provided under Division 16 and required for properly completing the control function specified in Division 13, Division 16, or shown on the Drawings shall be provided under this Section.

D. The orientation of all devices including PLC and I/O when installed shall be per the manufacturer’s recommendations. No vertical orientation of PLC racks shall be allowed unless specifically indicated by the manufacturer as an acceptable mounting alternative and also approved by the engineer.

E. Purge system for enclosures located in hazardous areas.

2.07 ELECTRICAL COMPONENTS

A. The control panel shall be provided with a main power circuit breaker and individual fuses for each 120VAC and 24VDC logical circuit.

B. All operating control devices and instruments shall be securely mounted on the exterior door. All controls shall be clearly labeled to indicate function and shall be in accordance with the electrical area classification indicated on the Contract Drawings.

C. The control panel shall be provided with a lightning and surge protection unit on the line side of the main circuit breaker. Unit shall be 600 Volt, 3 Phase, General Electric "Tranquell" Series, or equal.

2.08 PILOT TYPE INDICATING LIGHTS

A. Type: Energy efficient Solid State LED Lamps.

B. Functional:

1. Units shall be provided with low voltage LED lamps suitable for the voltage supplied.
2. Lights supplied with 120V AC power shall have integral reduced voltage tansformers.
3. Lamps shall be replaceable from the front of the unit.

C. Physical:

1. Lens color:
   a. Running, on, open – Red.
   b. Stopped, off, closed – Green.
   c. Alarm – Amber.
   d. White - Power on
   e. Blue - All other status indications not covered by the above
   f. Lens caps shall be approximately 0.46 inch diameter. Provide legend faceplates engraved to indicate the required function of each device; NEMA rating - 4X.

D. Manufacturer(s):

1. Cutler-Hammer.
2. Allen Bradley.
3. Equal.

2.09 SELECTOR SWITCHES AND PUSHBUTTONS

A. Type:

1. Control devices shall be heavy-duty oil tight type with stackable contact blocks.

B. Functional:

1. Provide contact arrangement and switching action as required for the control system specified.

C. Physical:

1. For 120 VAC service provide contacts rated 10 amps at 120 VAC, for 24 VDC service provide silver sliding contacts rated 5 amps at 125 VDC, for electronic (millivolt/ milliamp) switching provide contacts rated lamp at 28 VDC.
2. Pushbuttons shall have flush type operators.
3. Selector switches shall have knob or wing lever operators; NEMA rating - 4X; Provide legend plates denoting switch/pushbutton position/ function.

D. Manufacturer(s):

1. Cutler-Hammer.
2. Allen Bradley.
3. Equal.

2.10 POTENTIOMETER

A. Type:

1. Device shall be heavy-duty 30 mm oil tight type.

B. Functional:

1. 270 degree dial
2. Rated for 1,000 ohms.

C. Physical:

1. Mounting: Suitable for panel mounting
2. NEMA 4X rating; escutcheon plates scaled in engineering units.

D. Manufacturer(s):

1. Allen Bradley Co.
2. Cutler-Hammer.
3. Equal.

2.11 GENERAL PURPOSE RELAYS AND TIME DELAYS

A. Type:

1. General purpose plug-in type.

B. Functional:

1. Contact arrangement/function shall be as required to meet the specified control function; mechanical life expectancy shall be in excess of 10 million.
2. Duty cycle shall be rated for continuous operation; Units shall be provided with integral indicating light to indicate if relay is energized.
3. Solid state time delays shall be provided with polarity protection (DC units) and transient protection.

4. Time delay units shall be adjustable and available in ranges from .1 second to 4.5 hours.

C. Physical:

1. For 120 VAC service provide contacts rated 10 amps at 120 VAC, for 24 VDC service provide contacts rated 5 amps at 28 VDC, for electronic (milliamp/millivolt) switching applicator provide gold plated contacts rated for electronic service; relays shall be provided with dust and moisture resistant covers.

D. Options/Accessories Required:

1. Provide mounting sockets with pressure type terminal blocks rated 300 volt and 10 amps.
2. Provide mounting rails/holders as required.

E. Manufacturer(s):

1. IDEC.
2. Allen Bradley.
3. Potter & Brumfield.
4. Equal.

2.12 SIGNAL RELAY SWITCHES (CURRENT TRIPS)

A. Type:

1. Solid state, ASIC technology, electronic type.

B. Functional:

1. Input: 4-20 mA.
2. Output: Isolated contact output, double pole double throw, rated 5 amps at 120 VAC.
3. Accuracy: 0.1 percent.
4. Protection: Provide RFI protection.
5. Deadband: Adjustable between 0.1 and 5.0 percent of span.
6. Set point Adjustment: Single Point alarms shall be adjustable to trip on rising or falling input signal, dual point alarms shall be adjustable to trip on rising and falling input signals.
7. Repeatability: Trip point repeatability shall be at least 0.1 percent of span.

C. Physical:

1. Mounting: DIN rail.

D. D. Manufacturer(s):

1. Action Instruments Slim Pak.
2. Acromag.
3. Equal.

2.13 SIGNAL ISOLATORS/BOOSTERS/CONVERTERS

A. Type:
   1. Solid state, ASIC technology; electronic type.
B. Functional:
   1. Accuracy: 0.15 percent.
   2. Inputs: Current, voltage, frequency, temperature, or resistance as required.
   3. Outputs: Current or voltage as required.
   4. Isolation: There shall be complete isolation between input circuitry, output circuitry, and the power supply.
   5. Adjustments: Zero and span adjustment shall be provided.
   6. Protection: Provide RFI protection.
C. Physical:
   1. Mounting: DIN rail.
D. Manufacturer(s):
   1. Action Instruments Slim Pak.
   2. Acromag.
   3. Equal.

2.14 SIGNAL SELECTORS, COMPUTATION, AND CONDITIONING RELAYS

A. Type:
   1. Solid state, ASIC technology, electronic type.
B. Functional:
   1. Inputs: 4-20 mA.
   2. Outputs: 4-20 mA.
   3. Protection: Provide RFI protection.
   4. Operation: The relay shall multiply, add, subtract, select, extract the square root, or perform the specified conditioning/ computation function required. All inputs shall be able to be individually rescaled and biased as Required.
   5. Isolation: All inputs, outputs, and power supplies shall be completely isolated.
   6. Accuracy: 0.35 percent of span.
   7. Adjustments: Multi turn potentiometer for zero, span, scaling, and biasing.
C. Physical:
   1. Mounting: DIN rail.
D. Manufacturer(s):
   1. Action Instruments Slim Pak.
   2. Acromag.

3. Equal.

2.15 INTRINSICALLY SAFE RELAYS

A. Type:
   1. Relays shall be of the solid state electronic type in which the energy level of the sensing or actuation circuit is low enough to allow safe usage in hazardous areas.

B. Options Required:
   1. Relays shall match power supply provided.
   2. Relays shall be located in non-hazardous areas.

C. Manufacturer(s):
   1. Consolidated Electric.
   2. Gems Safe-Pak.
   3. Warrick Controls.
   4. R. Stahl, Inc.
   5. Equal.

2.16 EMERGENCY ALARM BEACON AND AUDIBLE HORN

A. Beacon alarm light:
   1. Type:
      a. Beacon alarm light.
   2. Physical:
      a. Beacon alarm light for building exterior mounting shall be 120 VAC, flush mounted, weatherproof construction.
      b. A 750,000-candle power xenon strobe tube and red polycarbonate lens.
   3. Manufacturer(s):
      a. Federal Signal.
      b. Edwards.
      c. Wheelock.
      d. Equal.

B. Alarm Horn:
   1. Type:
      a. Alarm horn shall be vibrating type for 120 Volts, 60 Hz.
   2. Manufacturer(s):
      a. Federal Signal Corp.
      b. Edwards Co.
      c. Benjamin.

d. Equal.

2.17 INTRINSIC SAFETY BARRIERS (FOR 2-WIRE TRANSMITTER SYSTEMS)

A. Intrinsic safety barriers shall be passive devices requiring no external voltage supply and supplied with series resistors, series fuse and shunt zener diodes to limit the transfer of energy to levels required by intrinsically safe protection between safe and hazardous locations.

B. Unit shall be Factory Mutual approved and certified for use in accordance with National Fire Protection Association (NFPA 493).

C. Manufacturer(s):

1. P&F.
2. Gems.
3. Unitech.
4. Equal.

2.18 24 VDC POWER SUPPLIES

A. Provide a 24 VDC power supply in the control panel to power field instruments, panel devices, etc., as required. Equip the power supply with a power on/off circuit breaker.

B. The 24 VDC power supply shall meet the following requirements:

1. Input power: 115 VAC, plus or minus 10 percent, 60 Hz.
2. Output voltage: 24 VDC.
3. Output voltage adjustment: 5 percent.
4. Line regulation: 0.05 percent for 10 volt line change.
5. Load regulation: 0.15 percent no load to full load.
6. Ripple: 3 mV RMS.
7. Operating temperature: 32 to 140 degrees Fahrenheit.

C. Size the 24 VDC power supply to accommodate the design load plus a minimum 25 percent spare capacity.

D. If power supply on/off status signal is shown, provide a relay contact (internal to the power supply or external if the power supply is not so equipped) to indicate on/off status of the power supply.

E. Provide output overvoltage and overcurrent protective devices with the power supply to protect instruments from damage due to power supply failure and to protect the power supply from damage due to external failure.

F. Mount the 24 VDC power supply such that dissipated heat does not adversely affect other panel components.

G. Manufacturer(s):

1. Phoenix Contact – Quint Series
2. PULS.

3. Lambda.
4. Equal.

2.19 DIGITAL PANEL METER

A. Type:
   1. Electronic, 3.5 digit, 0.56 inch high efficiency LED display.
B. Operation:
   1. To accept 4-20 mA DC input signal and provide indication in Engineering Units of measured variable.
C. Functional:
   1. Power supply: 115 VAC, plus or minus 10 percent, 50/60 Hz, 10 VA.
   2. Input: 4-20 mA DC into 100 ohms.
   3. Indication: 0.56 inch LED display.
D. Physical:
   1. Case size nominal 2.5 inch high by 5 inch wide by 6 inch deep.
   2. Case type: watertight and dust-tight (NEMA 4X).
   3. Mounting: flush panel suitable for high density mounting arrangements.
E. Performance: Linear input accuracy plus or minus 0.05 percent of calibrated span, plus or minus 1 count.
F. Manufacturer(s):
   1. Precision Digital.
   2. Red Lion.
   3. Equal.

2.20 TIMERS

A. Two (2) channel surface and flush mounted 2 channel electronic time switches.
B. Features
   1. 24-Hour or 7-Day applications
   2. Auto Daylight Saving Time (DST) feature
   3. 2 circuit independent programing
   4. 50 setpoint programs
   5. 2 preset adjustable block programs
   6. Easy-to-follow menu driven programming
   7. Manual override with load switch indication
   8. Battery Backup
C. Ratings

1. Size: 2.83" x 2.83" (72 mm x 72 mm)
2. Supply Voltage: 120 VAC
3. Switch Rating: 2x SPDT Relay
4. N.O. and N.C. Contact:
   a. 1⁄2 HP, 120 VAC
   b. 1 HP, 240 VAC
   c. 16A, 277 VAC Resistive
   d. 12A, Ballast 120 VAC
   e. 8A, Ballast 240 VAC
   f. 720 VA, 240 VAC Pilot Duty
   g. 360 VA, 120 VAC Pilot Duty
   h. 600W, Tungsten 120 VAC 1000W
   i. Tungsten 240 VAC
5. Operating Temperature: -13ºF to 131ºF (-25ºC to 55ºC) (limited display function at -13˚F)

D. Manufacturer(s):
   1. Intermatic FM2D50 series or
   2. Equal.

2.21 DUPLEX CONTROLLER

A. General
   1. The controller shall be a duplex controller with an analog input for level control. The controller shall contain four 10A rated output relays, for the functions Pump1, Pump 2, High level alarm, and Low level alarm.
   2. The controller shall contain a regulated, 24VDC power supply for powering the level transducer input.
   3. The controller shall contain a red LED bar graph to display level, red LED's to display Pump 1 and Pump 2 call, and the high and low level alarms. Additionally, there shall be six red LED's for the level setting and level simulation, which are turned on by depressing the Setting Select pushbutton on the face of the controller.
   4. The controller shall contain a 10 second power-up delay, and a 5 second lag pump delay, to prevent the turning on of one or both pumps immediately after a power interruption.
   5. Depressing and releasing the Setting Select pushbutton shall cause the level simulation and settings LED's to turn on, one at a time, from left to right. With no setting or simulation LED on, the bar graph display shall display the level.
   6. Level settings shall be made by depressing the Setting Select pushbutton until the LED over the desired setting is turned on. The setting may then be viewed on

the bar graph, and the respective potentiometer can be used to change the setting.

7. In the Level Simulation mode, the controller shall energize the low and high alarms and pump calls as the level is simulated by moving up and down the bar graph display via the up and down pushbutton.
8. If left in the Level Simulation mode, the controller shall automatically return to monitoring the wetwell level after sixty seconds.
9. The controller shall contain a Zero Adjustment used to make the bar graph display zero feet of water for an input of 4.0mA, and a Span Adjustment used to make the bar graph display either 11, 22, or 33 feet of water for an input of 20 mA.
10. The controller shall be UL approved, be power by 120VAC, and shall perform both pump down and pump up functions. All electrical connections shall be made by quick disconnect, phoenix style connectors.

B. Manufacturer(s):

1. MPE SC100 series or
2. Equal.

PART 3 - EXECUTION

3.01 INSTALLATION

A. The panels shall be installed at locations as shown on the Contract Drawings.

B. Refer to Section 13300.

3.02 TESTS

A. Refer to Section 13300.

END OF SECTION

SECTION 16050

BASIC ELECTRICAL MATERIALS AND METHODS

PART 1 - GENERAL

1.01 SUMMARY

A. Section includes

1. Provide all labor, materials and equipment necessary to complete the installation required for the items specified under Division 16.
2. The major areas in the scope of work shown on the Drawings which includes both the furnishing and installation are:
    a. Switchboard and motor control center.
    b. Instruments and devices supplied under Division 16.
    c. Conduits, grounding system and the field interconnection wiring between the instruments, field devices, electrical enclosures, etc. as shown on Drawings.
    d. All necessary miscellaneous shut off, sample and calibration valves to sensors.
    e. Trenching, backfilling, compaction and resurfacing for all underground conduit routes, concrete pads and pull boxes.
    f. Provide all necessary hardware, fittings, and devices to connect the designated equipment and wiring.
    g. Equipment for the future telephone services.
    h. Site electrical devices, lights and receptacles.
    i. Installation, mounting supports, interconnection drawings, wiring, start-up, testing and warranty for all equipment and systems.

B. Related work under this section

1. Labor and materials required to furnish and install the electrical systems in a complete and operational fashion.
2. Carpentry, masonry, steel and concrete materials and labor required for construction of proper stands, bases and supports for electrical materials and equipment.
3. Cutting and patching of holes required by installation including flashing and counter-flashing of roof and exterior wall penetrations.
4. Excavating, pumping and backfilling required for installation.
5. Removal of work debris from construction activities to County’s satisfaction.
6. Testing and cleaning of equipment installed.

C. Work not under this section

1. Furnishing of motors, fans, compressors, water heaters, thermostats and motor starters included under Division 15, or as noted otherwise.
2. Finish painting of exposed metal surfaces included under Division 9, or as otherwise noted.

D. Related sections

1. Where items specified in other Division 16 sections conflict with the requirements of this Section, the most stringent requirement shall govern.
2. The requirements of this Section apply to all Division 16 work, as applicable.
3. Consult all other sections, determine the extent and nature of related work and properly coordinate work specified herein with that specified elsewhere to provide a complete and working installation.
    a. The General Conditions and General Requirements, Division 1, are a part of and are to apply to all the work of this Division.
    b. Site Construction –Division 2: Earthwork, Boring
    c. Concrete –Division 3: All sections
    d. Metals –Division 5: Structural Metal Framing
    e. Finishes – Division 9: Painting and Coatings
    f. Equipment – Division 11: As provided
    g. Special Construction -Division 13:
        1) 13300 INSTRUMENTATION AND CONTROLS – GENERAL PROVISIONS

1.02 REFERENCES

A. Comply with the latest edition of the following applicable specifications and standards except as otherwise shown or specified:

1. CCR –California Code of Regulations
    a. Title 8 –Industrial Relations; Division 1 –Department of Industrial Relations
        1) Chapter 3.2 -California Occupational Safety and Health Regulations (CAL/OSHA)
        2) Chapter 4 –Division of Industrial Safety
            a) Subchapter 4 -Construction Safety Orders (CSO)
            b) Subchapter 5 -Electrical Safety Orders (ESO)
    b. Title 24 –California Building Standards
        1) Part 1 -Building Standards Administrative Code
        2) Part 2 -California Building Code (CBC); ICBO Uniform Building Code (UBC) with California amendments
        3) Part 3 -California Electrical Code(CEC); NFPA 70 National Electrical Code (NEC) with California amendments

4) Part 4 -California Mechanical Code (MEC); IAPMO Uniform Mechanical Code (UMC) with California amendments
5) Part 5 -California Plumbing Code; IAPMO Uniform Plumbing Code (UPC) with California amendments
6) Part 6 -California Energy Code
7) Part 7 -California Elevator Safety Construction Code
8) Part 9 -California Fire Code; WFCA Uniform Fire Code (UFC) with California amendments
9) Part 12 -California Reference Standards Code

2. CPUC –California Public Utilities Commission
   a. GO-95; Rules for Overhead Electric Line Construction
   b. GO-128; Rules for Construction of Underground Electric Supply and Communication Systems
3. IEEE –Institute of Electrical and Electronic Engineers
   a. C2; National Electrical Safety Code (NESC)
4. NECA –National Electrical Contractors Association
   a. 1; Standard Practices for Good Workmanship in Electrical Contracting
   b. 4090; Manual of Labor Units
5. All applicable local municipal codes and ordinances.
6. Applicable rules and regulations of local utility companies.

1.03 SUBMITTALS

A. Product data
   1. Prior to commencement of work and within 35 days after award of Contract, submit in ample time for approval in accordance with Division 1 a complete list of furnished equipment, material and shop drawings, including all substitutions. Partial or incomplete lists of materials will not be considered. Substitutions will be considered thereafter.
      a. Where it is in the best interest of County, Engineer may give written consent to a submittal received after expiration of designated time limits or for an additional re-submittal.

B. Closeout submittal
   1. Furnish three complete sets of maintenance and operating instructions bound in a binder and indexed to County. Start compiling data upon approval of materials and equipment. Final inspection will not be made until Engineer approves binders. Refer also to Division 1 for additional requirements.
   2. Provide one of each tool required for proper equipment operation and maintenance provided under this Section. All tools shall be delivered to the County at project completion.
   3. Provide two keys to County for each lock furnished under Division 16.

4. Record drawings

    a. Upon completion of Work, furnish Engineer with complete sets of plans (not marked blueprints) upon which shall be shown all work installed under Contract, which are not in accordance with the Construction Documents. Refer to Division 1 requirements.

    b. All symbols and designations used in preparing Record Drawings shall match those used in Construction Documents.

1.04 SUBSTITUTIONS

A. If it is desired to make a substitution, the Contractor shall clearly identify each substitution on the submittal, and to submit complete information or catalog data to shown equality of equipment or material offered to that specified. Substitutions will be interpreted to be all manufacturers other than those specifically listed by model or catalog number within these Specifications and Drawings. No substitution will be allowed unless identified, requested and approved in writing. Materials of equal merit and appearance, in the opinion of the Engineer, will be approved for use. Architect and Engineer reserve the right to require originally specified items at no additional costs to County. Only one request for substitutions will be considered on each item of material or equipment.

B. Acceptance of a substitute is not to be considered a release from the Specifications. Correct any deficiencies in an item, even though approved at the Contractor's expense.

C. Responsibility for installation of approved substitution is included herein. Make any changes required for installation of approved substituted equipment without additional costs.

D. Failure to comply with any of the requirements of the above will necessitate that the specified materials be submitted and supplied.

1.05 CHANGE ORDER PROPOSALS

A. Shall comply with the requirements set forth by the General Conditions.

B. All change order proposals and requests, both additive and deductive, shall be accompanied by a detailed materials and labor breakdown for each specific task and/or item.

    1. All change order proposals and change orders, both additive and deductive, shall be based upon and be accompanied by a detailed materials and labor breakdown for each specific task and/or item. The breakdown shall include actual materials costs plus overhead and profit, as well as labor units base upon the most recent NECA Manual of Labor Units (NECA Index #4090) or equivalent publication for each specific task and item. Labor costs shall be computed as outlined within the General Conditions, based upon the NECA labor tables for each task required. Materials costs shall include actual Contractor invoice plus no more than 15% markup. The County and Contractor agree to the above change order cost procedure, for both additive and deductive change orders.

1.06 QUALITY ASSURANCE

A. General

1. References to codes, standards, specifications and recommendations of technical societies, trade organizations and governmental agencies shall mean that latest edition of such publications adopted and published prior to bid submittal. Such codes or standards shall be considered a part of this Specification as though fully repeated herein.
2. Work and materials shall be in full accordance with the latest rules and regulations of applicable state of local laws or regulations and standards of following:
    a. National Fire Protection Association (NFPA)
    b. California Electrical Code (CEC)
    c. California Occupational Safety Health Act (Cal-OSHA)
    d. California State Fire Marshall (CSFM)
    e. California Code of Regulations (CCR)
    f. Electrical Safety Orders, CAC Title 8 (ESO)
    g. California Public Utilities Commissions, General Order 95 (GO-95)
    h. Applicable rules and regulations of local utility companies.
    i. NECA 1-2000, Standard Practices for Good Workmanship in Electrical Contracting
3. All electrical equipment and material furnished under Division 16 shall conform to all CEC/NEC requirements and bear the Underwriters' Laboratories (UL) label where applicable.
4. Nothing in the Construction Documents shall be construed to permit work not conforming to these Codes. Whenever the indicated material, workmanship, arrangement or construction is of high quality or capaCounty than that required by the above rules and regulations, the Construction Documents shall take precedence. Should there be any direct conflict between the rules and regulations and Construction Documents, the rules shall govern.
5. All electrical equipment and material furnished under this Section shall conform to NEMA and ASTM standards, NEC/CEC and bear the Underwriters' Laboratories (UL) label where such label is applicable.
6. All electrical work shall conform to manufacturer's written instruction, and the NECA Standard Practices for Good Workmanship in Electrical Contracting and all published recommended practices at the time of project. The Contractor shall use the requirements within the Specifications whenever they exceed NECA guidelines.
7. Follow manufacturer's direction where these direction cover points not included with the Construction Documents.

B. Electrical Contractor Qualifications

1. It is the intent of this Division that the complete responsibility for management and installation of the electrical and instrumentation required for this project be by

the Electrical Sub-Contractor. This responsibility includes, but not limited to, supervision and coordination of work performed by all suppliers of Division 16.

2. Contractor shall submit the proposed Electrical Sub-Contractor and System Supplier that will be used on this project.
3. If the Electrical Contractor, General Contractor and System supplier listed in bid documents are deemed not qualified by County, they will have their bid rejected at the County's sole discretion and the next qualified bidder selected.
4. The Electrical Sub-Contractor shall meet the following minimum qualifications:
    a. Has a current C-10 Electrical Sub-Contractor's License and has been actively engaged in the type of electrical and instrumentation work specified in this Division for a minimum of two years.
    b. Has regularly engaged in similar electrical contracting for the municipal water and wastewater industry.
    c. Has all persons performing work as electricians certified by the California Apprenticeship Council per California Labor Code Section 3099.

C. System Integrator/Supplier Qualifications
1. General:
    a. It is the intent of this Division that complete responsibility in the supplying of the MCC/PLC, PLC programming and all instrumentation listed for Division and other equipment required for this project be supplied by a single integrator. This responsibility includes, but not limited to, all work necessary to select, furnish, program, supervise installation, calibrate, and place into operation all transmitters, instruments, controllers, alarm equipment, monitoring equipment, and accessories as specified herein.
    b. The Integrator shall have an on staff project engineer with prior experience on similar sized projects. This project engineer shall coordinate the technical aspects of this project and prepare the submittals and drawings. The system supplier project engineer shall attend all coordination meetings and be on-site when requested by the County.

1.07 DELIVERY, STORAGE AND HANDLING

A. Packing, shipping, handling and unloading
1. Damage to the equipment delivered to the site or in transit to the job shall be the responsibility of the Electrical Contractor.
2. Equipment and material delivery of shall be scheduled as required for timely, expeditious progress of work.

B. Storage and protection of job equipment is the responsibility Contractor.

C. Comply with Division 1 requirements with regards to waste management and disposal.

1.08 PROJECT CONDITIONS

A. Discrepancies

1. In the event of discrepancies with the Contract Documents, Engineer shall be notified with sufficient time as stated within Division 1 to allow the issuing of an addendum prior to the bid opening.
2. If, in the event that time does not permit notification of clarification of discrepancies prior to the bid opening, the following shall apply:
    a. The drawings govern in matters of quantity and specifications govern in matters of quality.
    b. In the event of conflict within the drawings and specifications involving quantities or quality, the greater quantity or higher quality shall apply. Such discrepancies shall be noted and clarified within the contractor's bid. No additional allowances will be made because of errors, ambiguities or omissions which reasonably should have been discovered during the bid preparation.

B. Verify all power and communication utilities' requirements prior to commencement of any utility work. Make proper adjustments to the construction to satisfy the serving utility.

C. Information shown relative to services is based upon available records and data, but shall be regarded as approximate only. Make minor deviations found necessary to conform to actual locations and conditions without extra cost. Verify locations and elevations of utilities prior to commencement of excavation for new underground installation.

D. Exercise extreme care in excavating near existing utilities to avoid any damage thereto; be responsible for any damage caused by such operations. Contact all utility companies to obtain exact locations prior to commencement of construction.

E. The electrical plans indicate the general layout and arrangement; the architectural drawings and field conditions shall determine exact locations. Field verify all conditions and modify as required to satisfy design intent. Maintain all required working clearances.

F. Fees, permits and utility services
    1. Obtain and pay for all permits and service charges required for the installation of this work. Arrange for required inspections and secure approvals from authorities having jurisdiction. Arrange for all utility connections.
    2. Extra charges imposed by the electrical and communication utility companies shall be included in the bid, if available. Unless otherwise stated, these charges will be assumed to include in the bid.

G. Provide and maintain temporary construction power. The General Contractor or County will pay for electric energy charges; refer to Division 1 for details. Should the Electrical Contractor be the prime contractor, the Electrical Contractor shall pay for energy charges unless negotiated with County.

1.09 SEQUENCING

A. Coordinate work within phasing plans as provided by the County.

1.10 WARRANTY

A. Furnish warranty in accordance with and in form required under Division 1. Repair or replace as may be necessary any defective work, material, or part without cost to the County, include repair or replacement of other work, furnishing, equipment or premises caused by such repair or replacement of defective work.

PART 2 - PRODUCTS

2.01 GENERAL

A. Materials mentioned herein or on Drawings require that the items be provided and of quality noted or an approved equal. All materials shall be new, full weight, standard in all respects and in first-class condition. Insofar as possible, all materials used shall be of the same brand or manufacturer throughout for each class of material or equipment.

B. Trade names or catalog numbers stated herein indicts grade or quality of material desired. Materials, where applicable, shall UL labeled and in accordance with NEMA standards.

C. Dimensions, sizes and capacities shown are a minimum. Do not make changes without written permission of Engineer

2.02 NAMEPLATES AND TAGS

A. Equipment exterior nameplates - Nameplate material shall be rigid laminated black phenolic with beveled edges and white lettering; except for caution, warning, and danger nameplates the color shall be red with white lettering. The size of the nameplate shall be as shown on the drawings. No letters are allowed smaller than 3/16". All phenolic nameplates located outdoors shall be UV resistant. Securely fasten nameplates in place using two stainless steel screws if the nameplate is not an integral part of the device. Epoxy cement or glued on nameplates will not be acceptable. Engrave the nameplates with the inscriptions as approved by the Engineer in the submittal.

1. For each major piece of electrical equipment provide a manufacturer's nameplate showing the Contract specified name and number designation, the manufacturer's name, model designation, part number, serial number, and pertinent ratings such as voltage, amperage, # of phases, range, calibration, etc.
2. For each device with a specific identity (pushbutton, indicator, instrument, etc.) mounted on the exterior or deadfront of a piece of equipment provide a nameplate with the inscription as shown in the Contract documents. Where no inscription is indicated in the Contract documents, furnish nameplates with an appropriate inscription providing the name and number of device.
3. For all receptacles and switches, provide a faceplate engraved or stamped with the panelboard and circuit number it is fed from. Also, include on faceplate or on a separate nameplate for each light switch identification use such as “OUTSIDE BUILDING LIGHTS”, “PERIMETER LIGHTS”, “MCC ROOM”, etc. Adhesive plastic labels are not acceptable.
4. All field instruments and devices shall be labeled with designation shown on P&ID diagrams.

5. All transformers and panelboards shall have nameplates with ½" high letters and be engraved with designations as shown on one-line Drawings.
6. All disconnect switches shall have nameplates with ½” high and be engraved with designations as shown on one-line drawings or as directed by Engineers.

B. Equipment Interior Nameplates - Nameplate material shall be clear plastic with black machine printed lettering as produced by a KROY or similar machine; except caution, warning, and danger nameplates shall have red lettering. The size of the nameplate tape shall be no smaller than 1/2” in height with 3/8" lettering unless otherwise approved by the Engineer. Securely fasten nameplates in place on a clean surface using the adhesion of the tape. Add additional clear glue to hold the nameplate securely in place when necessary. For each device with a specific identity (relay, module, power supply, fuse, terminal block, etc.) mounted in the interior of a piece of equipment provide a nameplate with the inscription as shown in the Contract documents. Where no inscription is indicated in the Contract documents, furnish nameplates with an appropriate inscription providing the name and number of device used on the submittal drawings. Stamp the nameplates with the inscriptions as approved by the Engineer in the submittal.

C. Equipment Tags - When there is no space or it is impractical to attach an engraved phenolic nameplate with screws, as is the case with most field devices and instruments, the Contractor shall attach a tag to the equipment with the same inscriptions as specified above in paragraph A. The tag shall be made from stainless steel material and the size of the nameplate shall be no smaller than 3/8"h x 2"w with3/16" machine printed or engraved lettering unless otherwise approved by the Engineer. The tag shall be attached to the equipment with stainless steel wire of the type normally used for this purpose. Twisting ends together is not acceptable.

D. Engrave or machine print the nameplates and tags with inscriptions as approved by the Engineer.

PART 3 -EXECUTION

3.01 EXAMINATION

A. Examine Construction Documents and Site; be familiar with types of construction where electrical installation is involved. Note carefully other sections of Specifications with their individual cross-references, standard details, etc.

B. Any electrical work or materials shown either in Construction Documents, but not mentioned herein, or vice versa, shall be executed the same as if mentioned herein, in a workmanlike manner in accordance with all published NECA Standards of Installation.

C. Coordinate work with other crafts to avoid conflicts, and check all outlet locations with Architectural and Mechanical drawings and specifications. Make minor adjustments without additional cost to County.

D. Engineer will make clarifications and rulings concerning any obvious discrepancies or omissions in work prior and after bidding. Perform all work involved in correcting obvious errors or omissions after award of contract as directed by Engineer at Contractor's expense.

E. Examine site dimensions and locations against Drawings and become informed of all conditions under which work is to be done before submitting proposals. No allowance will be made for extra expense due to error.

F. Layouts of equipment, accessories and wiring systems are diagrammatic (not pictorial), but shall be followed as closely as possible. Construction Documents are for assistance and guidance, and exact locations, distance, levels, etc., will be governed by construction; accept same with this under standing.

G. Horsepower of motors or wattage of equipment indicated in Construction Documents is estimated horsepower or wattage requirement of equipment furnished under other sections of Specifications. Size all feeders (conduit and wiring), motor starters, overload protection and circuit breakers to suit horsepower of motors or wattage of equipment actually furnished under various sections of specifications. However, in no case shall feeders and branch circuits (conduit and wiring) and circuit breakers be of smaller capacities or sizes than those indicated on Drawings or specified, unless approved in writing by Engineer.

3.02 PREPARATION

A. Seal all exterior wall penetrations in an approved watertight manner and to the satisfaction of Engineer and Architect.

3.03 INSTALLATION

A. Working spaces

1. Provide adequate working space around electrical equipment in compliance with Article 4 of Electrical Safety Orders and CEC/NEC 110.26. In general provide 78” of headroom and 30” wide minimum clear workspace in front of panelboards and controls. In addition to the above, provide the following minimum working clearances:

   a. 0V – 150V (line-to-ground) provide 36” minimum clear distance.

   b. 151V – 600V (line-to-ground) provide 42” minimum clear distance.

B. Equipment supports

1. Anchor all electrical equipment to structure. Support systems shall be adequate to withstand seismic forces per CBC.

C. Fasteners

1. Fasteners for securing equipment to walls, floors, and the like shall be 316 stainless steel. The minimum size fastener shall be 3/8 inch diameter. Layout to maintain headroom, neat mechanical appearance, and to support equipment loads required.

2. Reinforced concrete pad with stainless steel anchor bolts shall be provided for floor mounted electrical enclosures.

3. Anchor Methods:

   a. Hollow Masonry: Sleeve type anchors.

   b. Solid Masonry: Sleeve type anchors or epoxy anchors bolts.

c. Metal Surfaces: Machine screws, bolts, or welded studs.

d. Concrete Surfaces: Wedge or expansion anchors.

e. Structural Steel: Right angle, parallel and edge type rigid metal clamps. Do not weld or drill structural steel.

4. Equipment Mounting:

a. The Contractor shall be responsible for furnishing and setting all anchor bolts required to install his equipment.

b. Electrical equipment shall be unistrut mounted a minimum of ½ - inch from the wall in a manner so that the rear of the equipment is freely exposed to air circulation.

c. All equipment enclosures shall be of the NEMA classification noted on the Drawings for the area in which the device will be mounted.

d. Reinforced concrete pad with stainless steel anchor bolts shall be provided for each piece of freestanding electrical equipment.

5. Dissimilar metals such as aluminum, stainless steel, steel, galvanized steel between enclosures, devices, etc. and mounting surfaces shall be isolated from each other using insulated tape or nonmetal spacers. Tape and spacers used shall be specifically manufactured for this application.

D. Excavating and backfilling

1. Excavate and backfill as required for installation of Work. Restore all surfaces, roadways, walks, curbs, walls existing underground installations, etc., cut by installations to original condition in an acceptable manner. Maintain all warning signs, barricades, flares and lanterns as required by ESO and local ordinances.

2. Dig trenches straight and true to line and grade, with bottom clear of any rock points. Support conduit for entire length on undisturbed original earth. Minimum conduit depth of pipe crown shall be 24” below finished or natural grade, unless otherwise noted.

E. Forming, cutting and patching

1. In new construction, General Contractor shall provide any special forming, recesses, chased, etc., and provide wood blocking, backing and grounds as necessary for the proper installation of electrical work. Be responsible for notifying General Contractor that such provision is necessary; layout work and check to see that it suits his requirements.

a. Provide metal backing plates, anchor plates and such that are required for anchorage of electrical work under Division 16; securely weld or bolt to metal framing. Wood blocking or backing will not be permitted in combination with metal framing.

2. Be responsible for proper placement of pipe sleeves, hangers, inserts and supports for this Work.

F. Concrete work

1. Provide concrete work related solely to electrical work. Concrete work, including forming and reinforcing steel installed for all electrical work, shall comply with all applicable requirements of Division 3, or in accordance with the State of

California Standard Specifications issued by the Department of Transportation (CALTRANS) and these Special Provisions.

3.04 REPAIR/RESTORATION

A. Cutting, patching and repairing of existing construction to permit installation of work under Division 16 is the responsibility of Contractor. Repair or replace all damage to existing work in kind to County's satisfaction.

B. Obtain Engineer's approval prior to performing any cutting or patching of concrete, masonry, wood or steel structure within building.

3.05 FIELD QUALITY CONTROL

A. Inspection of work

1. Working parts shall be readily accessible for inspection, repair and renewal. The right is reserved to make reasonable changes in equipment location shown on Drawings prior to rough in without additional costs to the County.

2. During construction all work will be subject to observation by the Engineer and his representatives. Assist in ascertaining any information that maybe required.

3. Do not allow or cause any work installed hereunder to be covered up or enclosed before it has been inspected and approved. Should any work be enclosed or covered prior to approval, uncover work, and after it has been inspected and approved, restore work of all others to the condition in which it was found at the time of cutting, all without additional costs to County.

B. Furnish all testing equipment as maybe required.

C. Test all wiring and connections for continuity and grounds; where such tests indicate faulty insulation or other defects, locate, repair and re-test.

D. Check rotation of all motors and correct if necessary.

E. Safety Lockouts

1. Contractor shall provide safety lockout tags on the breakers for all switchboards, MCCs and panelboards and other electrical enclosures. Safety tags shall not be the same as those used by the County. All padlocks used for this purpose shall be keyed differently from any of the County's padlocks. Padlocks shall remain in place by the Contractor until operation of the portion of work is turned over to the County with the responsibilities noted on the acceptance form.

2. The following is the procedure for transferring each portion of work over to the County prior to completion of the entire project:

a. Contractor shall inform the County when a portion of the work is complete, ready for inspection and available to be placed into operation.

b. The County will schedule the inspection and substantiate that the work is complete and operational.

c. The Contractor will correct any deficiencies.

d. The County will prepare a written authorization in which that portion of the project will be turned over the County with the responsibilities noted on the

acceptance form. The Contractor then shall remove his safety lockouts and tags.

3. Safety lockout tags shall be rigid vinyl with write-on surface and brass grommet. Safety tags shall be secured in place with cord of sufficient strength to prevent accidental removal or displacement. Safety lockout tags shall be Panduit Write-on Safety Tags, model PVT-98 or approved equal

3.06 CLEANING

A. Repair or replace all broken, damaged or otherwise defective parts without additional cost to County, and leave entire work in a condition satisfactory to Engineer. At completion, carefully clean and adjust all equipment, fixtures and trim installed as part of this work; leave systems and equipment in satisfactory operating condition.

B. Clean out and remove from the site all surplus materials and debris resulting from this work; this includes surplus excavated materials.

3.07 DEMONSTRATION

A. At project completion, Contractor shall allot a period of not less than 8 hours for instruction of operating and maintenance personnel in the use of all systems installed under this Section. This time is in addition to any instruction time stated in the Specifications of other sections for other equipment (i.e., fire alarm, security, etc.). All personnel shall be instructed at one time, the Contractor shall make all necessary arrangements with manufacturer's representatives as may be required. Contractor, if any, for the above services shall pay all costs.

3.08 PROTECTION

A. In performance of work, protect work of other trades as well as work under this Section from damage.

B. Protect electrical equipment, stored and installed, from dust, water or other damage.

END OF SECTION

SECTION 16060

GROUNDING AND BONDING FOR ELECTRICAL SYSTEMS

PART 1 - GENERAL

1.01 SUMMARY

A. Section includes

1. Provide all labor, materials and equipment necessary to complete the installation required for the item specified under this Section, including but not limited to power system grounding

B. Related sections

1. Where items specified in other Division 16 sections conflict with the requirements of this Section, the most stringent requirement shall govern.
2. The requirements of this Section apply to all Division 16 work, as applicable.
3. Consult all other sections, determine the extent and character of related work and properly coordinate work specified herein with that specified elsewhere to produce a complete installation.

1.02 REFERENCES

A. Comply with the latest edition of the following applicable specifications and standards except as otherwise shown or specified:

1. CCR –California Code of Regulations, Title 24
    a. Part 3 -California Electrical Code(CEC); NFPA 70 National Electrical Code (NEC) with California amendments
2. IEEE –Institute of Electrical and Electronic Engineers
    a. 142; Recommend Practices for Grounding of Industrial and Commercial Power Systems
3. NFPA –National Fire Protection Association
    a. 780; Lightning Protection Code
4. UL –Underwriters Laboratories, Inc.
    a. 467; Grounding and Bonding Equipment

1.03 SYSTEM DESCRIPTION

A. This Section provides for the grounding and bonding of all electrical and communication apparatus, machinery, appliances, components, fittings and accessories where required to provide a permanent, continuous, low impedance, grounded electrical system.

B. Ground the electrical service system neutral at service entrance equipment as shown on the Drawings.

C. Ground each separately derived system, as defined in CEC/NEC 250-5(d) and on the Drawings, unless specifically noted otherwise.

D. Except as otherwise indicated, the complete electrical installation including the neutral conductor, equipment and metallic raceways, boxes and cabinets shall be completely and effectively grounded in accordance with all CEC/NEC requirements, whether or not such connections are specifically shown or specified.

1.04 SUBMITTALS

A. Submit manufacturer's data for equipment and materials specified within this Section in accordance to Section 16050.

1.05 QUALITY ASSURANCE

A. All materials, equipment and parts comprising the materials specified herein shall be new and unused, bearing UL labels where applicable.

PART 2 - PRODUCTS

2.01 CONCRETE ENCASED GROUNDING ELECTRODE (UFER GROUND)

A. #3/O AWG minimum bare stranded copper conductor.

2.02 DRIVEN (GROUND) RODS

A. Copper clad steel, minimum ¾" diameter by 10'-0" length, sectional type with copper alloy couplings and carbon steel driving stud; Weaver, Cadweld or equal.

2.03 INSULATED GROUNDING BUSHINGS

A. Plated malleable iron body with 150°C molded plastic insulated throat and lay-in ground lug; OZ/Gedney BLG, Thomas & Betts #TIGB series or equal.

2.04 CONNECTION TO PIPE

A. Cable to pipe connections; OZ/Gedney G-100B series, Thomas & Betts #290X series or equal.

2.05 CONNECTIONS TO STRUCTURAL STEEL, GROUND RODS OR SPLICES

A. Where required by the Drawings, grounding conductors shall be spliced together, connected to ground rods or connected to structural steel using exothermic welds, Cadweld or equal, or high pressure compression type connectors, Cadweld, Thomas & Betts or equal.

2.06 BONDING JUMPERS

A. OZ/Gedney Type BJ, Thomas & Betts #3840 series or equal.

2.07 GROUND CONDUCTOR

A. Ground conductor shall be code size UL labeled, Type THWN insulated copper wire, green in color.

2.08 MAIN BUILDING REFERENCE GROUND BUS (BGB)

A. Provide 1 24”x4”x1/4” TK copper bus bar mounted on wall with insulating stand-offs at +18” AFF. Furnish complete with cast copper alloy body Thomas Betts Series 310 or equal lugs for connecting grounding conductors. Attach lugs to bus with appropriate size bronze bolt, flat washer and Belleville washer. All connections shall be torque, and all holes shall be drilled and tapped for single hole lugs. Provide 4 spare lugs with respective spaces.

PART 3 - EXECUTION

3.01 INSTALLATION

A. Grounding electrodes
   1. Concrete encased grounding electrode (Ufer ground)
      a. Provide a #3/O AWG minimum bare copper conductor encased along the bottom of concrete foundation, footing or trench which is in direct contact with the earth and where there is no impervious waterproofing membrane between the footing and soil. The electrode shall extend through a horizontal length of 30’ minimum and shall be encased in not less than 2” or more than 5” of concrete separating it from surrounding soil. The electrode shall emerge from the concrete slab through a protective non-metallic sleeve and shall be extended to BGB or as shown on Drawings.
   2. Supplementary grounding electrode (ground ring, grid and driven rod)
      a. Provide as shown driven ground rod(s). Interconnect ground rod with structural steel and adjacent rods with code size bare copper conductor. Ground rods shall be space no less than 6’-0” on centers from any other electrode or electrodes of another electrical system.
   3. Separately derived electrical system grounding electrode
      a. Ground each separately derived system per CEC/NEC 250-26 or as shown on Drawings, whichever is greater.
   4. Metal underground water pipe
      a. Contractor shall install am accessible grounding electrode conductor from the main incoming cold water line to BGB. The electrode conductor shall be sized per CEC/NEC Table 250-94 or as shown on Drawings, whichever is greater.

B. Grounding electrode conductor
   1. Provide grounding electrode conductors per CEC/NEC Table 250-94 or as shown on Drawings, whichever is greater.

C. Power system grounding

1. Connect the following items using code size copper grounding conductors to BGB or as shown on Drawings:
    a. Concrete encased electrode (Ufer ground)
    b. Ground rod(s)
    c. Incoming cold and fire water pipes
    d. Gas pipe
    e. Structural steel
    f. Distribution transformer secondary

D. Equipment Bonding/Grounding

1. Provide a code sized copper ground conductor, whether indicated or noted on the drawings, in each of the following:
    a. All power distribution conduits and ducts
    b. Distribution feeders
    c. Motor and equipment branch circuits
    d. Device branch circuits
2. Provide a separate grounding bus at distribution panelboards, loadcenters, switchboards and motor control centers. Connect all metallic enclosed equipment so that with maximum fault current flowing, shall be maintained at not more than 35V above ground.
3. Metallic conduits terminating in concentric, eccentric or oversized knockouts at panelboards, cabinets, gutters, etc. shall have grounding bushings and bonding jumpers installed interconnecting all such conduits.
4. Provide bonding jumpers across expansion and deflection coupling in conduit runs, pipe connections to water meters and metallic cold water dielectric couplings.
5. Provide ground wire in flexible conduit connected at each end via grounding bushing.
6. Provide bonding jumpers across all cable tray joints.
7. Bond each end of metallic conduit longer than 36” in length to grounding conductor using a #6 AWG pigtail.

3.02 FIELD QUALITY CONTROL

A. Contractor using test equipment expressly designed for that purpose shall perform all ground resistance tests in conformance with IEEE quidelines. Contractor shall submit typewritten records of measured resistance values to Engineer for review and approval prior to energizing the system.

B. Obtain and record ground resistance measurements both from electrical equipment ground bus to the ground electrode and from the ground electrode to earth. Furnish

and install additional bonding and add grounding electrodes as required to comply with the following resistance limits:

1. Resistance from ground bus to ground electrode and to earth shall not exceed 5 ohms unless otherwise noted.
2. Resistance from the farthest panelboard, loadcenter, switchboard or motor control center ground bus to the ground electrode and to earth shall not exceed 20 ohms maximum.

C. Inspection

1. The Engineer or Inspector prior to encasement, burial or concealment thereto shall review the grounding electrode and connections.

END OF SECTION

SECTION 16075

ELECTRICAL IDENTIFICATION

PART 1 – GENERAL

1.01 SUMMARY

A. Section includes requirements for:
   1. Identifying electrical, instrumentation, and process equipment and components.
   2. Material, manufacturing, and installation requirements for identification devices.

B. Related Sections:
   1. Contract Documents are a single integrated document, and as such all Divisions and Sections apply. It is the responsibility of the Contractor and its subcontractors to review all sections to ensure a complete and coordinated project.

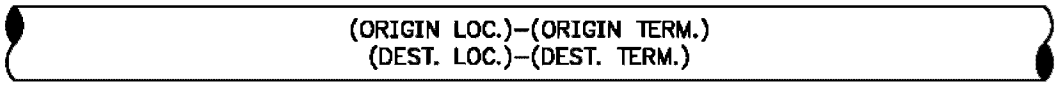
1.02 SYSTEM DESCRIPTION

A. Nameplates:
   1. Provide a nameplate for each control device or major item of electrical equipment, either located in the field or within panels.
   2. Provide all nameplates of identical style, color, and material throughout the facility.
   3. Device nameplates information:
      a. Designations as indicated on the Drawings and identified on the Process and Instrumentation Drawings.
      b. Device tag and loop number ID (e.g. EDV-60.0101.01).
      c. Circuit ID (e.g. LPA-11).
      d. Area served (e.g. Lighting Chemical Building).

B. Wire Numbers:
   1. Coordinate the wire numbering system with all vendors of equipment so that every field wire has a unique number associated with it for the entire system:
      a. Wire numbers shall correspond to the wire numbers on the control drawings or the panel and circuit numbers for receptacles and lighting.
      b. Wire numbers shall correspond to the terminal block number to which they are attached in the control panel.
      c. Internal panel wires on a common terminal shall have the same wire number.
      d. All instrumentation cables shall be identified at pull points as described above.
   2. Provide the following wiring numbering schemes throughout the project for field wires between Process Control Module, (PCM), Vendor Control Panels, (VCP), Motor Control Centers, (MCC), field starters, field instruments, etc.



OR



Where:

ORIGIN LOC. = Designation for originating panel or device
ORIGIN TERM. = Terminal designation at originating panel or device
DEST. LOC. = Designation for destination panel or device
DEST. TERM. = Terminal designation at destination panel or device or PLC I/O address at destination panel

a. Identify equipment and field instruments as the origin.
b. PCM's are always identified as the destination.
c. Location is the panel designation for VCP, LCP, or PCM. For connections to MCC's, location is the specific starter tag and loop number. Location is the tag and loop number for motor starters, field instruments and equipment. Any hyphen in the panel designation or tag and loop number shall be omitted.
d. Terminal designation is the actual number on the terminal block where the conductor terminates at field devices and vendor control panels. For multiconductor cables, all terminal numbers shall be shown, separated by commas.
e. Terminal designations at motor leads shall be the motor manufacturer's standard terminal designation (e.g.T1, T2, T3, etc.).
f. Terminal designations at PCM's where the field conductor connects to a PLC input or output shall be the PLC address (Note: the following PLC I/O numbering scheme is typical for Allen Bradley, the numbering scheme should be modified to match that of the actual PLC manufacturer used for the project):
   1) Discrete Point: W:X:Y/Z Analog Point: W:X:Y.Z

      Where:
      W = I for input, O for output
      X = PLC number (1, 2, 3…)
      Y = Slot number (01, 02, 03…)
      Z = Terminal number (00,01,02…) for a discrete point or a word number for an analog point (1,2,3…)
g. Terminal designations at PCM's where the conductor does not connect to a PLC I/O point shall be the terminal number with a "C" prefix (e.g. C0010). For common power after a fuse or neutrals after a switch, the subsequent points shall have and capital letter suffix starting with "A" (e.g.. C0010A).

3. **Case 1**: Vendor Control Panel (VCP) to Process Control Module (PCM): Field Wire Number/Label: A-B/C-D
   - A = Vendor Control Panel number without hyphen (VCP60.0101.01)
   - B = Terminal number within VCP (manufacturer's or vendor's standard terminal number)
   - C = Process Control Module number without hyphen (PCM60.0101)
   - D = Either the PLC address if the field terminal is connected directly to a PLC input or output point or the terminal number with a "C" prefix if not connected directly to a PLC I/O point (C0010)

   Examples: VCP60.0101.01-10/PCM60.0101-I:1:01/01
   VCP60.0101.01-10/PCM60.0101-O:1:10/07
   VCP60.0101.01-10/PCM60.0101-C0100

4. **Case 2**: Field Instrument to Process Control Module (PCM): Field Wire Number/Label: E-F/C-D
   - C = Process Control Module number without hyphen (PCM60.0101)
   - D = Either the PLC address if the field terminal is connected directly to a PLC input or output point or the terminal number with a "C" prefix if not connected directly to a PLC I/O point (C0010)
   - E = Field mounted instrument tag and loop numbers without hyphen (EDV60.0101.01)
   - F = Manufacturer's standard terminal number within instrument. Use both terminal numbers for analog points separated by a comma

   Examples: TIT60.0101.01-2,3/PCM60.0101-I:1:01.1
   TSH60.0101-1/PCM60.0101-I:2:01/00

5. **Case 3**: Motor Control Center (MCC) to Process Control Module (PCM): Field Wire Number/Label: G-B/C-D
   - B = Terminal number within Motor Control Center (manufacturer's or vendor's standard terminal number)
   - C = Process Control Module without hyphen (PCM60.0101)
   - D = Either the PLC address if the field terminal is connected directly to a PLC input or output point or the terminal number with a "C" prefix if not connected directly to a PLC I/O point (C0010)
   - G = Actual starter designation in the Motor Control Center without hyphen (MMS60.0101)

   Examples: MMS60.0101-10/PCM60.0101-I:1:01/01
   MMS60.0101-10/PCM60.0101-O:1:10/07
   MMS60.0101-10/PCM60.0101-C0100

6. **Case 4**: Motor Control Center (MCC) to Vendor Control Panel (VCP): Field Wire Number/Label: G-B/A-B
   - A = Vendor Control Panel number without hyphen (VCP60.0101.01)
   - B = Terminal number within motor control center or vendor control panel (manufacturer's or vendors standard terminal number)
   - G = Actual starter designation in the Motor Control Center without hyphen (MMS60.0101)

Example: MMS60.0101-X2/VCP60.0101.01-10

7. **Case 5**: Motor leads to a Motor Control Center (MCC): Field Wire Number/Label: H-I/G-B
   B = Terminal number within motor control center (manufacturer's standard terminal number)
   G = Actual starter designation in the Motor Control Center without hyphen (MMS60.0101)
   H = Equipment tag and loop number without hyphen (PMP60.0101.01)
   I = Motor manufacturer's standard motor lead identification (e.g.T1, T2, T3, etc.)

   Example: PMP-60.0101.01-T3/MMS60.0101.01-T3

8. **Case 6**: Remote or separately mounted starter or Variable Frequency Drive (VFD) to Process Control Module (PCM): Field Wire Number/Label: J-B/C-D
   B = Terminal number within starter or Variable Frequency Drive (manufacturer's standard terminal number)
   C = Process Control Module number without hyphen (VCP60.0101.01)
   D = Either the PLC address if the field terminal is connected directly to a PLC input or output point or the terminal number with a "C" prefix if not connected directly to a PLC I/O point (C0010)
   J = Starter or Variable Frequency Drive tag and loop number without hyphen (MMS60.0101)

   Examples: MMS60.0101-10/PCM60.0101.01-I:1:01/01
   MMS60.0101-10/PCM60.0101.01-O:2:10/07
   MMS60.0101-10/PCM60.0101.01-C0010

9. Terminate all spare conductors on terminal blocks and identify as required for other field wires with an "S" prefix:

   Example: S MMS60.0101-10/PCM60.0101.01-C011

1.03 SUBMITTALS

A. Furnish submittals in accordance with General Provisions.

B. Product Data:
   1. Nameplates:
      a. Color.
      b. Size:
         1) Outside dimensions.
         2) Lettering.
      c. Material.
      d. Mounting means.
   2. Nameplate Schedule:
      a. Show exact wording for each nameplate.
      b. Include nameplate and letter sizes.
   3. Wire Numbers:
      a. Manufacturer's catalog data for wire labels and label printer.

C. Record Documents:
   1. Update the conduit schedule to reflect the exact quantity of wire numbers including spares and destination points for all wires.

PART 2 – PRODUCTS

2.01 MANUFACTURERS

A. Nameplates and Signs:
   1. One of the following or equal:
      a. Brady.
      b. Seton.

B. Conductor and Cable Markers:
   1. Heat-shrinkable tubing:
      a. One of the following or equal:
         1) Raychem.
         2) Brady.
         3) Thomas & Betts.
         4) Kroy.

C. Conduit and Raceway Markers:
   1. One of the following or equal:
      a. Almetek: Almetek type mini-tag.
      b. Lapp Group: Maxi System

D. Medium Voltage Raceway Voltage Labels:
   1. One of the following or equal:
      a. Brady.
      b. Seton.

2.02 MATERIALS

A. Nameplates:
   1. Fabricated from white-center and red or black face laminated plastic engraving stock:
      a. 3/32-inch thick material.
      b. Two-ply.
      c. With chamfered edges.
      d. Block style engraved characters of adequate size to be read easily from a distance of 6 feet:
         1) No characters smaller than 1/8-inch in height.

B. Signs:
   1. Automatic equipment and high voltage signs:
      a. Suitable for exterior use.
      b. In accordance with OSHA regulations.

C. Conductor and Cable Markers:
   1. Machine printed black characters on white tubing.
   2. Ten point type or larger.

D. Conduit and Raceway Markers:
   1. UV resistant holder and letters.
   2. Black letters on yellow background.
   3. Minimum 1/2-inch high letters.

E. Medium Voltage Circuit Raceway Labels:
   1. Vinyl plastic.
   2. Minimum 1-inch high letters.

2.03 SOURCE QUALITY CONTROL

A. Nameplates:
   1. Provide all nameplates for control panel operator devices (e.g. pushbuttons, selector switches, pilot lights, etc.):
      a. Same material and same color and appearance as the device nameplates, in order to achieve an aesthetically consistent and coordinated system.

PART 3 – EXECUTION

3.01 INSTALLATION

A. Refer to Section 16010, ELECTRICAL BASIC REQUIREMENTS.

B. Nameplates:
   1. Attach nameplates to equipment with rivets, bolts or sheet metal screws, approved waterproof epoxy-based cement or install in metal holders welded to
      the equipment.
   2. On NEMA 4or NEMA 4X enclosures, use epoxy-based cement to attach nameplates.
   3. Nameplates shall be aligned and level or plumb to within 1/64 inch over the entire length:
      a. Misaligned or crooked nameplates shall be remounted, or provide new enclosures at the discretion of the Engineer.

C. Conductor and Cable Markers:
   1. Apply all conductor and cable markers before termination.
   2. Heat-shrinkable tubing:
      a. Tubing shall be shrunk using a heat gun that produces low temperature heated air.
      b. Tubing shall be tight on the wire after it has been heated.
      c. Characters shall face the open panel and shall read from left to right or top to bottom.
      d. Marker shall start within 1/32 inch of the end of the stripped insulation point.

D. Conduit Markers:
   1. Furnish and install conduit markers for every conduit in the electrical system that is identified in the conduit schedule or part of the process system:
      a. Conduit markings shall match the conduit schedule.
   2. Mark conduits at the following locations:
      a. Each end of conduits that are greater than 10 feet in length.
      b. Where the conduit penetrates a wall or structure.
      c. Where the conduit emerges from the ground, slab, etc.
      d. The middle of conduits that are 10 feet or less in length.
   3. Mark conduits after the conduits have been fully painted.
   4. Position conduit markers so that they are easily read from the floor.
   5. Secure all conduit markers with nylon cable ties:
      a. Provide with ultraviolet resistant cable ties for conduit markers exposed to direct sunlight.
      b. Adhesive labels are not acceptable.
   6. Mark conduits before construction review by Engineer for punch list purposes.

E. Medium Voltage Raceway Labels:
   1. Apply at 50 foot intervals stating the voltage level contained within the raceway.

F. Signs and Labeling:
   1. Furnish and install permanent warning signs at mechanical equipment that may be started automatically or from remote locations:
      a. Fasten warning signs with round head stainless steel screws or bolts.
      b. Locate and mount in a manner to be clearly legible to operations personnel.
   2. Furnish and install permanent and conspicuous warning signs on equipment (front and back), doorways to equipment rooms, pull boxes, manholes, etc. where the voltage exceeds 600 volts.
   3. Furnish and install warning signs on equipment that has more than one source of power.
      a. Warning signs to identify every panel and circuit number of the disconnecting means of all external power sources.
   4. Place warning signs on equipment that has 120 VAC control voltage source used for interlocking.
      a. Identify panel and circuit number or conductor tag for control voltage source disconnecting means.

3.02 **FIELD QUALITY CONTROL**

A. Replace any nameplates, signs, conductor markers, cable markers, or raceway labels that in the sole opinion of the Engineer do not meet the Engineer’s aesthetic requirements.

END OF SECTION

SECTION 16120

CONDUCTORS AND CABLES

PART 1 - GENERAL

1.01 SUMMARY

A. Section includes

1. Provide all labor, materials and equipment necessary for the installation of all conductors and cables under this Section related to lighting, power, mechanical, control and signal systems.

B. Related sections

1. Where items specified in other Division 16 sections conflict with the requirements of this Section, the most stringent requirement shall govern.
2. The requirements of this Section apply to all Division 16 work, as applicable.
3. Consult all other sections, determine the extent and character of related work and properly coordinate work specified herein with that specified elsewhere to produce a complete installation.

1.02 REFERENCES

A. Comply with the latest edition of the following applicable specifications and standards except as otherwise shown or specified:

1. ASTM -American Society for Testing and Materials
   a. B3; Standard Specification for Soft or Annealed Copper Wire
   b. B8; Standard Specification for Concentric-Lay-Stranded Copper Conductors, Hard, Medium-Hard, or Soft
   c. B787/B787M; Standard Specification for 19 Wire Combination Unilay-Stranded Copper Conductors for Subsequent Insulation
   d. D1000; Standard Test Method for Pressure-Sensitive Adhesive-Coated Tapes Used for Electrical and Electronic Applications
2. CCR –California Code of Regulations, Title 24
   a. Part 3 -California Electrical Code(CEC); NFPA 70 National Electrical Code (NEC) with California amendments
3. UL -Underwriters Laboratories, Inc.
   a. UL 83; Thermoplastic-Insulated Wire and Cables
   b. UL 486A 486B; Wire Connectors
   c. UL 486C; Splicing Wire Connectors
   d. UL 486D; Standard for Insulated Wire Connector Systems for Underground Use Or In Damp Or Wet Locations
   e. UL 486E; Standard for Equipment Wiring Terminals for Use with Aluminum and/or Copper Conductors

f. UL 493; Thermoplastic-Insulated Underground Feeders and Branch Circuit Cables

g. UL 510; Standard for Polyvinyl Chloride, Polyethylene and Rubber Insulating Tape

h. UL 854; Service-Entrance Cables

4. NEMA –National Electrical Manufacturer's Association

a. WC 70-1999; Nonshielded Power Cables Rated 2000 Volts or less for the Distribution of Electrical Energy

5. IEEE –Institute of Electrical and Electronic Engineers

a. 82; Standard Test Procedure for Impulse Voltage Tests on Insulated Conductors

1.03 DELIVERY

A. Wire shall be in original unbroken package. Obtain approval of Inspector or Engineer before installation of wires.

PART 2 - PRODUCTS

2.01 BUILDING WIRE

A. Conductor material

1. Provide annealed copper for all wire, conductor and cable of not less than 98% conductivity.

2. Wire #8 AWG and larger shall be stranded.

3. Wire #10 AWG and smaller shall be solid.

B. Insulation material

1. All insulated wire, conductor and cable shall be 600 Vac rated.

2. Feeder and branch circuits larger than #6 AWG shall be type THW, XHHW or THHN/THWN.

3. Feeder and branch circuits #6 AWG and smaller shall be type TW, THW, XHHW or THHN/THWN.

4. Control circuits shall be type THW or THHN/THWN.

5. Wires shall bear the UL label, be color-coded and marked with gauge, type and manufacturer's name on 24" centers.

2.02 FLEXIBLE CORDS AND CABLES

A. Provide flexible cords and cables of size, type and arrangement as indicated on Drawings.

B. Type S flexible cords and cable shall be manufactured in accordance with NEC Article 400 and composed of two or more conductors and a full sized green insulated grounding conductor with an outer rubber or neoprene jacket.

C. Flexible cords and cables shall be fitted with wire mesh strain relief grips either as a integral connector component or an idependently supported unit.

D. Suspended flexible cords and cables shall incorporate safety spring(s).

2.03 WIRE CONNECTIONS AND TERMINATIONS

A. Electrical spring wire connectors

1. Provide multi-part construction incorporating a non-restricted, zinc coated square cross-sectional steel spring enclosed in a steel sheet with an outer jacket of plastic and insulating skirt.

2. Self-striping pigtail and tap U-contact connectors are not acceptable.

B. Compression type terminating lugs

1. Provide tin-plated copper high compression type lugs for installation with hand or hydraulic crimping tools as directed by manufacturer. Notch or single point type crimps are not acceptable.

2. Two hole, long barrel lugs shall be provided for size #4/O AWG and larger wire where terminated to bus bars. Use minimum of three crimps per lug where possible.

C. Splicing and insulating tape

1. Provide black, UV resistant, self extinguishing, 7 mil thick vinyl general purpose electrical tape per UL 510 and ASTM D1000. 3M Scotch 33 or equal.

D. Insulating putty

1. Provide pads or rolls of non-corrosive, self-fusing, 125 mil thick rubber putty with PVC backing sheet per UL 510 and ASTM D1000. 3M Scotchfil or equal.

E. Insulating resin

1. Provide two-part liquid epoxy resin with resin and catalyst in pre-measured, sealed mixing pouch. 3M Scothcast 4 or equal.

2. Use resin with thermal and diaelectric properties equal to the cable’s insulating properties.

F. Terminal strips

1. Provide box type terminal strips in the required quantities plus 25% spare. Install in continuous rows.

2. Use the box type terminal strips with barrier open backs and with ampere ratings as required.

3. Identify all terminals strips and circuits.

G. Crimp type connectors

1. Provide insulated fork or ring crimp terminals with tinned electrolytic copper-brazed barrel with funnel wire entry and insulation support.

2. Fasten crimp type connectors or terminals using a crimping tool recommended by the manufacturer.

3. Provide insulated overlap splices with tinned seamless electrolytic copper-brazed barrel with funnel wire entry and insulation support.
4. Provide insulated butt splices with tinned seamless electrolytic copper-brazed barrel with center stop, funnel wire entry and insulation support.

H. Cable ties

1. Provide harnessing and point-to-point wire bundling with nylon cable ties. Install using tool supplied by manufacturer as required.

I. Wire lubricating compound

1. UL listed for the wire insulation and conduit type, and shall not harden or become adhesive.
2. Shall not be used on wire for isolated type electrical power systems.

J. Bolt termination hardware

1. Bolts shall be plated, medium carbon steel heat-treated, quenched and tempered equal to ASTM A-325 or SAE Grade 5; or silicon bronze alloy ASTM B-9954 Type B.
2. Nuts shall be heavy semi-finished hexagon, conforming to ANSI B18.2.2, threads to be unified coarse series (UNC), class 2B steel or silicon bronze alloy.
3. Flat washers shall be steel or silicon bronze, Type A plain standard wide series, conforming to ANSI B27.2. SAE or narrow series shall be used.
4. Belleville conical spring washers shall be hardened steel, cadmium plated or silicon bronze.
5. Each bolt connecting lug(s) to a terminal or bus shall not carry current exceeding the following values:
   a. 1/4” bolt – 125 A
   b. 5/16” bolt – 175 A
   c. 3/8” bolt – 225 A
   d. 1/2” bolt – 300 A
   e. 5/8” bolt – 375 A
   f. 3/4” bolt – 450 A

PART 3 - EXECUTION

3.01 EXAMINATION

A. A. Thoroughly examine site conditions for acceptance of wire and cable installation to verify conformance with manufacturer and specification tolerances. Do not commence with work until all conditions are made satisfactory.

3.02 INSTALLATION

A. All wire, conductor, and cable with their respective connectors, fittings and supports shall be UL listed for the installed application and ambient conditions.

B. Feeders and branch circuits in wet locations shall be rated 75°C minimum.

C. Feeders and branch circuits in dry locations shall be rated 90°C minimum.

D. Minimum conductor size

1. #12 AWG copper for all power and lighting branch circuits.

2. #14 AWG copper for all line voltage signal and control wiring, unless otherwise indicated.

E. Remove and replace conductors under the following conditions at no additional costs to the City:

1. Installed within wrong specified conduit or raceway.

2. Damaged during installation.

3. Of insufficient length to facilitate proper splice of conductors

3.03 WIRING METHODS

A. Install wires and cable in accordance with manufacturer's written instructions, as shown on Drawings and as specified herein.

B. Install all single conductors within raceway system, unless otherwise indicated.

C. Parallel circuit conductors and terminations shall be equal in length and identical in all aspects.

D. Provide adequate length of conductors within electrical enclosures and neatly train to termination points with no excess. Terminate such that there is no bare conductor at the terminal.

E. Splice cables and wires only in junction boxes, outlet boxes, pull boxes, manholes or handholes.

F. Group and bundle with tie wrap each neutral with it's associated phase conductors where more than one neutral conductor is present within a conduit.

G. Install cable supports for all vertical feeders in accordance with NEC Article 300. Provide split wedge type fittings, which firmly clamp each individual cable and tighten due to cable weight.

H. Seal cable where exiting a conduit from an exterior underground raceway with a non-hardening compound (i.e., duct seal or equal).

I. Provide UL listed factory fabricated, solder-less metal connectors of size, ampacity rating, material, type and class for applications and for services indicated. Use connectors with temperature ratings equal or greater than the conductor or cable being terminated.

J. Stranded wire shall be terminated using fittings, lugs or devices listed for the application. Under no circumstances shall stranded wire be terminated solely by wrapping it around a screw or bolt.

K. Flexible cords and cables supplied as part of a pre-manufactured assembly shall be installed according to manufacturer's published instructions.

3.04 WIRING INSTALLATION IN RACEWAYS

A. Install wire in raceway after interior of building has been physically protected from weather, and all mechanical work likely to injure conductors has been completed.

B. Pull all conductors into raceway at the same time.

C. Use UL listed, non-petroleum base and insulating type pulling compound as needed.

D. Completely mandrel all underground or concrete encased conduits prior to installation.

E. Completely and thoroughly swab raceway system prior to installation

F. Do not use block and tackle, power driven winch or other mechanical means for pulling conductors smaller than #1 AWG.

G. Wire pulling

1. Provide installation equipment that will prevent cutting or abrasion of insulation during installation.
2. Maximum pull tension shall not exceed manufacturer's recommended value during installation for cable being measured with tension dynometer.
3. Use rope made of non-metallic material for pulling.
4. Attach pulling lines by means of either woven basket grips or pulling eyes attached directly to the conductors.
5. Pull multiple conductors simultaneously within same conduit.

3.05 WIRE SPLICES, JOINTS AND TERMINATIONS

A. Join and terminate wire, conductors and cables in accordance with UL 486, NEC and manufacturer's instructions.

B. Thoroughly clean wires before installing lugs and connectors.

C. Make splices, taps and terminations to carry full conductor ampacity without perceptible temperature rise, and shall be made mechanically and electrically secure.

D. Terminate wires in terminal cabinets using terminal strips, unless otherwise indicated.

E. Insulate spare conductors with electrical tape and leave sufficient length to terminate anywhere within panel or cabinet.

F. Encapsulate splices in wet locations using specified insulating resin kits.

G. Make up all splices and taps in accessible junction or outlet boxes with connectors as specified herein. Pigtails and taps shall be the same color as feed conductor with at least 6 inches of tail, all neatly packed within box.

H. Where conductors are to be connected to metallic surfaces, coated surfaces shall be cleaned to base metal surface before installing connector. Remove lacquer coating of conduits where ground clamps are to be installed.

I. Branch circuits (#10 AWG and smaller) connectors shall comply with 2.01.D.2 and 2.01.D.2 above.

J. Branch circuits (#8 AWG and larger)

1. Join or tap conductors using insulated mechanical compression taps with pre-molded, snap-on insulating boots or specified conformable insulating pad and over-wrapped with two half-lapped layers of vinyl insulating tape starting and ending at the middle of joint.
2. Terminate conductors using mechanical compression lugs in accordance with manufacturer's recommendation or as specified elsewhere.
3. Field installed compression connectors for 250 MCM and larger shall have not less than two clamping elements or compression indents per wire.
4. Insulate splices and joints with materials approved for the particular use, location, voltage and temperature.

K. Termination hardware assemblies

1. Al/Cu lugs connected to aluminum plated or copper bus shall be secured with steel bolt, flat washer (two per bolt), Belleville washer and nut.
2. Copper lugs connected to copper buss shall bus shall be secured using silicon bronze alloy bolt, flat washer (two per bolt), Belleville washer and nut.
3. The crown of Belleville washers shall be under the nut.
4. Bolt assemblies shall be torque to manufacturer's recommendations. Where manufacturer recommendation is not obtainable, the following shall be used:
   a. 1/4" -20 bolt at 80 inch-pound torque
   b. 5/16" -18 bolt at 180 inch-pound torque
   c. 3/8" -20 bolt at 20 inch-pound torque
   d. 1/2" -20 bolt at 40 inch-pound torque
   e. 5/8" -20 bolt at 55 inch-pound torque
   f. 3/4" -20 bolt at 158 inch-pound torque

3.06 IDENTIFICATION

A. Securely tag all branch circuits. Mark conductors with specified vinyl wrap-around markers. Where more than two conductors run through a single outlet, mark each conductor with the corresponding circuit number.

B. Provide all terminal strips with each individual terminal identified using specified vinyl markers.

C. In manholes, pullboxes and handholes provide tags of embossed brass type with cable type and voltage rating. Attach tags to cable with slip-free plastic cable lacing units.

D. Color coding

1. For 120/208 Volt (or 120/240 Volt), 1 phase, 3 wire systems:
   a. Phase A – Black
   b. Phase B – Red
   c. Neutral – White

d. Ground – Green

2. For 120/208 Volt, 3 phase, 4 wire systems:
   a. Phase A – Black
   b. Phase B – Red
   c. Phase C – Blue
   d. Neutral – White
   e. Ground – Green
3. For 277/480 Volt, 3 phase, 4 wire systems:
   a. Phase A – Brown
   b. Phase B – Orange
   c. Phase C – Yellow
   d. Neutral – Gray
   e. Ground – Green
4. Switch leg individually installed shall be the same color as the branch circuit to which they originate, unless otherwise indicated.
5. Travelers for 3-way and 4-way switches shall be a distinct color and pulled with the circuit switch leg or neutral.

3.07 FIELD QUALITY CONTROL

A. Supply labor, materials and test equipment required to perform continuity and ground tests.

B. Electrical testing
   1. Perform feeder and branch circuit insulation test after installation and prior to connection to device.
   2. Tests shall be performed by 600 Vdc megger for a continuous 10 seconds from phase-to-phase and phase-to-ground.
   3. Torque test conductor connections and terminations for conformance to Specifications.
   4. If any failure is detected, locate failure, determine cause and replace or repair cable to Engineer’s satisfaction at no additional costs.
   5. Furnish test results in type written report form for review by Engineer.

END OF SECTION

SECTION 16130

RACEWAYS AND BOXES

PART 1 - GENERAL

1.01 SUMMARY

A. Section includes

1. Provide all labor, materials and equipment necessary to complete the installation required for the items specified under this Section, including but not limited to electrical conduits; outlet, junction and pull boxes; and related supports.

B. Related sections

1. Where items specified in other Division 16 sections conflict with the requirements of this Section, the most stringent requirement shall govern.
    a. 16060 – Grounding and Bonding for Electrical Systems
2. The requirements of this Section apply to all Division 16 work, as applicable.
3. Consult all other sections, determine the extent and character of related work and properly coordinate work specified herein with that specified elsewhere to produce a complete installation.

1.02 REFERENCES

A. Comply with the latest edition of the following applicable specifications and standards except as otherwise shown or specified:

1. ANSI –American National Standards Institute
    a. C33.91; Specification for Rigid PVC Conduit
    b. C80.1; Specification Rigid Steel Conduit, Zinc-Coated
    c. C80.3; Specification for Electrical Metallic Tubing, Zinc-Coated
    d. C80.6; Intermediate Metal Conduit (IMC), Zinc-Coated
2. CCR –California Code of Regulations, Title 24
    a. Part 2 -California Building Code (CBC); ICBO Uniform Building Code (UBC) with California amendments
    b. Part 3 -California Electrical Code(CEC); NFPA 70 National Electrical Code (NEC) with California amendments
3. NECA –National Electrical Contractors Association
    a. 101, Standard for Installing Steel Conduit (Rigid, IMC, EMT)
    b. 111, Standard for Installing Nonmetallic Raceways (RNC, ENT, LFNC) (ANSI)

4. NEMA –National Electrical Manufacturer's Association
    a. FB 1; Fittings, Cast Metal Boxes, and Conduit Bodies for Conduit, Electrical Metallic Tubing, and Cable
    b. FB 2.10; Selection and Installation Guidelines for Fittings for Use with Non-flexible Electrical Metal Conduit or Tubing (Rigid Metal Conduit, Intermediate Metal Conduit, and Electrical Metallic Tubing)
    c. FB 2.20; Selection and Installation Guidelines For Fittings for Use With Flexible Electrical Conduit and Cable
    d. OS 1; Sheet-Steel Outlet Boxes, Device Boxes, Covers, and Box Supports
    e. OS 3; Selection and Installation Guidelines for Electrical Outlet Boxes
    f. RN 1; Polyvinyl-Choride Externally Coated Galvanized Rigid Steel Conduit and Electrical Metallic Tubing
    g. TC 2; Electrical Plastic Tubing and Conduit
    h. TC 3; PVC Fittings for Use with Rigid PVC Conduit and Tubing
    i. TC 14; Reinforced Thermosetting Resin Conduit (RTRC) and Fittings
5. OSHPD Anchorage Pre-approvals
    a. OPA-0003; Superstrut Seismic Restraint System
    b. OPA-0114; B-Line Seismic Restraints
    c. OPA-0120; Unistrut Seismic Bracing System
    d. OPA-0242; Power-Strut Seismic Bracing System
6. UL –Underwriter's Laboratories, Inc.
    a. 1; Standard for Flexible Metal Conduit
    b. 6; Rigid Metal Electrical Conduit
    c. 360; Standard for Liquid-Tight Flexible Steel Conduit
    d. 514A; Metallic Outlet Boxes, Electrical
    e. 514B; Fittings for Conduit and Outlet Boxes
    f. 651; Schedule 40 & 80 PVC Conduit
    g. 797; Electrical Metallic Tubing
    h. 1242; Intermediate Metal Conduit
    i. 1684; Reinforced Thermosetting Resin Conduit (RTRC) and Fittings

1.03 SYSTEM DESCRIPTION

A. Furnish, assemble, erect, install, connect and test all electrical conduits and related raceway apparatus required and specified to form a complete installation.

1.04 SUBMITTALS

A. Submit manufacturer's data for materials specified within this Section in accordance to Section 16050.

1.05 QUALITY ASSURANCE

A. All materials, equipment and parts comprising the materials specified herein shall be new and unused, bearing UL labels where applicable.

B. Installation shall conform to the NECA installation guidelines unless otherwise indicated within this Section.

PART 2 – PRODUCTS

2.01 MATERIALS

A. Conduits and Fittings

1. Rigid steel conduit (RMC)

a. Conduit: Standard weight, mild steel pipe, and zinc coated on both inside and outside by a hot dipping or shearardizing process manufactured in accordance with UL 6 and ANSI C80.1 specifications.

b. Fittings (couplings, elbows, bends, etc.)

1) Shall be steel or malleable iron.

2) Coupling and unions shall be threaded type, assembled with anti-corrosion, conductive and anti-seize compound at joints made absolutely tight to exclude water.

c. Bushings

1) Insulating bushings: Threaded polypropylene or thermosetting phenolic rated at 150°C minimum.

2) Insulating grounding bushing: Threaded cast body with insulating throat and steel “lay-in” ground lug.

3) Insulating metallic bushing: Threaded cast body with plastic insulated throat rated at 150°C minimum.

2. Coated rigid steel conduit (CRMC)

a. Conduit: Equivalent to RMC with a Polyvinyl chloride (PVC) coated bonded to the galvanized outer surface of the conduit. The bonding between the PVC coating and conduit surface shall be ETL PVC-001 compliant. The coating thickness shall be a minimum of 40mil.

b. Fittings (couplings, elbows, bends, etc.)

1) Equivalent to RMC above with bonded coating same as conduit.

2) The PVC sleeve over fittings shall extend beyond hub or coupling approximately one diameter or 1 1/2” whichever is smaller.

c. Bushing equivalent to RMC above.

3. Rigid non-metallic conduit (PVC40 or PVC80)

a. Conduit: PVC composed Schedule 40 or 80 as noted , 90°C manufactured in accordance with NEMA TC 2 and UL 651 specifications.

b. Fittings: Molded PVC, slip on solvent welded type in accordance to NEMA TC 3.

4. Flexible metallic conduit (FMC)

a. Conduit: Continuous, flexible steel spirally wound with zinc coating on both inside and outside in accordance with UL 1.

b. Connectors: Steel or malleable iron with compression type fastener via a nut with plastic insulated throat rated at 150°C minimum.

5. Liquidtight flexible metallic conduit (LFMC)

a. Conduit: PVC coated, continuous, flexible steel spirally wound with zinc coating on both inside and outside in accordance with UL 360.

b. Connectors: Steel or malleable iron with compression type fastener via a nut with plastic insulated throat rated at 150°C minimum.

6. Miscellaneous Fittings and Products

a. Conduit sealing bushings: Steel or cast malleable iron body and pressure clamps with PVC sleeve, neoprene sealing grommets and PVC coated steel pressure rings. Supplied with neoprene sealing rings between body and PVC sleeve.

b. Watertight cable terminators: One piece, compression molded sealing ring with PVC coated steel pressure disks, stainless steel screws and zinc plated cast iron locking collar.

c. Watertight cable/cord connectors: Liquidtight steel or cast malleable iron body with sealing neoprene bushing and stainless steel retaining ring.

d. Expansion fittings: Multi-piece unit of hot dip galvanized malleable iron or steel body and outside pressure bussing design to allow a maximum of 4” movement (2” in either direction). Furnish with external braid tinned copper bonding jumper. UL listed for both wet and dry locations.

e. Expansion/deflection couplings: Multi-piece unit comprised of a neoprene sleeve, internal flexible tinned copper braid attached to bronze end couplings with stainless steel bands. Coupling to provide minimum of 3/4” movement and 30 degrees deflection from normal. UL listed for both wet and dry locations.

f. Conduit bodies: Raintight, malleable iron, hot-dip galvanized body with threaded hubs, stamped steel cover, stainless steel screws and neoprene gasket.

g. Other couplings, connectors and fittings shall be equal in quality, material and construction to items specified herein.

B. Boxes

1. Outlet boxes

a. Standard: Galvanized one-piece of welded pressed steel type in accordance with NEMA OS 1 and UL 514. Boxes shall not be less than 4” square and at least 1 1/2” deep.

b. Concrete: Galvanized steel, 4” octagon ring with mounting lug, backplate and adapter ring type in accordance with NEMA OS 1 and UL 514. Depth as required by application.

c. Masonry: Galvanized steel, 3.75” high gang box in accordance with NEMA OS 1 and UL 514.

d. Surface cast metal: Cast malleable iron body, surface mounted box with threaded hubs and mounting lugs as required in accordance with NEMA OS 1 and UL 514. Furnish with ground flange, steel cover and neoprene gasket.

2. Pull and junction boxes

a. Sheet metal boxes: Standard or concrete outlet box wherever possible; otherwise use 16 gauge galvanized sheet metal, NEMA 1 box sized per CEC with machine screwed cover.

b. Cast metal boxes: Install standard cast malleable iron outlet or device box when possible.

c. Flush mounted boxes: Install overlapping cover with flush head screws.

d. In-ground mounted pull holes/boxes: Install pre-cast concrete box, sized per Drawing or CEC with pre-cast or traffic rated lid.

3. Floor boxes

a. Floor boxes shall be adjustable, cast metal body with threaded conduit openings, adjustable rings, brass flange or Lexan ring and cover plate with threaded plug. Include provisions to accommodate surface mounted telephone or receptacle outlet, or flush floor mounted telephone or receptacle outlet where shown on Drawings.

C. Pull line/cord

1. Polypropylene braided line or Let-line #232 or equal of 1/8” diameter with a minimum break strength of 200 pounds.

PART 3 — EXECUTION

3.01 EXAMINATION

A. Thoroughly examine site conditions for acceptance of wire and cable installation to verify conformance with manufacturer and specification tolerances. Do not commence with work until all conditions are made satisfactory.

3.02 PREPARATION

A. Conduit

1. Provide all necessary conduit fittings, connectors, bushings, etc. required to complete conduit installation to meet the CEC/NEC and intended application whether noted, shown or specified within.

2. Location of conduit runs shall be planned in advance of the installation and coordinated with other trades.

3. Where practical, install conduits in groups in parallel vertical or horizontal runs that avoid unnecessary offsets.
4. All conduits shall be parallel or at right angles to columns, beams and walls whether exposed or concealed.
5. Conduits shall not be placed closer than 12” to a flue, parallel to hot water, steam line or other heat sources; or 3” when crossing perpendicular to the above said lines when possible.
6. Install exposed conduit as high as practical to maintain adequate headroom. Notify Engineer if headroom will be less than 102”.
7. Do not obstruct spaces required by Code in front of electrical equipment, access doors, etc.
8. The largest trade size conduit in concrete floors and walls shall not exceed 1/3 thickness or be spaced a less than three conduit diameters apart unless permitted by Engineer. All conduits shall be installed in the center of slab or wall, and never between reinforcing steel and bottom of floor slab.
9. Install additional pull boxes, not shown on Drawings, in sufficient quantities to facilitate pulling of conductors and cables such that total spacing does not exceed 150 feet or 270 degrees, total; and maximum pulling tension will not be exceeded.
10. When installing underground conduits to specified depth; depth shall be taken from finished grade as it will be at project completion. Should finish grade be above existing grade by an amount equal to or greater than specified depth, conduit shall be installed not less than 6” below existing grade.
11. Verify that information concerning finish grade is accurate, for should the underground run be less than the specified depth, Contractor may be required to re-install conduit to meet the required depth.
12. Unless otherwise specified, underground conduits shall be installed with top side not less than 24” below finished grade; this depth applies to all conduits outside of building foundations including those under walks, open corridors or paved areas.
13. Utility company service conduits installation depth shall be as directed by their respective specifications and requirements.

B. Boxes

1. Before locating outlet boxes, check Construction Documents for type of construction and make sure that there is no conflict with other equipment. Locate outlet boxes as shown and locate so as not to interfere with other Work or equipment.
2. Install all outlet boxes flush within walls, ceiling and floors except where installed within non-finished rooms, cabinetry, attic spaces or as indicated on Drawings.
3. Locate pull boxes and junction boxes within concealed, accessible locations where possible.
4. Do not install outlet boxes back-to-back with same stud space. Where shown back-to-back, offset as required, and fill void with sound dampening material where requested by the City.

5. In fire rated walls separate boxes by 24” minimum and with stud member.
6. Adjust position of outlet boxes within masonry wall to accommodate course lines.

3.03 INSTALLATION

A. Conduit

1. Minimum conduit size shall be 3/4” unless otherwise indicated.
2. All conduit work shall be concealed unless otherwise indicated. Exposed conduits shall be permitted within unfinished rooms/spaces to facilitate installation.
3. Install conduit in complete runs prior to installing conductors or cables.
4. Make long radius conduits bends free from kink, indentations or flattened surfaces. Make bends carefully to avoid injury or flattening. Bends 1 1/4” size and larger shall be factory made ells, or be made with a manufactured mechanical bender. Heating of steel conduit to facilitate bending or that damage galvanized coating will not be permitted.
5. Remove burrs and sharp edges at end of conduit with tapered reamer.
6. Protect and cover conduits during construction with metallic bushings and bushing “pennies” to seal exposed openings.
7. Assemble conduit threads with anti-corrosion, conductive, anti-seize compound and tighten securely.
8. Install conduits shall that no traps to collect condensation exist.
9. Fasten conduit securely to boxes with locknuts and bushings to provide good grounding continuity.
10. Install pull cords/line within any spare or unused conduits of sufficient length to facilitate future cable installation.
11. Penetrations
    a. Locate penetrations within structural members as shown on Drawings and as directed by Architect or Engineer. Should it be necessary to notch any framing member, make such notching only at locations and in a manner as approved by Engineer.
    b. Do not chase concrete or masonry to install conduit unless specifically approved by Engineer.
    c. Cutting or holes
        1) Install sleeves for cast-in-place concrete floors and walls. After installing conduit through penetration, seal using dry-pack grouting compound (non-iron bearing, chloride free and non-shrinking) or fire rated assembly if rated floor or wall. Use escutcheon plate on floor underside to contain compound as necessary.
        2) Cut holes with a hole saw for penetrations through non-concrete or non-masonry members.
        3) Provide chrome plated escutcheon plates at all publicly exposed wall, ceiling and floor penetrations.

d. Sealing

1) Non-rated penetration openings shall be packed with non-flammable insulating material and sealed with gypsum wallboard taping compound.

2) Fire rated penetration shall be sealed using a UL classified fire stop assembly suitable to maintain the equivalent fire rating prior to the penetration.

3) Use escutcheon plates to hold sealing or fire rated compound as necessary.

e. Waterproofing

1) Make penetrations through any damp-proofed/waterproofed surfaces within damp/wet locations as such as to maintain integrity of surface.

2) Install specified watertight conduit entrance seals at all below grade wall and floor penetrations.

3) At roof penetrations furnish roof flashing, counter flashing and pitch-pockets compatible to roof assembly.

4) Where possible conduits that horizontally penetrate a waterproof membrane shall fall away from and below the penetration's exterior side.

5) Make penetrations through floors watertight with mastic, even when concealed within walls or furred spaces.

12. Supports

a. Conduits shall be support and braced per OSHPD pre-approved anchorage systems when those methods are implemented and installed.

b. Sizes of rods and cross channels shall be capable of supporting 4 times and 5 times actual load, respectively. Anchorage shall support the combined weight of conduit, hanger and conductors.

c. Support individual horizontal conduit 1 1/2" and smaller by means of 2 hole straps or individual hangers.

d. Galvanized iron hanger rods sizes 1/4" diameter and larger with spring steel fasteners, clips or clamps specifically design for that purpose for 1 1/2" conduits and larger.

e. Support multi-parallel horizontal conduits runs with trapeze type hangers consisting of 2 or more steel hanger rods, preformed cross channels, 'J' bolts, clamps, etc.

f. Support conduit to wood structures by means of bolts or lag screws in shear, to concrete by means of insert or expansion bolts and to brickwork by means of expansion bolts.

g. Support multi-parallel vertical conduits runs with galvanized Unistrut, Power-Strut or approved equal type supports anchored to wall. Where multi-floored conduits pass through floors, install riser clamps at each floor.

h. Maximum conduit support spacing shall be in accordance with NECA Standard of Installation:

1) Horizontal runs:

a) 3/4” and smaller at 60” on centers, unless building construction prohibits otherwise, then 84” on centers.

b) 1” and larger at 72” on centers, unless building construction prohibits otherwise or any other condition, then 120” on centers.

2) Vertical runs:

a) 3/4” and smaller @ 84” on centers.

b) 1” and 1 1/4” @ 96” on centers.

c) 1 1/2” and larger @ 120” on centers.

d) Any vertical condition such as shaftways and concealed locations for any sized conduit, 120” on centers.

i. Anchorage for RMC/IMC supports unless otherwise specified:

1) < 1” IMC/RMC = #10 bolt/screw.

2) 1” IMC/RMC = 1/4” bolt/screw.

3) 1 1/2” and 2” IMC/RMC = 3/8” bolt/screw.

4) 3” IMC/RMC, 4” EMT = 1/2” bolt/screw.

5) > 3”IMC/RMC = 5/8” bolt/screw.

j. Anchorage for EMT supports unless otherwise specified:

1) < 1 1/2” EMT = #10 bolt/screw.

2) 1 1/2” EMT = 1/4” bolt/screw.

3) 2, 2 1/2” and 3” EMT = 3/8” bolt/screw.

4) 4” EMT = 1/2” bolt/screw.

5) > 4”EMT = 5/8” bolt/screw.

B. Boxes

1. Install boxes as shown on Drawings and as required for splices, taps, wire pulling, equipment connections and Code compliance.
2. Install additional pull boxes, not shown on Drawings, in sufficient quantities to facilitate pulling of conductors and cables such that total spacing does not exceed 150 feet or 270 degrees, total; and maximum pulling tension will not be exceeded.
3. Install plaster rings on all outlet boxes in stud walls or in furred, suspended or exposed ceilings. Covers shall be of a depth suited for installation.
4. Provide gasketed cast metal cover plates where boxes are exposed in damp or wet locations
5. Install access door for boxes installed within concealed locations without access.
6. Install approved factory made knockout seal where knockouts are not present.
7. Refer to Architectural interior elevations and details shown for exact mounting heights of all electrical outlets. In general, locate outlets as shown or specific and complies with Americans with Disabilities Act:

a. Convenience outlets: +18”AFF or +6” above counter or splash.

b. Local switches: +48”AFF or +6” above counter or splash.

c. Telecommunication outlets: +18”AFF or +48”AFF for wall telephone or intercom device.

d. Verify all mounting heights with Architectural Drawings, and where heights are not suited for construction or finish please consult Engineer or Architect.

8. Use conduit bodies to facilitate pulling of conductor or cables or change conduit direction. Do not splice within conduit bodies.
9. Enclose pull box with additional rated gypsum board as necessary to maintain wall’s original fire rating.
10. Install galvanized steel coverplates on all open boxes within dry listed areas.
11. Install in-ground pull holes/boxes flush to grade finish at finished areas or 1” above finished landscaped grade. Seal all conduits terminating in pull hole/box watertight. Install and grout around bell ends where shown. Cover and lids shall be removable without damage to adjacent finish surfaces.
12. Support

a. Accurately place boxes for finish, independently and securely supported by adequate blocking or manufacturer channel type heavy-duty box hangers for stud walls. Do not use nails to support boxes.

b. Support boxes independent of conduit system.

c. Mount boxes installed within ceilings to 16 gauge metal channel bars attached to main runners or joists.

d. Support boxes within suspended acoustical tile ceilings directly from structure above when light fixture are to be installed from box.

e. Use auxiliary plates, bar or clips and grouted in place for masonry, block or pour-in-place concrete construction.

3.04 APPLICATION

A. Conduit

1. RMC suitable for all damp, dry and wet locations except when in contact with earth.
2. CRMC suitable for corrosive, damp, or wet locations; concealed within concrete, in contact with earth or exposed applications.
3. PVC suitable for beneath ground floor slab, except when penetrating, and direct earth burial. Do not run exposed within concrete walls or in floor slab unless indicated on Drawings or per Engineer’s permission.
4. FMC suitable for dry locations only for connections to motors, transformers, vibrating equipment/machinery, controllers, valves, switches and light fixtures in less than 6 foot lengths.
5. LFMC application same as FMC above but for damp or wet locations.

B. Termination and joints

1. Use raceway fittings compatible with associated raceway and suitable for the location.
2. Raceways shall be joined using specified couplings or transitions where dissimilar raceway systems are joined.
3. Conduits shall be securely fastened to cabinets, boxes and gutters using (2) two locknuts and insulating bushing or specified insulated connector. Where joints cannot be made tight and terminations are subject to vibration, use bonding jumpers, bonding bushings or wedges to provide electrical continuity of the raceway system. Use insulating bushings to protect conductors where subjected to vibration or dampness. Install grounding bushings or bonding jumpers on all conduits terminating at concentric or eccentric knockouts.
4. Terminations exposed at weatherproof enclosures and cast outlet boxes shall be made watertight using specified connectors and hubs.
5. Stub freestanding equipment conduits through concrete floors for connections with top of coupling set flush with finished floor. Install plugs to protect threads and entrance of debris.
6. Install specified cable sealing bushings on all conduits originating outside the building walls and terminating within interior switchboard, panel, cabinet or gutters. Install cable sealing bushings or raceway seal for conduit terminations in all grade level or below grade exterior pull, junction or outlet boxes.
7. Where conduits enter building from below grade inject into filled raceways pre-formulated rigid 2 lbs. density polyurethane foam suitable for sealing against water, moisture, insects and rodents.
8. Install expansion fitting or expansion/deflection couplings per manufacturer's recommendations where:
    a. Any conduit that crosses a building structure expansion joint; secure conduit on both sides to building structure and install expansion fitting at joint.
    b. Any conduit that crosses a concrete expansion joint; install expansion/deflection at joint.
    c. Any conduit greater than 1-1/4" is routed along roof top in runs greater than 100 feet; install expansion fittings every 100 feet.
    d. Engineer may allow FMC or LFMC in lieu of expansion fitting or expansion/deflection couplings on conduits 2" and smaller within accessible locations upon further review and written consent.

C. Boxes

1. Standard type suitable for all flush installations and all dry concealed locations.
2. Concrete type suitable for all flush concrete installations.
3. Masonry type suitable for all flush concrete and block installations.
4. Surface cast meta type suitable for all exposed damp and wet surface mounted locations, and dry surface mounted locations less than 96" from finished floor

END OF SECTION

SECTION 16140

WIRING DEVICES

PART 1 - GENERAL

1.01 SUMMARY

A. Section includes

1. Provide all labor, materials and equipment necessary to complete the installation required for the items specified under this Section, including but not limited to wiring devices.

B. Related sections

1. Where items specified in other Division 16 sections conflict with the requirements of this Section, the most stringent requirement shall govern.
    a. 16060 – Grounding and Bonding for Electrical Systems
2. The requirements of this Section apply to all Division 16 work, as applicable.
3. Consult all other sections, determine the extent and character of related work and properly coordinate work specified herein with that specified elsewhere to produce a complete installation.

1.02 REFERENCES

A. Comply with the latest edition of the following applicable specifications and standards except as otherwise shown or specified:

1. Federal Specification
    a. W-C-596; Connector, Electrical, Power, General Specification for
    b. W-S-896; Switches, Toggle (Toggle and Lock), Flush Mounted (General Specification)
2. NEMA –National Electrical Manufacturer’s Association
    a. WD 1; General Color Requirements for Wiring Devices
    b. WD 6; Wiring Devices-Dimensional Requirements
3. UL -Underwriters Laboratories, Inc.
    a. 20; General-Use Snap Switches
    b. 498; Standard for Attachment Plugs and Receptacles
    c. 943; Standard for Ground-Fault Circuit-Interrupters
    d. 1449; Standard for Transient Voltage Surge Suppressors

1.03 SUBMITTALS

A. Submit manufacturer’s data for materials specified within this Section in accordance to Section 16050.

1.04 QUALITY ASSURANCE

A. All materials, equipment and parts comprising the materials specified herein shall be new and unused, bearing UL labels where applicable.

PART 2 - PRODUCTS

2.01 SWITCHES

A. Wall switches
   1. Specification grade, quiet, AC rated, mechanical, snap type with silver alloy contacts, and shall comply with NEMA WD-1 and Fed. Spec W-S-896.
   2. Rating shall be 20A at 120/277Vac, unless otherwise shown.
   3. Handles shall be nylon; color shall be compatible with adjacent wall finish.
   4. Manufacturers and types
      a. Single pole, single throw
         1) Cooper Wiring Devices #CSB120, Hubbell #CSB120, or equal.
      b. Double pole, single throw
         1) Cooper Wiring Devices #CSB220, Hubbell #CSB220, or equal.
      c. Three way
         1) Cooper Wiring Devices #CSB320, Hubbell #CSB320, or equal.

2.02 RECEPTACLES

A. Standards
   1. Specification grade, NEMA 5-15R configuration grounding type, rated 15A at 125/250Vac that conform to NEMA WD-6 and Fed. Spec W-C-596.
   2. At dedicated receptacle locations and as otherwise noted, use specification grade, NEMA 5-20R configuration grounding type, rated 20A at 125/250Vac that conform to NEMA WD-6 and when possible Fed. Spec W-C-596.
   3. Specialty receptacles shall conform to NEMA WD-6 and UL standards as applicable.

B. Color
   1. General purpose receptacle face shall be nylon; color shall be compatible with adjacent wall finish, unless otherwise indicated.

C. Receptacle types
   1. General purpose single
      a. Provide self-grounding back and side wired with binding head staked terminal screw.
      b. Use Cooper Wiring Devices #5261, Hubbell #5261, or equal for NEMA 5-15R.

c. Use Cooper Wiring Devices #5361, Hubbell #5361, or equal for NEMA 5-20R.

2. General purpose duplex
   a. Provide self-grounding back and side wired with binding head staked terminal screws and break-off strip for two circuit wiring.
   b. Use Cooper Wiring Devices #5262, Hubbell #5262, or equal for NEMA 5-15R.
   c. Use Cooper Wiring Devices #5362, Hubbell #5362, or equal for NEMA 5-20R.
3. Transient voltage surge suppressor (TVSS) duplex
   a. Provide 20A, 125Vac receptacle consisting of NEMA 5-20R duplex device with integral TVSS protection circuit.
   b. Provide LED indicator to verify surge protection and ground, and audible alarm to notify bad ground connection or surge protection expiration.
   c. TVSS characteristics:
      1) 400V clamping voltage.
      2) 280J energy rating.
      3) 150Vac RMS MOV rating
      4) 18kA maximum surge current in all modes (L-N, L-G and N-G)
   d. Use Cooper Wiring Devices #5362_S, no known equal.
4. Isolated ground
   a. Provide receptacle specified within this Section with equipment grounding contacts connected only to the green grounding screw terminal of the device and with inherent electrical isolation from mounting strap.
5. Ground fault circuit interrupter (GFCI) duplex
   a. Provide 20A, 125Vac receptacle consisting of NEMA 5-20R duplex device with integral solid state sensing and signaling circuitry capable of detecting and interrupting a maximum 5mA line-to-ground fault current in approximately 1/40th of a second per UL 943.
   b. Provide visual device with trip indication, manual reset and test mechanisms per UL 943.
   c. Device shall be capable of point of use and multi-outlet protection.
   d. Use Cooper Wiring Devices #XGF20, Hubbell #GF53, or equal.
6. Special purpose
   a. Provide specification grade devices with NEMA configuration, voltage, ampacity, poles and ground provisions as noted on Drawings.

2.03 WALL PLATES

A. Interior locations

1. Finished Areas: 0.032” stainless steel, brushed or satin finish with required number of openings for location.
2. Exposed Areas: galvanized, raised type.

B. Exterior: die-cast copper-free aluminum, gasketed, raintight cover UL listed for exterior and wet locations while in use. Use Hubbell #WP8M (duplex), #WP26M (GFCI) or equal.

C. Screws shall match plate.

D. Tamper resistance receptacles shall have exposed screws of temper resistant type.

E. Individual, gangable wall plates are not acceptable where two or more devices are installed at one location.

PART 3 - EXECUTION

3.01 PREPARATION

A. Coordinate device heights with architectural drawings and details.

B. Locate switches on latch side of door, unless otherwise indicated.

3.02 INSTALLATION

A. Mount and align device and wall plates level and plumb. Insure wall plates fit flat against wall and tight against device without strain on plate.

B. Comply with manufacturer’s instructions regarding termination of conductors to wiring device.

C. Provide wall plates for all outlet boxes with devices.

D. Install blank wall plates on all outlet boxes in which no device is present or installed.

END OF SECTION

SECTION 16441

SWITCHBOARDS

PART 1 - GENERAL

1.01 SUMMARY

A. Section includes

1. Provide all labor, materials and equipment necessary to complete the installation required for the items specified under this Section, including but not limited to switchboards and large distribution panels.

B. Related sections

1. Where items specified in other Division 16 sections conflict with the requirements of this Section, the most stringent requirement shall govern.
    a. 16060 – Grounding and Bonding for Electrical Systems
    b. 16490 – Overcurrent Protection Devices
2. The requirements of this Section apply to all Division 16 work, as applicable.
3. Consult all other sections, determine the extent and character of related work and properly coordinate work specified herein with that specified elsewhere to produce a complete installation.

1.02 REFERENCES

A. Comply with the latest edition of the following applicable specifications and standards except as otherwise shown or specified:

1. ANSI - American National Standards Institute
    a. C12.16; Solid State Electricity Metering
    b. C57.13; Instrument Transformers
2. CCR –California Code of Regulations, Title 24
    a. Part 3 -California Electrical Code(CEC); NFPA 70 National Electrical Code (NEC) with California amendments
3. Federal Specification
    a. W-C-37; Circuit Breakers, Molded Case, Branch Circuit And Service
4. NECA –National Electrical Contractors Association
    a. 400, Recommended Practice for Installing and Maintaining Switchboards
5. NEMA –National Electrical Manufacturer’s Association
    a. AB 1; Molded Case Circuit Breakers and Molded Case Switches
    b. KS; Fused and Non-fused Switches
    c. PB 2; Deadfront Distribution Switchboards, File E8681

d. PB 2.1; Proper Handling, Installation, Operation and Maintenance of Deadfront Switchboards Rated 600 Volts or Less

e. PB 2.2; Application Guide for Ground Fault Protective Devices for Equipment

6. UL -Underwriters Laboratories, Inc.

a. UL 50; Cabinets and Boxes

b. UL 98; Enclosed and Dead Front Switches

c. UL 489; Molded Case Circuit Breakers

d. UL 891; Dead-Front Switchboards

e. UL 943; Ground Fault Circuit Interrupters

f. UL 977; Fused Power Circuit Devices

1.03 SUBMITTALS

A. Submit manufacturer's data for materials specified within this Section in accordance to Section 16050.

B. Shop Drawings shall indicate front and side enclosure elevations with overall dimensions shown; conduit entrance locations and requirements; nameplate legends; one-line diagrams; equipment schedule; and switchboard instrument details.

1.04 QUALITY ASSURANCE

A. All materials, equipment and parts comprising the materials specified herein shall be new and unused, bearing UL labels where applicable.

B. The manufacturing facility shall be registered by Underwriters Laboratories Inc. to the International Organization for Standardization ISO 9002 Series Standards for quality.

C. Installation shall conform to NECA 400-1998, Recommended Practice for Installing and Maintaining Switchboards unless otherwise specified.

1.05 DELIVERY, STORAGE AND HANDLING

A. Deliver, store, protect, and handle products in conformance with manufacturer's recommended practices as outlined in applicable Installation and Maintenance Manuals.

B. Each switchboard section shall be delivered in individual shipping splits for ease of handling. They shall be individually wrapped for protection and mounted on shipping skids.

C. Store in a clean, dry space. Maintain factory protection and/or provide an additional heavy canvas or heavy plastic cover to protect structure from dirt, water, construction debris, and traffic. Where applicable, provide adequate heating within enclosures to prevent condensation.

D. Handle in accordance with NEMA PB 2.1 and manufacturer's written instructions. Lift only by lifting means provided for this express purpose. Handle carefully to avoid damage to switchboard internal components, enclosure, and finish.

PART 2 – PRODUCTS

2.01 MANUFACTURERS

A. Square D, Cutler-Hammer, General Electric, or approved equal.

2.02 MATERIAL

A. General

1. Utility Metering Compartment: The utility current transformer compartment shall be connected for hot sequence metering. The compartment shall comply with EUSERC and/or the local utility company specifications.
2. Switchboards shall be rated with a minimum short circuit current rating at listed voltage as shown on Drawings.
3. All unused spaces provided, unless otherwise specified, shall be fully bussed and equipped for future devices, including all appropriate connectors and mounting hardware.
4. Enclosure shall be of NEMA type shown on Drawings.
5. Sections shall be aligned front and rear.
6. The switchboard(s) shall be of deadfront construction.
7. The switchboard frame shall be of formed steel rigidly bolted together to support all cover plates, bussing and component devices during shipment and installation.
8. Each switchboard section shall have an open bottom and an individually removable top plate for installation and termination of conduit.
9. The switchboard enclosure shall be painted on all exterior surfaces. The paint finish shall be a medium gray, ANSI #49, applied by the electro-deposition process over an iron phosphate pre-treatment.
10. All front covers shall be screw removable with a single tool and all doors shall be hinged with removable hinge pins.
11. Top and bottom conduit areas shall be clearly indicated on shop drawings.
12. Provide 1” high by 3” wide engraved laminated nameplates for each device. Furnish black letters on a white background for all voltages.
13. Bus composition shall be plated copper. Plating shall be applied continuously to all bus work. The switchboard bussing shall be of sufficient cross-sectional area to meet UL 891 temperature rise requirements. The phase and neutral through-bus shall have an ampacity as shown in the plans. For 4-wire systems, the neutral shall be of equivalent ampacity as the phase bus bar. Tapered bus is not acceptable. Full provisions for the addition of future sections shall be provided. Bussing shall include all necessary hardware to accommodate splicing for future additions.
14. Bus connections shall be bolted with Grade 5 bolts and conical spring washers.

15. Ground Bus shall be sized per CEC/NEC and UL 891 Tables 25.1 and 25.2 and shall extend the entire length of the switchboard. Provisions for the addition of future sections shall be provided.

B. Incoming main devices shall of circuit breaker type.

   a. Circuit breaker shall be of type, rating and poles shown on Drawings per Section 16490 – Overcurrent Protection Devices.

C. Distribution section devices shall of type and accessories as shown on Drawings.

   1. Group mounted or individually mounted as shown on Drawings.
   2. All distribution circuit breakers shall be thermal-magnetic molded case, unless otherwise noted on Drawings.
   3. Circuit breaker shall be of type, rating and poles shown on Drawings per Section 16490 – Overcurrent Protection Devices.

PART 3 – EXECUTION

3.01 EXAMINATION

A. Examine switchboard to provide adequate clearances for installation.

B. Check that concrete pads are level and free of irregularities.

C. Begin work only after unsatisfactory conditions are corrected.

3.02 INSTALLATION

A. Install switchboard in location shown on Drawings, in accordance with manufacturer's written instructions and NEMA PB 2.1. Anchor to resist seismic forces as inidicated on Drawings and in accordance with OSHPD's anchorage requirements. Provide all testing and inspections requirements by inspecting authority.

B. Installation shall conform to NECA 400 where not specified under this Division.

C. Tighten accessible bus connection and mechanical fasteners after placing switchboard.

3.03 FIELD QUALITY CONTROL

A. Obtain the services of an independent testing company who shall provide quality control and adjustments as well as tests.

B. Inspect complete installation for physical damage, proper alignment, anchorage and grounding prior to energizing.

C. Measure the insulation resistance of each bus section phase-to-phase and phase-to-ground for one minute each at 1000Vdc; acceptable insulation resistance is 1 megaohms. Also, refer to manufacturer's specifications for specific testing procedures and values.

D. Check tightness of accessible bolted bus joints using a calibrated torque wrench per manufacturer's specifications.

E. Physically test key interlock systems to check for proper functionality.

F. Test ground fault systems by push-to-test button.

G. Check and set where required all protective device settings in accordance with approved coordination study settings and conduct ground fault acceptance tests.

3.04 ADJUSTING

A. Adjust all operating mechanisms for free mechanical movement per manufacturer's specifications.

B. Tighten bolted bus connections in accordance with manufacturer's instructions.

C. Adjust circuit breaker trip and time delay settings to values indicated by Engineer.

D. Main circuit breaker ground fault setting shall be per CEC/NEC 230-95(a).

3.05 CLEANING

A. Touch up scratched or marred surfaces to match original finish

END OF SECTION

SECTION 16442

PANELBOARDS

PART 1 - GENERAL

1.01 SUMMARY

A. Section includes

1. Provide all labor, materials and equipment necessary to complete the installation required for the items specified under this Section, including but not limited to panelboards.

B. Related sections

1. Where items specified in other Division 16 sections conflict with the requirements of this Section, the most stringent requirement shall govern.
    a. 16060 – Grounding and Bonding for Electrical Systems
    b. 16490 – Overcurrent Protection Devices
2. The requirements of this Section apply to all Division 16 work, as applicable.
3. Consult all other sections, determine the extent and character of related work and properly coordinate work specified herein with that specified elsewhere to produce a complete installation.

1.02 REFERENCES

A. Comply with the latest edition of the following applicable specifications and standards except as otherwise shown or specified:

1. CCR – California Code of Regulations, Title 24
    a. Part 3 -California Electrical Code(CEC); NFPA 70 National Electrical Code (NEC) with California amendments
2. Federal Specification
    a. W-C-375; Circuit Breakers, Molded Case, Branch Circuit and Service
3. NECA –National Electrical Contractors Association
    a. 407, Recommended Practice for Installing and Maintaining Panelboards
4. NEMA –National Electrical Manufacturer’s Association
    a. AB 1; Molded Case Circuit Breakers
    b. PB 1; Panelboards
    c. PB 1.1; Instructions for Safe Installation, Operation and Maintenance of Panelboards Rated 600 Volts or Less
5. UL -Underwriters Laboratories, Inc.
    a. 50; Cabinets and Boxes
    b. 67; Panelboards

c. 98; Enclosed and Dead Front Switches

d. 489; Molded-Case Circuit Breakers and Circuit Breaker Enclosures

e. 891; Dead-Front Switchboards

f. 943; Ground Fault Circuit Interrupters

g. 977; Fused Power Circuit Devices50; Enclosures for Electrical Equipment

1.03 SUBMITTALS

A. Submit manufacturer's data for materials specified within this Section in accordance to Section 16050.

B. Submittal shall show the following information: circuit breaker numbering, circuit breaker type and short circuit rating, provisions for future circuit breakers, bussing, including neutral and ground, ratings and enclosure dimensions and trims.

1.04 QUALITY ASSURANCE

A. All materials, equipment and parts comprising the materials specified herein shall be new and unused, bearing UL labels where applicable.

1.05 DELIVERY, STORAGE AND HANDLING

A. Handle carefully to avoid damage to internal components, enclosure and finish.

B. Store in a clean, dry environment. Maintain factory packaging and, if required, provide an additional cover to protect enclosure in harsh environments.

PART 2 -– PRODUCTS

2.01 MANUFACTURERS

A. Square D, Cutler-Hammer, General Electric, or approved equal.

2.02 MATERIALS

A. Panelboards

1. Interior

a. Shall be factory-assembled with voltage, ampacity, and short circuit rating as shown in Drawings.

b. Provide 1 continuous copper bus bar per phase. Each bus bar shall have sequentially phase branch circuit connectors suitable for plug-on or bolt-on branch circuit breakers. The bussing shall be fully rated. Panelboard bus current rating shall be determined by heat-rise tests conducted in accordance with UL 67. Panelboards shall be suitable for use as Service Equipment when application requirements comply with UL 67 and CEC/NEC 230.F and 230.G.

c. All current-carrying parts shall be insulated from ground and phase-to-phase by high dielectric strength material.

d. Interior trim shall be of dead-front construction to shield user from energized parts. Dead-front trims shall have pre-formed twist-out covering unused mounting spaces.

e. Nameplates shall contain system information and catalog number or factory order number. Interior wiring diagram, neutral wiring diagram, UL Listed label and short circuit current rating shall be displayed on the interior.

f. Main and sub-feed circuit breakers shall be vertical mounted. Interior leveling provisions shall be provided for flush mounted applications.

2. Main Circuit Breaker

a. Circuit breaker shall be of type, rating and poles shown on Drawings per Section 16490 – Overcurrent Protection Devices.

3. Branch Circuit Breakers

a. Circuit breakers shall be of type, rating and poles shown on Drawings per Section 16490 – Overcurrent Protection Devices.

4. Enclosures

a. General

1) Boxes shall be galvanized steel constructed in accordance with UL 50 requirements. Galvanealed steel will not be acceptable.

2) Front shall meet strength and rigidity requirements per UL 50 standards. Front shall have ANSI 49 gray enamel electrodeposited over cleaned phosphatized steel.

3) All lock assemblies shall be keyed alike with 2 keys per lock provided.

4) A clear plastic directory cardholder shall be mounted on the inside of door.

5) Maximum enclosure dimensions shall not exceed 20 in wide and 6.5 in deep.

b. Type NEMA 3R, 5, and 12

1) All doors shall be gasketed and equipped with a tumbler type vault lock.

PART 3 - EXECUTION

3.01 INSTALLATION

A. Install in accordance with manufacturer’s written instructions and NEMA PB 1.1.

B. Installation shall conform to NECA 407 where not specified under this Division.

C. Anchor panelboards to structural members and as shown on Drawings. Provide additional support as required. Anchor freestanding distribution panels to concrete pad.

D. Mount panelboards level and plumb.

E. After installation, make all feeder connections to circuit breaker load side lugs and incoming secondary feeders.

3.02 FIELD QUALITY CONTROL

A. Inspect complete installation prior to energizing for physical damage, proper alignment, anchorage and grounding.

B. Check tightness of bolted connections and circuit breaker connections using a calibrated torque wrench or torque screwdriver per manufacturer's written specifications.

3.03 ADJUSTING

A. Measure steady state load line currents at each panelboard feeder; rearrange panelboard circuits to balance the phase loads with 20% of each other. Maintain proper phasing for multi-wire branch circuits.

B. Fill out panelboard circuit identification card, typewritten, with list of circuits in use. Identification shall be specific with room designation and other information as necessary. For distribution panels, use engraved laminated phenolic plates showing load served.

END OF SECTION

SECTION 16461

DISTRIBUTION DRY-TYPE TRANSFORMERS (600VAC AND LESS)

PART 1 - GENERAL

1.01 SUMMARY

A. Section includes

1. Provide all labor, materials and equipment necessary to complete the installation required for the items specified under this Section, including but not limited to transformers.

B. Related sections

1. Where items specified in other Division 16 sections conflict with the requirements of this Section, the most stringent requirement shall govern.

a. 16060 – Grounding and Bonding for Electrical Systems

2. The requirements of this Section apply to all Division 16 work, as applicable.

3. Consult all other sections, determine the extent and character of related work and properly coordinate work specified herein with that specified elsewhere to produce a complete installation.

1.02 REFERENCES

A. Comply with the latest edition of the following applicable specifications and standards except as otherwise shown or specified:

1. ANSI - American National Standards Institute

a. C57; Distribution and Power Transformers, Guide for Loading Dry-Type

b. C57.110; Recommended Practice for Establishing Liquid-Filled and Dry-Type Power and Distribution Transformer Capability When Supplying Nonsinusoidal Load Currents

2. CCR –California Code of Regulations, Title 24

a. Part 3; California Electrical Code(CEC); NFPA 70 National Electrical Code (NEC) with California amendments

3. Federal Register

a. 10 CFR Part 430, July 29, 2004; US Department of Energy, Office of Energy Efficiency and Renewable Energy, Energy Conservation Program for Commercial and Industrial Equipment: Energy Conservation Standards for Distribution Transformers; Proposed Rule

4. NECA –National Electrical Contractors Association

a. 409; Recommended Practices for Installing and Maintaining Dry-Type Transformers

5. NEMA –National Electrical Manufacturer's Association
    a. ST20; Dry Type Transformers for General Applications
    b. TP1; Guide for Determining Energy Efficiency for Distribution Transformers
    c. TP2; Standard Test Method for Measuring the Energy Consumption of Distribution Transformers
    d. TP3; Standard for the Labeling of Distribution Transformer Efficiency
    e. TR1; Transformers, Regulators, and Reactors
6. UL -Underwriters Laboratories, Inc.
    a. 1561; Dry-Type General Purpose and Power Transformers

1.03 SUBMITTALS

A. Submit manufacturer's data for materials specified within this Section in accordance to Section 16050.

B. Include outline and support point dimensions of enclosures and accessories; unit weights; voltage; kVA rating; impedance rating and characteristics; loss and efficiency data at 25%, 50%, 75% and 100% rated load; sound level, tap configurations; insulation system type; and rated temperature raised

1.04 QUALITY ASSURANCE

A. All materials, equipment and parts comprising the materials specified herein shall be new and unused, bearing UL labels where applicable.

B. Installation shall conform to NECA 409-2002, Recommended Practice for Installing and Maintaining Dry-Type Transformers.

1.05 DELIVERY, STORAGE AND HANDLING

A. Store in a warm, dry location with uniform temperature. Protect unit if handled in inclement weather (i.e., rain, sleet, snow, etc.). Cover ventilating opening to keep out dust and foreign materials prior to startup.

B. Handle transformer using only lifting eyes and brackets provided for that purpose; see manufacturer's installation instructions.

PART 2 – PRODUCTS

2.01 GENERAL PURPOSE, TP-1 COMPLIANT

A. Manufacturers
    1. Square D, Cutler-Hammer, General Electric, or approved equal.

B. Rating Information
    1. All insulating materials are to exceed NEMA ST20 standards and be rated for 220°C UL component recognized insulation system.
    2. Capable of meeting daily overload requirements of ANSI C57.96.

3. Transformers 15kVA and larger shall be 150°C temperature rise above 40°C ambient.
4. Transformers 25kVA and larger shall have a minimum of 4 - 2.5% full capacity primary taps.
5. The maximum temperature of the top of the enclosure shall not exceed 50°C rise above a 40°C ambient.
6. Transformers shall be low loss type with minimum efficiencies per NEMA TP1 when operated at 35% of full load capacity. Efficiency shall be tested in accord with NEMA TP2.
7. Sound levels shall be warranted by the manufacturer not to exceed NEMA ST20 requirements.

C. Construction

1. Transformer coils shall be aluminum, unless noted otherwise on Drawings, of the continuous wound construction and shall be impregnated with nonhygroscopic, thermosetting varnish.
2. All cores to be constructed with low hysteresis and eddy current losses. Magnetic flux densities are to be kept well below the saturation point to prevent core overheating. Cores for transformers greater than 500kVA shall be clamped utilizing insulated bolts through the core laminations to ensure proper pressure throughout the length of the core. The completed core and coil shall be bolted to the base of the enclosure but isolated by means of rubber vibration-absorbing mounts. There shall be no metal-to-metal contact between the core and coil and the enclosure except for a flexible safety ground strap.
3. The core of the transformer shall be visibly grounded to the enclosure by means of a flexible grounding conductor sized in accordance with applicable UL and NEC standards.
4. The transformer enclosures shall be ventilated and be fabricated of heavy gauge, sheet steel construction.
5. The coating shall be UL recognized for outdoor use.
6. Manufacturer shall provide the optional accessories where required and noted on the Drawings:
   a. Weathershields for all models.
   b. Wall mounting brackets for 75kVA units and smaller.
   c. Ceiling mounting brackets for 150kVA units and smaller.

PART 3 – EXECUTION

3.01 EXAMINATION

A. Examine transformer to provide adequate clearances for installation.

B. Check that concrete pads are level and free of irregularities for floor mounted installations.

C. Begin work only after unsatisfactory conditions are corrected.

3.02 INSTALLATION

A. Read and follow manufacturer's bulletin included with unit prior to installation.

B. Installation shall conform to NECA 409 where not specified under this Division.

C. Transformers not specifically designed for wall mounting, shall be spaced a minimum of 6" from adjacent walls, ceiling and all other equipment.

D. Mount to resist seismic forces and brace to 0.56g. Submit calculations and mounting details for review and approval.

E. Terminations

1. Provide all transformers with lugs for both primary and secondary conductors shown on Drawings. Connect lug to termination point with appropriate size bolt, nut and washers.

2. Use flexible conduit indoors in dry locations or liquidtight flexible conduit in damp/wet locations for primary and secondary connections to transformer case when less than 48" in length. Connection shall be to enclosure's side panels only unless fed directly below from ground mounted installation or as shown on Drawings.

F. Grounding

1. Provide a dual rated four-barrel solderless grounding lug with a 5/8"-11 threaded hole. Drill transformer enclosure with 11/16" bit and attach lug to enclosure using a torque bolt and T&B Dragon Tooth transition washer with the following connections:

a. Primary feeder ground

b. Secondary feeder ground

c. Grounding electrode per CEC/NEC 250-30.

d. Main bond jumper to neutral (when present)

3.03 FIELD QUALITY CONTROL

A. Prior to energizing transformer:

1. Check for physical damage.

2. Tighten all bolted connections per manufacturer's published data.

B. Measure primary and secondary voltages, and make appropriate tap adjustments to within 2% of rated voltage.

END OF SECTION

SECTION 16482

MOTOR CONTROL CENTERS

PART 1 – GENERAL

1.01 SUMMARY

A. Section includes

1. Provide all labor, materials and equipment necessary to complete the installation required for the items specified under this Section, including but not limited to motor control centers (MCC).

B. Related sections

1. Where items specified in other Division 16 sections conflict with the requirements of this Section, the most stringent requirement shall govern.
    a. 16060 – Grounding and Bonding for Electrical Systems
    b. 16490 – Overcurrent Protection Devices
    c. 16442 – Panelboards
    d. 16461 – Distribution Dry-Type Transformers
2. The requirements of this Section apply to all Division 16 work, as applicable.
3. Consult all other sections, determine the extent and character of related work and properly coordinate work specified herein with that specified elsewhere to produce a complete installation.

1.02 REFERENCES

A. Comply with the latest edition of the following applicable specifications and standards except as otherwise shown or specified:

1. CCR –California Code of Regulations, Title 24
    a. Part 3 -California Electrical Code(CEC); NFPA 70 National Electrical Code (NEC) with California amendments
2. Federal Specification
    a. W-C-37; Circuit Breakers, Molded Case, Branch Circuit and Service
3. NECA –National Electrical Contractors Association
    a. 402, Recommended Practice for Installing and Maintaining Motor Control Centers
4. NEMA –National Electrical Manufacturer’s Association
    a. AB 1; Molded Case Circuit Breakers and Molded Case Switches
    b. ICS 1; Industrial Control and Systems: General Requirements

c. ICS 2; Industrial Control and Systems: Controllers, Contactors, and Overload Relays Rated 600 Volts

d. KS; Fused and Non-fused Switches

5. UL -Underwriters Laboratories, Inc.

a. UL 489; Molded Case Circuit Breakers

b. UL 845; Motor Control Centers

1.03 SUBMITTALS

A. Submit manufacturer's data for materials specified within this Section in accordance to Section 16050.

B. Shop Drawings shall indicate front and side enclosure elevations with overall dimensions shown; conduit entrance locations and requirements; nameplate legends; one-line diagrams; equipment schedule; and switchboard instrument details.

1.04 QUALITY ASSURANCE

A. All materials, equipment and parts comprising the materials specified herein shall be new and unused, bearing UL labels where applicable.

B. The manufacturing facility shall be registered by Underwriters Laboratories Inc. to the International Organization for Standardization ISO 9001 Series Standards for quality.

C. The manufacturer of the MCC shall also be the manufacturer of the across the line motor starters, solid state reduced voltage starters and variable frequency drives. The use of third party supply and assembly is not acceptable and will be rejected.

D. Installation shall conform to NECA 402, Recommended Practice for Installing and Maintaining Motor Control Centers unless otherwise specified.

1.05 DELIVERY, STORAGE AND HANDLING

A. Deliver, store, protect, and handle products in conformance with manufacturer's recommended practices as outlined in applicable Installation and Maintenance Manuals.

B. Each switchboard section shall be delivered in individual shipping splits for ease of handling. They shall be individually wrapped for protection and mounted on shipping skids.

C. Store in a clean, dry space. Maintain factory protection and/or provide an additional heavy canvas or heavy plastic cover to protect structure from dirt, water, construction debris, and traffic. Where applicable, provide adequate heating within enclosures to prevent condensation.

D. Handle in accordance with manufacturer's written instructions. Lift only by lifting means provided for this express purpose. Handle carefully to avoid damage to switchboard internal components, enclosure, and finish.

PART 2 –– PRODUCTS

2.01 MANUFACTURERS

A. Square D Model 6, Allen Bradley Centerline 2100 or approved equal.

2.02 RATINGS

A. Voltage - Unless shown differently on the drawings, the MCC shall be rated for a 480V system.

B. Short Circuit Withstand Rating – Unless shown differently on the drawings, the MCC shall be rated for a fault current of 42,000A.

2.03 ENCLOSURE

A. The MCC shall be NEMA Type 1 Gasketed unless otherwise indicated in the Drawings.

B. Removable end plates on each end of the MCC shall cover the horizontal bus and horizontal wireway openings.

C. The MCC shall include bottom plates.

D. Each section shall be equipped with full metal side sheets to isolate each vertical section.

E. All interior and exterior surfaces shall be painted ANSI 49 medium light gray. The vertical wireways and unit back plates shall be painted high visibility gloss white.

F. All unpainted parts shall be plated for corrosion resistance.

2.04 STRUCTURE

A. Motor control centers (MCC) shall be made up of standardized, freestanding modular sections.

B. The MCC shall be of dead front construction and shall consist of one or more vertical sections bolted together to form a rigid, free-standing assembly. The systems shall be designed to allow for the addition of future sections and to permit the interchanging of units. The overall length of the MCC shall not exceed the dimensions shown on the Drawings.

C. All louvers and vents shall be screened and supplied with replaceable filters.

D. Vertical sections shall be rigid, free-standing structures.

1. Vertical sections shall have internal mounting angles running continuously within the shipping block.

2. Vertical sections shall be 90 inches high, 20 inches deep and 20 inches wide except where larger dimensions are required.

3. Vertical sections shall be provided with a removable steel lifting angle on all shipping blocks. The angle shall run the length of the shipping block.

E. Provide full depth horizontal wireways at the top and bottom of the MCC.

1. The horizontal wireways shall be isolated from the bus.

2. The horizontal wireways shall have removable covers held in place by captive screws.

F. Provide a full height vertical wireway, independent of the plug-in units, in each standard vertical section.

1. The vertical wireway shall be isolated from the vertical and horizontal buses.
2. The vertical wireway shall be covered with a hinged and secured door.
3. Wireway tie bars shall be provided.
4. Isolation between the wireway and units shall be provided.

G. Unit Information

1. Each vertical section shall accommodate six size No. 1 combination starter spaces or “buckets” within each vertical section. Only one-half of full multiples of this unit space shall be used for the various types and sizes of equipment in the MCC. Starters and other equipment shall be arranged on the front only.
2. Construction shall be NEMA Class II to provide complete systems wiring and individual combination motor starter units shall be Type B with unit mounted terminal blocks.
3. NEMA Size 5 starters and below shall be provided as plug-in units.
4. Plug-in units
    a. Plug-in units shall consist of unit assembly, unit support pan and unit door assembly.
    b. Units shall be supplied with removable doors. The unit doors shall be fastened to the structure so that the doors can be closed when the unit is removed.
    c. A unit support pan shall be provided for support and guiding units. Unit support pans shall remain in the structure when units are removed to provide isolation between units.
    d. A service position shall be provided for plug-in units that allows for the unit to be supported, but disengaged from the bus. The unit shall be capable of being padlocked in the service position.
5. Power Stabs
    a. Unit stabs for engaging the power bus shall be tin plated copper and provided with stainless back-up springs to provide and maintain a high pressure 4-point connection to the vertical bus.
    b. Wiring from the unit disconnecting means to the plug-in stabs shall not be exposed to the rear of the unit. A separate isolated pathway shall be provided for each phase to minimize the possibility of unit fault conditions reaching the power bus system.
    c. The power cable termination at the plug-in stab shall be a maintenance free crimp type.
6. Handle
    a. Units shall be provided with a heavy-duty, industrial, flange mounted handle mechanism for control of each disconnect switch or circuit breaker.

b. The operator units may pivot in the vertical or horizontal plane.

c. The on-off condition shall be indicated by the handle position, red and green color indicators with the words ON and OFF, and the international symbols I and O along with a pictorial indication of the handle position.

d. Handles shall be capable of being locked in the OFF position with up to three padlocks.

e. The operator handle shall be interlocked with the unit door so that the disconnect cannot be switched to the ON position unless the unit door is closed. A means shall be provided for purposely defeating the interlock during maintenance or testing.

f. The operator handle shall be interlocked with the unit so that the unit cannot be inserted or withdrawn with the operator handle in the ON position.

7. Pilot Devices

a. Where specified, units shall be furnished with NEMA Type 4/13 water tight / oil tight pushbuttons, selector switches or pilot lights.

8. Terminal Blocks

a. Control terminal blocks shall be pull-apart on all plug-in units for easy removal of the unit from the structure.

b. Control terminal blocks on factory mounted units shall be fixed type.

c. Provide power terminal blocks on starters rated NEMA size 3 and below. Power terminal blocks shall be pull-apart for NEMA size 1 and 2. Terminal blocks for NEMA size 3 starters shall be non-pull apart. Power terminal blocks are not required on NEMA size 4 and above.

d. Terminal blocks shall not be located adjacent to or inside the vertical wireway.

2.05 BUS BARS

A. Horizontal Power Bus

1. The horizontal bus shall be rated as shown on the drawings.

2. The horizontal bus material shall be copper with tin plating.

3. The horizontal bus shall be supported, braced and isolated from the vertical bus with a high strength, non-tracking glass polyester material.

4. For standard sections the horizontal bus shall be continuous within each shipping block and shall be braced within each section

5. Horizontal bus splices shall have at least 2 bolts on each side.

B. Vertical Bus

1. The vertical power bus shall have an effective rating of 600A. If a center horizontal bus construction is utilized, then the rating shall be 300A above and below the horizontal bus for an effective rating of 600A. If a top or bottom mounted horizontal bus is utilized, then the full bus must be rated for 600A.

2. The vertical bus material shall be copper with tin plating.

3. The vertical bus shall attach to the horizontal bus with at least 2 bolts.
4. The vertical bus shall be continuously braced by a high strength non-tracking glass-filled polyester material and sandwiched by a glass-filled polycarbonate molded cover.
5. Automatic shutters shall cover plug-in stab openings when units are removed.

C. Ground Bus

1. Provide a ground bus system consisting of a horizontal ground bus connected to vertical ground buses mounted in each section.
2. Provide an unplated copper (0.25 inch by 2 inch) horizontal ground bus mounted in the bottom of the MCC unless otherwise specified in the drawings.
3. Provide a pressure type mechanical lug mounted on the ground bus in the incoming line section.
4. Provide a unit ground stab on all unit inserts. The ground stab shall establish unit insert grounding to the vertical ground bus before the plug-in power stabs engage the power bus. The grounding shall be maintained until after the plug-in power stabs are disengaged.
5. Provide an unplated copper vertical unit load ground bus in each standard vertical section.
6. Provide a unit load connector on all units. The load connector shall provide a termination point for the load ground cable at the unit.

D. Neutral Bus

1. If a 4-wire system is specified, yet there are no neutral loads in the MCC, only a neutral connection plate is required in the MCC; i.e. a full neutral bus is not required.
2. If neutral loads are specified within the MCC, a full neutral bus is required. Provide a neutral bus across the full width of the MCC, an incoming neutral lug pad in the incoming section, and neutral connection plates in sections as required.

2.06 DISCONNECTS

A. The withstand rating of the main shall be greater than or equal to the bus bracing for the MCC.

B. Provide lugs to accommodate the conductors as indicated on the drawings.

C. If no overcurrent protection is indicated, provide a main incoming lug compartment.

D. Fusible disconnect assemblies where specified in Drawings shall comply with Section 16490 – Overcurrent Protection Devices.

E. Circuit breaker disconnect assemblies specified in Drawings shall comply with Section 16490 – Overcurrent Protection Devices.

F. Provide a removable protective barrier to reduce the possibility of contact with the line terminals.

G. Provide one normally open and one normally closed internal auxiliary contact on disconnect device.

2.07 COMBINATION NEMA RATED ACROSS THE LINE STARTERS

A. Starters shall be of NEMA design. Starters shall have molded coils, replaceable contacts and metal housing plate. NEMA rated / IEC designed starters will be rejected.

B. Starters shall be provided with a 3-pole Class 20 solid state overloads unless noted otherwise. The overload shall provide overload and phase loss protection.

C. Starters shall be provided with a minimum of (1) N.O. and (1) N.C. auxiliary contact in addition to the hold in contact and auxiliary contacts shown on the drawings up to a maximum of seven beyond the hold-in contact.

D. Provide a control power transformer with a VA rating of at least twice the sealed VA rating of the starter. Provide both primary and secondary fuse protection for the starter.

E. Provide a door mounted selector switch for Hand-Off-Auto operation. The Hand Mode shall provide local start control. In the Auto Mode, start control shall be provided through a remote contact. Provide an extra set of contacts on the selector switch for monitoring of switch position.

F. Provide door mounted transformer type pilot lights for On (Green) and Off (Red) indication.

2.08 SOLID STATE MOTOR CONTROLLERS (SSMC)

A. The unit shall be provided with overcurrent protection and disconnect device as shown on Drawing.

B. The unit shall be provided with a 120V control power transformer. The control power transformer shall be provided with primary and secondary fusing.

C. The SSMC unit shall be provided with a bypass contactor for NEMA 12 designs. The bypass contactor shall be energized once the motor is up to full speed. The bypass contactor shall be fully rated for the motor load and be capable of starting the motor if so wired in the field. The unit shall be provided with a converter module so that the SSMC overload can be utilized at all times.

D. Provide an input isolation contactor.

E. The SSMC unit shall be provided with line side protective modules. The modules shall contain capacitors and metal oxide varistors (MOVs) that protect the internal power circuitry from severe electrical transients and / or high electrical noise.

F. Provide a door mounted selector switch for Auto-Manual control. In the auto mode, the start command shall be provided through a remote contact. In the manual mode, the start-stop control shall be provided through the door mounted push buttons. Provide extra contact blocks on the selector switch for monitoring of switch position.

G. Provide door mounted pushbuttons for start-stop and pump stop control. Stop pushbuttons shall always be active.

H. Provide door mounted transformer type pilot lights for indication of On (Green) and Off (Red).

2.09 VARIABLE FREQUENCY DRIVES

A. The unit shall be provided with overcurrent protection and disconnect device as shown on Drawing.

B. The unit shall be provided with a 120V control power transformer. The control power transformer shall be provided with primary and secondary fusing.

C. Provide a 120V control interface.

D. Provide a common mode choke on the output of the drive.

E. Provide a door mounted selector switch for Auto-Manual control. In the auto mode, the start command shall be provided through a remote contact. In the manual mode, the start-stop control shall be provided through the door mounted push buttons. Provide extra contact blocks on the selector switch for monitoring of switch position.

F. Provide door mounted pushbuttons for start-stop control. Stop pushbuttons shall always be active.

G. Provide door mounted transformer type pilot lights for indication of On (Green) and Off (Red).

H. Provide a door mounted Human Interface for programming, display and speed control.

I. Provide one isolated / configurable analog input and output.

2.10 CONTROL AND LIGHTING TRANSFORMER

A. Provide control and lighting transformers as shown on drawings. The rating shown on the drawings shall be the minimum acceptable rating.

B. The insulation shall be Class 180ºC insulation with 80ºC rise.

C. Provide thermal magnetic circuit breaker for primary protection.

D. The primary circuit breaker compartment and transformer compartment shall be wired and interlocked together.

E. Provide secondary fuse protection for the transformer.

F. Provide vented doors with filters for NEMA Type 1 with gaskets and NEMA Type 12 structures.

2.11 LIGHTING PANEL

A. Provide distribution panel as shown on the Drawings and per Section 16442 – Panelboards.

PART 3 – EXECUTION

3.01 EXAMINATION

A. Examine motor control center to provide adequate clearances for installation.

B. Check that concrete pads are level and free of irregularities.

C. Begin work only after unsatisfactory conditions are corrected.

3.02 INSTALLATION

A. Install motor control center in location shown on Drawings, in accordance with manufacturer's written instructions. Anchor to resist seismic forces as inidicated on Drawings and in accordance with OSHPD's anchorage requirements. Provide all testing and inspections requirements by inspecting authority.

B. Installation shall conform to NECA 402 where not specified under this Division.

C. Tighten accessible bus connection and mechanical fasteners after placing motor control center.

3.03 FIELD QUALITY CONTROL

A. Inspect complete installation for physical damage, proper alignment, anchorage and grounding prior to energizing.

B. Check tightness of accessible bolted bus joints using a calibrated torque wrench per manufacturer's specifications.

C. Check and set where required all protective device settings in accordance with approved coordination study settings and conduct ground fault acceptance tests.

3.04 ADJUSTING

A. Adjust all operating mechanisms for free mechanical movement per manufacturer's specifications.

B. Tighten bolted bus connections in accordance with manufacturer's instructions.

C. Adjust circuit breaker trip and time delay settings to values indicated as instructed by Engineer.

3.05 CLEANING

A. Touch up scratched or marred surfaces to match original finish.

END OF SECTION

SECTION 16490

OVERCURRENT PROTECTION DEVICES

PART 1 - GENERAL

1.01 SUMMARY

A. Section includes

1. Provide all labor, materials and equipment necessary to complete the installation required for the items specified under this Section, including but not limited to overcurrent protection devices.

B. Related sections

1. Where items specified in other Division 16 sections conflict with the requirements of this Section, the most stringent requirement shall govern.
2. The requirements of this Section apply to all Division 16 work, as applicable.
3. Consult all other sections, determine the extent and character of related work and properly coordinate work specified herein with that specified elsewhere to produce a complete installation.

1.02 REFERENCES

A. Comply with the latest edition of the following applicable specifications and standards except as otherwise shown or specified:

1. CCR –California Code of Regulations, Title 24
    a. Part 3 -California Electrical Code(CEC); NFPA 70 National Electrical Code (NEC) with California amendments
2. Federal Specification
    a. W-C-375; Circuit Breakers, Molded Case, Branch Circuit and Service
3. NEMA –National Electrical Manufacturer’s Association
    a. AB 1; Molded-Case Circuit Breakers, Molded Case Switches, and Circuit-Breaker Enclosures
    b. PB 2.2; Application Guide for Ground Fault Protective Devices for Equipment
4. UL -Underwriters Laboratories, Inc.
    a. 248; Low Voltage Fuses
    b. 468; Wire Connectors
    c. 508E; IEC Type "2" Coordination Short Circuit Tests
    d. 489; Molded-Case Circuit Breakers and Circuit Breaker Enclosures
    e. 943; Standard for Ground-Fault Circuit-Interrupters

1.03 SUBMITTALS

A. Submit manufacturer's data for materials specified within this Section in accordance to Section 16050.

B. Production test of circuit breakers upon request of Engineer.

C. Submittal shall show the following information: circuit breaker numbering, circuit breaker type and short circuit rating, provisions for future circuit breakers, bussing, including neutral and ground, ratings and enclosure dimensions and trims.

D. Provide arc flash analysis for the power system, based upon the submitted switchboard, in accordance with NFPA 70E requirements, prepared and signed by a California Registered Professional Electrical Engineer. Submit this analysis within 30 days of acceptance of the submitted distribution power submittal package. Include all costs in the bid.

1.04 QUALITY ASSURANCE

A. All materials, equipment and parts comprising the materials specified herein shall be new and unused, bearing UL labels where applicable.

B. The manufacturing facility shall be registered by Underwriters Laboratories Inc. to the International Organization for Standardization ISO 9002 Series Standards for quality.

1.05 DELIVERY, STORAGE AND HANDLING

A. Handle carefully to avoid damage to internal components, enclosure and finish.

B. Store in a clean, dry environment. Maintain factory packaging and, if required, provide an additional cover to protect enclosure in harsh environments.

PART 2 - PRODUCTS

2.01 FUSES

A. All power distribution fuses shall be time-delay, high interrupting (200kAIC minimum) and current limiting type, unless otherwise indicated. All fuses shall be of same manufacturer and model.

1. Motor branch circuit fuses (0 – 600A): UL Class RK5 dual element, time delay type shall be size for UL 508E "Type 2" coordination for the motor controller. Coordinate fuse selection with motor starter overload relay heaters as required.

2. General purpose feeder fuses (0 – 600A): UL Class RK1 dual element, time delay type shall be size per Drawings.

B. Control and instrumentation fuses shall of type and rating as recommended by equipment manufacturer, suitable for fuse blocks or holders installation.

2.02 MOLDED CASE CIRCUIT BREAKERS

A. General

1. Circuit breakers shall be constructed using glass reinforced insulating material. Current carrying components shall be completely isolated from the handle and the accessory mounting area.

2. Circuit breakers shall have an over center, trip free, toggle operating mechanism which will provide quick-make, quick-break contact action. The circuit breaker shall have common tripping of all poles.
3. The circuit breaker handle shall reside in a tripped position between ON and OFF to provide local trip indication.
4. The maximum ampere rating and UL, IEC, or other certification standards with applicable voltage systems and corresponding interrupting ratings shall be clearly marked on face of circuit breaker after installation.
5. Circuit breakers shall have an RMS interrupting capacity not less than shown on Drawings, or if not shown shall not be less than:
    a. 25kA for 480V systems
    b. 22kA for 240V (or less) systems
6. Each circuit breaker shall be equipped with a push-to-trip button, located on the face of the circuit breaker to mechanically operate the circuit breaker tripping mechanism for maintenance and testing purposes.
7. Circuit breakers shall be equipped with UL Listed electrical accessories as noted on Drawing. Circuit breaker handle accessories shall provide provisions for locking handle in the ON and OFF position.
8. All circuit breakers shall be UL Listed for reverse connection without restrictive line and load markings and be suitable for mounting in any position.
9. Circuit breakers shall be constructed with factory installed mechanical lugs. All circuit breakers shall be UL Listed to accept field installable/removable mechanical type lugs. Lug body shall be bolted in place; snap in design not acceptable. All lugs shall be UL Listed to accept solid (not larger than #8 AWG) and/or stranded copper and aluminum conductors. Lugs shall be suitable for 90°C rated wire, sized according to the 75°C temperature rating in the CEC.
10. All circuit breakers shall be capable of accepting bus connections.

B. Thermal-Magnetic Circuit Breakers

1. Circuit breakers shall have a permanent trip unit containing individual thermal and magnetic trip elements in each pole.
2. Thermal trip elements shall be factory preset and sealed. Circuit breakers shall be true RMS sensing and thermally responsive to protect circuit conductor(s) in a 40°C ambient temperature.
3. Circuit breaker frame sizes above 100 amperes shall have a single magnetic trip adjustment located on the front of the circuit breaker.

C. Electronic Trip Circuit Breakers

1. Circuit breaker trip system shall be a microprocessor-based true RMS sensing design with sensing accuracy through the thirteenth (13th) harmonic. Sensor ampere ratings shall be as indicated on Drawings.
2. The integral trip system shall be independent of any external power source and shall contain no less than industrial grade electronic components.
3. The ampere rating of the circuit breaker shall be determined by the combination of an interchangeable rating plug, the sensor size and the long-time pickup

adjustment on the circuit breaker. The sensor size, rating plug and adjustment positions shall be clearly marked on the face of the circuit breaker. Circuit breakers shall be UL Listed to carry 80% (or 100% where noted on Drawings) of their ampere rating continuously.

4. The following time/current response adjustments shall be provided. Each adjustment shall have discrete settings and shall be independent of all other adjustments.
    a. Instantaneous Pickup
    b. Long Time Pickup
    c. Long Time Delay
    d. Short Time Pickup
    e. Short Time Delay
    f. Ground Fault Pickup (when specified with ground fault protection)
    g. Ground Fault Delay (when specified with ground fault protection)
5. A means to seal the trip unit adjustments in accordance with CEC/NEC 240-6(b) shall be provided.
6. Local visual trip indication for overload, short circuit and ground fault trip occurrences shall be provided.
7. Long Time Pickup indication to signal when loading approaches or exceeds the adjusted ampere rating of the circuit breaker shall be provided.
8. An ammeter to individually display all phase currents flowing through the circuit breaker shall be provided. Indication of inherent ground fault current flowing in the system shall be provided on circuit breakers with integral ground fault protection. All current values shall be displayed in true RMS with 5% accuracy.
9. Equipment Ground Fault Protection shall be provided where noted on Drawings.
    a. Circuit breakers shall be provided with integral equipment ground fault protection for grounded systems. The circuit breaker shall be suitable for use on three-phase, three-wire circuits where the system neutral is grounded but not carried through the system or on three-phase, four-wire systems.
    b. A separate neutral current transformer shall be provided for three-phase, four-wire systems.
    c. Ground fault sensing system shall be residual sensing type.
    d. The trip system shall include a ground fault memory circuit to sum the time increments of intermittent ground faults above the pickup point.
    e. A means of testing the ground fault system to meet the on-site testing requirements of CEC/NEC 230-95(c) shall be provided.
    f. Local visual trip indication for a ground fault trip occurrence shall be provided.
    g. The ground fault sensing system shall be provided with Zone Selective Interlocking (ZSI) communication capabilities compatible with other circuit breakers equipped with ground fault sensing, electronic trip circuit breakers with integral ground fault sensing and external ground fault sensing systems as noted on Drawings.

10. Circuit breaker trip system shall be equipped with an externally accessible test port. Disassembly of the circuit breaker shall not be required for testing. Test set shall be capable of verifying the operation of all trip functions with or without tripping the circuit breaker.

2.03 INSULATED CASE CIRCUIT BREAKERS

A. Circuit breaker trip system shall be a microprocessor-based true RMS sensing design with sensing accuracy through the thirteenth (13th) harmonic. Sensor ampere ratings shall be as indicated on Drawings.

B. The integral trip system shall be independent of any external power source and shall contain no less than industrial grade electronic components.

C. Circuit breakers shall have an RMS interrupting capacity not less than shown on Drawings, or if not shown shall not be less than:

1. 65kA for all frame sizes at 208V
2. 65kA for all 800A - 2,000A frames at 480V
3. 100kA for all 3,000A - 4,000A frames at 480V

D. The ampere rating of the circuit breaker shall be determined by the combination of an interchangeable rating plug, the sensor size and the long-time pickup adjustment on the circuit breaker. The sensor size, rating plug and switch adjustments shall be clearly marked on the face of the circuit breaker. Circuit breakers shall be UL Listed to carry 100% of their ampere rating continuously.

E. The following time/current response adjustments shall be provided. Each adjustment shall have discrete settings and shall be independent from all other adjustments.

a. Instantaneous Pickup
b. Long Time Pickup
c. Long Time Delay
d. Short Time Pickup
e. Short Time Delay
f. Ground Fault Pickup (when specified with ground fault protection)
g. Ground Fault Delay (when specified with ground fault protection)

F. Circuit breakers with adjustable short-time function shall be provided with instantaneous adjustment and 30 cycle short-time withstand ratings. Short-time withstand ratings shall be specified in RMS symmetrical amperes, as shown on the Drawings.

G. A means to seal the rating plug and trip unit adjustments in accordance with CEC/NEC 240-6(b) shall be provided.

H. Local visual trip indication for overload, short circuit and ground fault trip occurrences shall be provided.

I. An ammeter to individually display all phase currents flowing through the circuit breaker shall be provided. All current values shall be displayed in True RMS with 5% accuracy.

J. Long Time Pickup indication to signal when loading approaches or exceeds the adjusted ampere rating of the circuit breaker shall be provided.

K. True two-step stored energy mechanism with five (5) cycle closing time shall be provided. All circuit breakers shall have multiple CHARGE/CLOSE provisions allowing the following sequence: CHARGE, CLOSE, RECHARGE, OPEN/CLOSE/OPEN

L. Local control pushbuttons to OPEN and CLOSE circuit breaker shall be provided. Color coded visual indication of contact position (OPEN or CLOSED) shall be provided on the face of the circuit breaker. Local manual charging following CLOSE operation shall be provided. Color coded visual indication of mechanism CHARGED and DISCHARGED position shall be provided on the face of the circuit breaker. Visual indicator shall indicate CHARGED only when closing springs are completely charged.

M. Each circuit breaker shall be electrically operated to permit remote CHARGE, CLOSE, and OPEN capabilities. Electrically operated circuit breaker shall be equipped with charge contact switch for remote indication of mechanism charge status.

N. All circuit breakers shall be equipped with electrical accessories as noted on Drawings.

O. Provide the following interlocking capabilities:

1. cell door interlock
2. key interlock for main-tie-main
3. lock off

P. Circuit breaker trip system shall be equipped with an externally accessible test port. Disassembly of the circuit breaker shall not be required for testing. Test set shall be capable of verifying the operation of all trip functions with or without tripping the circuit breaker.

Q. Equipment Ground Fault Protection shall be provided where noted on Drawings.

1. Circuit breakers shall be provided with integral equipment ground fault protection for grounded systems. The circuit breaker shall be suitable for use on three-phase, three-wire circuits where the system neutral is grounded but not carried through the system or on three-phase, four-wire systems.
2. A separate neutral current transformer shall be provided for three-phase, four-wire systems.
3. Ground fault sensing system shall be residual sensing type.
4. The trip system shall include a ground fault memory circuit to sum the time increments of intermittent ground faults above the pickup point.
5. A means of testing the ground fault system to meet the on-site testing requirements of CEC/NEC 230-95(c) shall be provided.
6. Local visual trip indication for a ground fault trip occurrence shall be provided.
7. The ground fault sensing system shall be provided with Zone Selective Interlocking (ZSI) communication capabilities compatible with other thermal magnetic circuit breakers equipped with ground fault sensing, electronic trip

circuit breakers with integral ground fault sensing and external ground fault sensing systems as noted on Drawings.

PART 3 - EXECUTION

3.01 PREPARATION

A. Notify Engineer no later than 10 working days for adjustable circuit breaker settings not shown within Drawings. Submit to Engineer the following information:
   1. Panel, switchboard name/ID
   2. Circuit breaker identifier (i.e., main circuit breaker, load served, etc.)
   3. List of necessary settings (i.e., trip settings, time delays, etc.)

3.02 INSTALLATION

A. Install equipment and their accessories in to manufacturer's instructions, pertinent Codes, and with recognized industry practices to insure device operates properly.

B. Tighten electrical connectors and terminals in accordance to manufacturer's requirements. Where the manufacturer does not have published torque tightening values, comply with the requirements of UL 468.

3.03 FIELD QUALITY CONTROL

A. Check tightness of circuit breaker connections using a calibrated torque wrench or torque screwdriver per manufacturer's written specifications.

B. Obtain the services of an independent testing company who shall provide quality control and adjustments as well as tests for
   1. Check each circuit breaker above 100A on a 225A frame for long-time and short-time delay pickup and instantaneous pickup.
      a. Instantaneous pickup current shall be determined by 4 cycles or less.
      b. b. Perform timing test with 300% of breaker trip unit rated current.
      c. Adjust unit if required, so that the tripping characteristics are within the limits of the published time-current characteristic curves for that particular trip unit.
   2. Test and calibrate ground fault protection trip and pickup time on 225A frame breakers and larger.

C. Physically test key interlock systems to check for proper functionality.

D. Check and set where required all protective device settings in accordance with approved coordination study settings and conduct ground fault acceptance tests.

3.04 ADJUSTING

A. Adjust all operating mechanisms for free mechanical movement per manufacturer's specifications.

B. Adjust circuit breaker trip and time delay settings to values indicated as instructed by Engineer.

1. Check each circuit breaker above 100A, long-time and short-time delay pickup and instantaneous pickup. Instantaneous pickup current shall be determined by 4 cycles or less. Perform timing test with 300% of breaker trip unit rated current. Adjust unit if required, so that the tripping characteristics are within the limits of the published time-current characteristic curves for that particular trip unit.
2. Main circuit breaker ground fault setting shall be per CEC/NEC 230-95(a) or as directed by Engineer.

3.05 PROTECTION

A. When directed by Engineer provide physical means to “permanently fix” settings for rotary and DIP type switches with a thin coat of clear lacquer.

3.06 CLEANING

A. Remove marks, dirt and debris from installed equipment surfaces for “new like” appearance.

END OF SECTION

SECTION 16500

LIGHTING

PART 1 - GENERAL

1.01 SUMMARY

A. Section includes

1. Provide all labor, materials and equipment necessary to complete the installation required for the items specified under this Section, including but not limited to fixtures, lamps, standards, bases, hangers, supports, reflectors, glassware, lenses, auxiliary equipment, ballasts and sockets.

B. Related work under this section

1. Where items specified in other Division 16 sections conflict with the requirements of this Section, the most stringent requirement shall govern.
2. The requirements of this Section apply to all Division 16 work, as applicable.
3. Consult all other sections, determine the extent and character of related work and properly coordinate work specified herein with that specified elsewhere to produce a complete installation.

1.02 REFERENCES

A. Comply with the latest edition of the following applicable specifications and standards except as otherwise shown or specified:

1. ANSI -American National Standards Institute
   a. C78; American National Standard for Electric Lamps
   b. C81; American National Standard for Electric Lampholders
   c. C82; American National Standard for Lamp Ballasts
   d. C136; American National Standard for Roadway and Area Lighting Equipment
2. California Codes of Regulations
   a. Part 3 -California Electrical Code(CEC); NFPA 70 National Electrical Code (NEC) with California amendments
   b. Part 6 -California Energy Code
3. IESNA –Illuminating Engineering Society of North America
   a. RP-16; Nomenclature and Definitions for Illuminating Engineering
4. NECA –National Electrical Contractors Association
   a. NECA/IESNA 500, Recommended Practice for Installing Indoor Commercial Lighting Systems

b. NECA/IESNA 501, Recommended Practice for Installing Exterior Lighting Systems

c. NECA/IESNA 502, Recommended Practice for Installing Industrial Lighting Systems

5. UL -Underwriter's Laboratories, Inc.

a. 935; Standard for Fluorescent-Lamp Ballasts

b. 1029; Standard for High-Intensity-Discharge Lamp Ballasts

c. 1574; Standard for Track Lighting Systems

1.03 SUBMITTALS

A. Submit manufacturer's data for materials specified within this Section in accordance to Section 16050.

B. Substituted fixtures shall be submitted with manufacturer's specification sheet and published photometric reports, verified by testing to IES and NEMA standards under controlled laboratory conditions.

1.04 QUALITY ASSURANCE

A. All materials, equipment and parts comprising the materials specified herein shall be new and unused, bearing UL labels where applicable.

B. Installation shall conform to the following standards:

1. NECA/IESNA 500, Recommended Practice for Installing Indoor Commercial Lighting Systems

2. NECA/IESNA 501, Recommended Practice for Installing Exterior Lighting Systems

3. NECA/IESNA 502, Recommended Practice for Installing Industrial Lighting Systems

1.05 DELIVERY, STORAGE AND HANDLING

A. Handle carefully to avoid damage to internal components, enclosure and finish.

B. Store in a clean, dry environment. Maintain factory packaging and, if required, provide an additional cover to protect enclosure in harsh environments.

1.06 WARRANTY

A. Furnish one-year guarantee in accordance with and in form required under Section 16050.

PART 2 -– PRODUCTS

2.01 GENERAL

A. Fixtures shall be of the types, wattages and voltages shown on Drawings.

B. Fixtures shall be UL listed as an entire assembly and for the installed location.

C. Equip exposed fluorescent lamps with safety lamp holders or wire guard.

D. Deliver fixtures and other lighting equipment complete with suspension accessories, canopies, castings, sockets, holders, reflectors, ballasts, diffusing material, louvers, frames, and recessing boxes all wired and assembled.

E. Hangers: Swivel-type to allow for free movement of 45 degrees from vertical at canopy and at luminaire housing. Steel tube hangers shall include a 1/16-inch diameter galvanized wire cord or equivalent (100-pound break strength) in stem assembly attached to luminaire housing and building structure. Attach loop with C-type tool applied compression splice.

F. All metal halide lamp luminaires shall be the enclosed type with diffuser or lens to withstand an arc tube rupture.

G. Louvers for fluorescent luminaires which are removable for re-lamping but not hinged shall be securely fastened near each end between the fixture housing and louvers using No. 16 jack chain.

2.02 BALLASTS

A. Ballast(s) in luminaire recessed in fire rated ceiling shall be approved for such use.

B. Ballast installed indoors shall be of encapsulated type for noise control.

C. Use appropriate rated ballast in high or low temperature applications.

D. Compact fluorescent and fluorescent lamp ballasts

1. Ballasts shall be programmed rapid start.
2. Ballasts shall be UL 935 listed, Class P, Type 1 Outdoor, CSA Certified where applicable.
3. The ballast shall meet or exceed ANSI C82.11, where applicable.
4. The ballast shall withstand transients specified within ANSI C62.41 Cat. A.
5. THD (Total Harmonic Distortion) shall be less than 10%.
6. Ballast power factor shall be greater than 98%.
7. The ballast shall have an audible noise rating of Class A or better.

E. High intensity discharge (HID) lamp ballasts

1. Ballasts shall be premium constant wattage (regulator stabilized) type, designed in accordance with all applicable ANSI specifications including ANSI C82.4 and UL 1029.
2. Power factor shall be greater than 90%.
3. Provide protective fusing with HID ballasts or HID fixtures.

F. Lamps

1. Provide lamps in all lighting fixtures shown.
2. Type as noted on the plans, T8 unless noted otherwise.
3. Approved manufacturers are General Electric, Osram Sylvania or equal.

PART 3 – EXECUTION

3.01 EXAMINATION

A. Locate all lighting fixtures by reference to Drawings, both electrical and architectural.

B. Report proposed changes for luminaire locations found necessary due to interference with structure, pipes, ducts, and other items to City's representative for direction before installation. Luminaires specified with overall lengths are subject to change. Adjust as directed by City's representative.

C. Contractor shall be responsible to coordinate with ceiling installation trade. This will assure that proper fixture type will be furnished to match ceiling system specified.

3.02 INSTALLATION

A. Luminaires shall be properly grounded per CEC Article 410, Parts 17 through 21.

B. Install all luminaires true and plumb. Support and mount in accordance manufacturer's instructions and with CEC Article 410, Parts 16 and 76.

3.03 ADJUSTING

A. Particular care shall be used to eliminate light leaks around edge of recessed fixture trims.

3.04 CLEANING

A. Clean all glass and plastic and polish all visible metal parts before submitting job to City's representative for final acceptance. Remove all fingerprints and dirt from exposed surfaces. Replace scratched or damaged components.

END OF SECTION

SECTION 16710

INSTRUMENTATION

PART 1 - GENERAL

1.01 REQUIREMENTS

A. The Contractor shall provide and install all instruments, devices, wiring, terminal blocks, accessories, and enclosures as specified herein and as shown on Contract Drawings for the instrumentation system. The Contract Documents are intended as an outline for the work and are descriptive of the type of hardware and software configuration to be provided. Any error or omission of detail shall not relieve the Contractor from the obligations to provide and install in correct detail any and all materials necessary for a complete operational instrumentation system, at no additional cost to the County.

B. Work includes that specified in Division 16, Electrical.

C. The major components for the instrumentation scope of work, which includes both the furnishing and installation, are:
   1. Level Switches (LSH/L)
   2. Flow Meter (FE/FIT)
   3. Pressure Gages (PI)
   4. Level Transmitter (LIT)
   5. Pressure Switch (PSH)
   6. Pressure Transmitters (PIT)
   7. Chart Recorder (CR)

D. The contract documents are not intended to cover every detail of materials, configuration, or construction. The Contractor shall furnish all tools, temporary utilities, materials, setup, parts, labor, and other incidentals necessary to fully complete the entire work, whether or not said details are particularly shown or specified, all at no additional cost to the County.

1.02 EXAMINATION OF SITE

A. Bidders shall visit the site at the time scheduled by the County. Bidders shall make allowance in the bid proposal for existing site conditions as related to the work that is to be performed.

1.03 RELATED WORK SPECIFIED ELSEWHERE

A. Division 11, Equipment

B. Division 16, Electrical

1.04 QUALITY ASSURANCE

A. All equipment shall comply with applicable standards of the Underwriter's Laboratories, Inc.

B. Provide enclosures suitable for the type of location in which they are located per Section 16010, Electrical, and General.

1.05 EQUIPMENT, MATERIALS AND WORKMANSHIP

A. It is the intent of these Specifications and of the Plans, to secure high quality in all equipment and materials, and to require first-class workmanship, in order to facilitate trouble free operation and minimum maintenance of the electrical system.

B. All equipment and materials shall be new, listed by UL, and bear the UL label, unless exception to this requirement is inherent to an individual item specified herein, or exception is otherwise granted by the Engineer.

C. Equipment and materials shall be products of reputable, experienced Manufacturers. Similar items in the project shall be the products of the same manufacturer. All equipment shall be of industrial grade and standard of construction, shall be of sturdy design and manufacture, and shall be capable of long, reliable, trouble-free service.

D. All work, including installation, connection, calibration, testing and adjustment, shall be done by qualified, experienced personnel who are technically skilled in their trades, are thoroughly instructed, and are competently supervised. The resulting complete installation shall reflect professional quality work, employing industrial standards and methods. Any and all defective material or inferior workmanship shall be corrected immediately to the Satisfaction of the Engineer at no additional cost to the County.

1.06 Contractor SUBMITTALS

A. Submittals shall comply with the requirements of Sections 01300, Submittals and 16010, Electrical, General.

B. Additional Requirements. The following information shall be clearly marked on each shop drawing, catalog cut, specification sheet, etc. submitted:
   1. Project Title
   2. Date
   3. Submitted By
   4. Identification of item represented

C. Submit manufacturer’s technical data and literature, specifications and installation instructions.

D. Submit test plans and test reports as specified herein.

1.07 OPERATION AND MAINTENANCE DATA

A. Provide operating and maintenance instructions as specified in Section 16010, Electrical, and General.

1.08 WARRANTY

A. The instrumentation supplier shall have a staff of experienced personnel available to provide service on 2 working days' notice during the warranty period. Such personnel shall be capable of fully testing and diagnosing the hardware and software delivered, and of implementing corrective measures.

B. If the instrumentation supplier fails to respond in 2 working days, the County, at its option, will proceed to have the warranty work completed by other resources. The total cost for these other resources shall be reimbursed in full by the Contractor. The use of other resources, as stated above, shall not change or relieve the Contractor or supplier from fulfilling the remainder of the warranty requirements.

C. Prior to "final acceptance", the Contractor shall furnish to the Engineer a listing of warranty information for all manufacturers of materials and equipment used on the project in accordance with Division 1. The listing shall include the following:
   1. Manufacturer's name, service contact person, phone number, and address.
   2. Material and equipment description, equipment number, part number, serial number, and model number.

D. Manufacturers warranty expiration date.

E. Completed test forms.

1.09 CLEANUP

A. Exposed parts shall be clean of all materials, and all oil and grease spots shall be removed with a non-flammable cleaning solvent. Such surfaces shall be carefully wiped and all cracks and corners scraped out.

B. During the progress of the work, the Contractor shall clean up after his men and shall leave the premises and all portions of the site in which he is working free from debris and surplus materials.

PART 2 – MATERIALS

2.01 GENERAL

A. It is the intent of the Contract Specifications and Drawings to secure the highest quality in all materials and equipment in order to facilitate operation and maintenance of the plant. All equipment and materials shall be new and the products shall be from reputable suppliers having adequate experience in the manufacture of these particular items. For uniformity, only one manufacturer will be accepted for each type of product.

B. All equipment shall be designed for the service intended and shall be of rugged construction, of ample strength for all stresses, which may occur during fabrication, transportation, erection, and continuous or intermittent operation. All equipment shall be adequately stayed, braced and anchored, and shall be installed in a neat and workmanlike manner. Appearance and safety, as well as utility, shall be given consideration in the design of details. All components and devices installed shall be

standard items of industrial grade, unless otherwise noted, and shall be of sturdy and durable construction suitable for long, trouble-free service. Light-duty, fragile and competitive grade devices of doubtful durability shall not be used.

C. Products that are specified by manufacturer, trade name or catalog number establish a standard of quality and do not prohibit the use of equal products of other manufacturers provided they are approved by the Engineer prior to installation.

D. The equipment specifications have been prepared on the basis of the equipment first named in the Specifications. The Contractor shall note that the second named equipment, if given, is considered acceptable and equal equipment, but in some cases additional design, options, or modifications may be required, at no additional cost to the County to meet Specifications.

E. All equipment shall be designed and constructed so that in the event of a power interruption, the equipment specified hereunder shall resume normal operation without manual resetting or operator interaction when power is restored.

F. Signal transmission from remote or field electric and electronic devices shall be 4-20 mA, powered by a 24 VDC loop supply from the panel that is to receive the signal. Nonstandard transmission methods such as impulse duration, pulse rate, and voltage regulated will not be permitted except where specifically noted.

G. Outputs of equipment that are not of the standard signals as outlined, shall have the output immediately raised and/or converted to compatible standard signals for remote transmission.

H. Components not specifically mentioned in this Section shall be as specified in Division 16, Electrical and/or Division 15, Mechanical.

2.02 LEVEL TRANSMITTER/IMPEDANCE TYPE (RF) SENSOR

A. The level sensor shall utilize the principle of the varying impedance of a sensing probe as function of the level of submersion. The sensing probe shall be included as a leg in a radio frequency (RF) bridge in the electronic measuring circuit. The level sensor shall be designed for installation in a deep well pump casing.

The impedance level sensor shall consist of a flexible probe and a solid state electronic unit housed in a NEMA 12 enclosure for stanchion mounting. Probes shall be designed for mounting through a threaded fitting in a well pump case of a length of up to 800 feet. The probe mounting parts shall be stainless steel and the probe shall be in accordance with the manufacturer's recommendation for the application specified. The probe shall be Teflon coated and shall include a stainless steel weight assembly.

Local indicators shall be mounted on the electronics housing and shall indicate the unit specified in the Schedule on a 5-inch or greater scale. Sufficient cable shall be provided to connect probe to housing.

The level sensing system shall operate from 120-Vac, 60-Hertz power and variations of ±10% in voltage or frequency shall not affect the accuracy in excess of ±0.5%.
Two-wire transmitter can be used as an option provided a power supply is provided.

Signals: Output signal shall be 4-20 mA with an accuracy of ±1%

Level sensors shall be manufactured Drexelbrook "check well," no known equal.

2.03 PRESSURE TRANSMITTER (PT/PIT)

A. Pressure Transmitters
1. Pressure transmitters shall be two wire devices with continuously adjustable span, zero and damping adjustments, integral indicators scaled in engineering units, solid state circuitry, 4-20 mA output and with integral display. Accuracy shall be plus or minus 0.25 percent of calibrated span. Process wetted and body materials shall be 316 SS. Process connections shall be ½-inch NPT.
2. The transmitters shall be capable of withstanding an over pressure of 50% of rating without requiring recalibration. The transmitters shall have an accuracy of +
or - 0.25% of calibrated span.
3. Wetted components shall be stainless steel. Transmitters shall be housed in NEMA 4 enclosure for outdoor or vault mounting and shall be equipped with a wall or pipe mounting bracket as applicable. Each differential pressure transmitter shall include a stainless steel, three way valve manufold and fittings and piping necessary for connects.
4. Level/Pressure transmitters shall be manufactured by Rosemont Model 1151GP or equal.

2.04 MAGNETIC FLOWMETER (FIT/FE)

A. Magnetic meters shall utilize the principle of electromagnetic induction to produce an output proportional to the rate of fluid flow. A set of pulsed dc, electrically powered coils shall generate a magnetic field which in turn induces a voltage in the flowing fluid which is sensed by a pair of electrodes in contact with the fluid.

1. Protect coils from contact with the fluid. The electrodes shall be made of Type 316 stainless steel. The meters shall be housed in a NEMA 4 enclosure. The metering tube shall be lined with hard rubber. Meters shall be resistant to electrode coating. The probe sensor shall be designed to be inserted in water pipes and shall not be affected by solids, air bubbles, oil or coating. The probe sensor wetted parts shall be of Type 316 stainless steel.
2. The meters shall be designed to operate from a 120 volt ac, 60 cycle, single phase power supply. A 10% variation in power line voltage or frequency shall not affect the meter output accuracy in excess of 1% of full scale.
3. Provide magnetic flowmeters suitable for fluids with conductivities as low as 5.0 micromhos/cm.
4. Each magnetic flow meter system shall have an accuracy within 1% of actual for flow velocities between 10% and 100% of full scale. Meters shall have a repeatability within 0.25% of full scale.

5. Each magnetic flow meter shall be equipped with a signal converter to transmit an analog 4-20 mAdc signal proportional to flow rate. Output span and zero shall be manually adjustable. Provide span adjustment capable of producing 100% strength analog at flow rates that are 30% of maximum. Signal shall be linear with flow within the accuracy specified above. The converter shall be integrally mounted within the meter housing.
6. Furnish special tools which are necessary for the replacement of parts and the adjustment of the equipment.
7. Provide a grounding circuit for each magnetic meter. Furnish and install grounding rings or protective shield when meter is installed in nonconductive line.
8. The signal converter/transmitter shall have the capability of positive zero return for shutdown conditions.

B. The magnetic flow meters shall have flanged end connections or as shown on the Drawings. Field coils shall be either completely encapsulated in the meter lining material or a protective shield shall be provided suitable for withstanding the scouring velocities of the process fluid at the maximum flow rates.

C. Meters and signal converters shall be manufactured by Sparling Series 600 Tiger Mag EP; no equal.

2.05 PRESSURE GAUGES (PI)

A. Pressure and vacuum gauges shall be of the local mounting type unless panel mounted type is shown on the Drawings. Complete assembly shall include gauge cock pulsation dampeners or snubbers.

B. Gauges shall be of the bourdon tube or bellows type with 270 degrees clockwise pointer travel. Dials shall be white with black numerals. Panel-mounted gauges shall have round bezels for flush mounting and rear connection. Others shall have a stem mounting bottom connection, cast iron case, plastic lens, and blowout protection. Accuracy shall be 1% of full-scale maximum and readable to 1%. Connection for all gauges shall be male 1/4-inch NPT with square wrench flats.

C. Pulsation dampeners and snubbers shall be stainless steel for the specific service involve

D. The gauges shall be manufactured by Ashcroft, U.S. Gauge, or equal. Pulsation dampeners and snubbers shall be Crosby 400SS; Trerice No. 870; or equal.

2.06 PRESSURE SWITCHES (PSH)

A. Pressure switches shall incorporate bourdon tubes, diaphragms, or bellows as the sensing and actuating element. The actuating element shall be Type 316 stainless steel or phosphorous bronze, depending on compatibility with the process fluid. The actuating point shall be readily field-adjustable in the range specified with adjustable dead band. Switches shall be SPDT, rated at 5 ampere minimum at 120 Vac. Enclosures shall be NEMA 4X unless specified explosion-proof as shown on the Drawings. Process connection shall be 1/4-inch NPT.

B. There shall be calibrated external adjustments for set point and differential. Element shall be rated for at least 50% over range pressure. Switches used for alarm shall have manual reset. Provide diaphragm seals on corrosive fluid and gas lines and those lines having large amounts of suspended solids.

C. Pressure switches shall be as manufactured by Mercoid; or equal.

2.07 CHART RECORDER

A. Circular chart recorders shall be provided as shown on the Drawings. Charts shall be motor driven for one revolution per 7 days. The pens shall be servo driven with feed back and null balancing. Accuracy shall be ±0.5% of full scale. Input signal shall be 4-20 mAdc.

Two SPDT alarm or control switches shall be provided, rated at 2 amperes, 120 Vac, 60 Hz. Recorders shall have 12-inch charts, manual pen lifter, and weatherproof case with hinged locking door with glass window. Dimensions shall be 19 inches x 15 inches x 12 inches deep maximum. Operating power shall be 120 Vac, 60 Hz.

Manufacturer: Ametek Model E4501-00, Chessel, or equal.

2.08 TUBING AND VALVES

A. Tubing shall be stainless steel tubing shall be Type 304 seamless, cold drawn and annealed per ASTM A269. Unless shown otherwise provide 1/4 inch diameter with 1/4 inch O.D. x 0.045 inch wall or 3/8 or ½ inch diameter where shown on plans which shall be 3/8-inch O.D. x 0.035-inch wall or ½ inch O.D. x 0.035-inch wall. Compression fittings shall be Type 316 stainless steel equal to Imperial or Swagelok.

B. Instrument valves shall be 1/4-inch, 3/8-inch or 1/2-inch from Whitey or Hoke to match tubing material and size.

PART 3 – EXECUTION

3.01 WORKMANSHIP

A. All instrumentation work in this contract shall conform to the codes and standards outlined herein.

B. The Contractor shall employ personnel who are skilled and experienced in the installation and connection of all elements, equipment, devices, instruments, accessories, and assemblies. Qualified personnel who have had experience on similar projects shall perform all installation labor. Provide first class workmanship for all installations.

C. Ensure that all equipment and materials fit properly in their installations.

D. Perform any required work to correct improper installations at no additional expense to the County.

E. The County reserves the right to halt any work that is found to be substandard or being installed by unqualified personnel.

F. Rejected equipment or equipment without approved submittals shall be immediately removed from the jobsite by the Contractor.

3.02 SUBMITTALS

A. Install and supply all products necessary, at no additional cost to the County to provide an operational system. This shall include, but is not limited to, the following:
   1. Provide relays, slave relays, signal converters, isolators, boosters, power conditioners, circuit cards, and other miscellaneous devices as required for a proper compatible and functional interface.
   2. Provide analog loop isolators, where required, to eliminate "ground loops."
   3. All wires shall be identified with machine printed labels. Plastic wire gutters shall be used for routing of wire bundles. Wiring shall be neat and laced with plastic tie wraps.
   4. The instrumentation and accessory equipment shall be installed in accordance with the manufacturer's instructions and located as shown on the Drawings. When manufacturer's installation literature specifies a particular location or orientation in a process line due to measurement accuracy considerations, the installation shall be in conformance with the manufacturer's instructions.
   5. Engineering scales and charts for all instruments shall be provided that match the range of instruments that monitor the process.

B. Instrument installation methods.
   1. Install instruments at the location shown on the Plans or approved by the County Instruments shall be NEMA rated for the installed location.
   2. Install level and plumb.
   3. All instruments shall be provided with floor stands or wall brackets as shown or required.
   4. Mounting hardware, stands, channels, and spacers shall be either galvanized steel, stainless steel, or non-metallic to match the NEMA rated location.
   5. All screws and bolts shall be stainless steel.

C. Wiring and raceway installation methods.
   1. Instrumentation wiring shall be carried in conduits provided in compliance with Division 16, Electrical. All analog circuits shall be run as twisted pairs or triads. In no case shall a circuit be made up using conductors from different pairs or triads. Triads shall be used wherever three wire circuits are required. Triads are not to be formed by using two pairs. Terminal blocks shall be provided at all instrument cable junctions and all wires shall be identified at such junctions. Instrumentation wiring shall be run without splices between instruments, terminal boxes, or panels.
   2. The number of signal wires listed on the Drawings is approximate only, and the Contractor shall determine the required number of signal pairs or triads to properly connect the system furnished, especially when substituting equipment.

D. Wiring, grounding, and shielding methods. It is important to observe good grounding and shielding practices in the generally noisy environment in this application. The following practices shall be observed unless modified by manufacturer's standards:
   1. Each electronic equipment chassis shall be grounded to power ground.
   2. All analog signals shall be transferred over shielded twisted pair cables.
   3. All communication signals shall be transferred over shielded cables.
   4. All shields of analog inputs and outputs of the programmable logic controller shall be connected at the PLC unit only. They shall not contact ground at any other point including the transmitters or receiving devices.
   5. Status and alarm signals routed through noisy environment shall be transferred over shielded twisted pair cables.
   6. Each shield, which is not connected to ground, shall be covered with a heat shrink-insulating boot. Shields shall be connected together at each transition from one cable to another for a continuous effective shield circuit. All shields shall be connected on terminal blocks.

3.03 TRANSMITTER INSTALLATION

A. Install new instruments and transmitters at locations as shown on Drawings.

B. Install and calibrate indicators/transmitter and connect to elements per manufacturer's recommendations. Submit testing and calibration forms.

C. Install and ground transmitters/elements per manufacturer's recommendations.

D. Calibrate per manufacturer's recommendations.

3.04 SUPPLIER/INTEGRATOR SERVICES

A. The Contractor shall be responsible for each supplier of equipment to provide the following minimum services for each type of instrument supplied. The supplier shall use a qualified instrumentation field technician (sales representatives are not acceptable) to perform services listed herein.
   1. Advise and instruct Contractor on installation requirements.
   2. Check, calibrate, and place equipment in operation.

B. All programmable devices shall be programmed and tested prior to startup. Programming shall be adjusted or changed as directed by the County or Engineer, at no additional cost.

C. Coordinate with the County and setup all alarm, process, and operation setpoints.

D. Generate Interconnection Wiring diagrams.

E. Perform the acceptance tests. Coordinate testing and startup services with RTU supplier.

F. Visit the job as often as required and spend as much time as necessary to ensure an operational instrumentation system.

G. Each time the Supplier's repairperson responds to a system malfunction during the warranty period, they must contact the County's maintenance supervisor for permission to make repairs, scheduling of the work, and access to the jobsite. The County’s supervision is necessary to test the equipment and the County reserves the right at their sole discretion to deny operational requests of the Supplier to require additional procedures or the bypassing of the equipment if those operations interfere with any critical facility operations.

H. Be readily available by telephone to answer all questions on supplied equipment.

I. Provide training as specified in Article 3.06, Training.

J. The Contractor shall insure each supplier of instrumentation assumes the responsibility for providing primary elements in a timely manner, for insertion into the process line, coordinating size and material type when applicable, and overseeing the actual installation, calibration, and acceptance testing.

3.05 TESTING

A. General Requirements
   1. The Contractor shall use the services of qualified testing personnel for the purpose of performing inspections and tests as herein specified and indicated on the Drawings. The procedures stated herein are guidelines for the intended tests, the Contractor shall be responsible to modify these tests to fit the particular application and insure personnel safety. It is the intent of these tests to assure that the instrumentation system is operational and is installed in accordance with Design Documents.

B. Test plans and test reports shall be treated as a formal submittal. Tests and test plans shall be in the cause and effect format. The person conducting the test shall initiate an action (cause) and, upon the system's or subsystem's producing the correct result (effect), the specific test requirement will have been satisfied.

C. Testing of the system shall be on a loop-by-loop basis. Test in manual mode before auto and remote modes.

D. Operational Readiness Test (ORT)
   1. Prior to startup, the complete instrumentation system shall be inspected, tested, and documented to show that it is ready for operation.
   2. The Contractor shall prepare a test plan for the ORT and shall submit it for review at least 30 days before the ORT is performed.
   3. The ORT shall demonstrate that the instrumentation system meets the requirements of the Specification that are nonloop-specific. Following are examples of nonloop-specific functions.
      a. CapaCounty. Demonstrate that all components and subsystems have the specified capaCounty, including spare capaCounty.
      b. Timing. Include tests to demonstrate all specified timing requirements.
      c. Diagnostics. Include tests to demonstrate specified diagnostic capabilities and procedures.
   4. If any component or subsystem fails the ORT, the Contractor shall correct the problem and repeat the test until it is successful.

5. After completion of the ORT, the Contractor shall prepare a test report and shall submit it for review. The ORT shall be successfully completed and the test report submitted to and reviewed by the Engineer before the functional acceptance test (FAT) is performed.

E. Functional Acceptance Test (FAT).
1. Once the facility has been started up and is operating, a witnessed FAT shall be performed on the complete instrumentation system to demonstrate that it is operating as specified and meets the requirements of the Specifications.
2. The Contractor shall prepare a test plan for the FAT and shall submit it for review at least 30 days before the FAT is performed.
3. The FAT shall operate all equipment and systems over the full operating range, shall demonstrate proper operation of alarms and indicators, and, in general, shall demonstrate that the equipment and systems meet the requirements of the Drawings and Specifications.
4. If any equipment or system fails the FAT, the Contractor shall correct the problem and shall repeat the test until it is successful.
5. The FAT shall be performed in the presence of the Engineer. The Engineer shall be notified at least 48 hours prior to the start of the test.
6. After completion of the FAT, the Contractor shall prepare a test report and shall submit it for review. The instrumentation system will not be accepted before the FAT is successfully completed and the test report submitted to and reviewed by the Engineer.

3.06 TRAINING

A. The Contractor shall provide 8 man-hours (total for both sites) of training of the operation of the instrumentation system to County’s personnel.

B. Instructions shall consist of the functional description of each piece of equipment, including calibration and setting of set points. Demonstration of the operation of each system shall be included.

C. The Contractor shall provide all manuals and study materials required for the training of County’s personnel.

END OF SECTION

Federal Requirements

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
WASHINGTON, D.C. 20460

MAR 20 2014

OFFICE OF WATER

MEMORANDUM

SUBJECT: Implementation of American Iron and Steel provisions of P.L. 113-76, Consolidated Appropriations Act, 2014

FROM: For Andrew D. Sawyers, Director
Office of Wastewater Management (4201M)

Peter C. Grevatt, Director
Office of Ground Water and Drinking Water (4601M)

TO: Water Management Division Directors
Regions I - X

P.L. 113-76, Consolidated Appropriations Act, 2014 (Act), includes an "American Iron and Steel (AIS)" requirement in section 436 that requires Clean Water State Revolving Loan Fund (CWSRF) and Drinking Water State Revolving Loan Fund (DWSRF) assistance recipients to use iron and steel products that are produced in the United States for projects for the construction, alteration, maintenance, or repair of a public water system or treatment works if the project is funded through an assistance agreement executed beginning January 17, 2014 (enactment of the Act), through the end of Federal Fiscal Year 2014.

Section 436 also sets forth certain circumstances under which EPA may waive the AIS requirement. Furthermore, the Act specifically exempts projects where engineering plans and specifications were approved by a State agency prior to January 17, 2014.

The approach described below explains how EPA will implement the AIS requirement. The first section is in the form of questions and answers that address the types of projects that must comply with the AIS requirement, the types of products covered by the AIS requirement, and compliance. The second section is a step-by-step process for requesting waivers and the circumstances under which waivers may be granted.

Implementation

The Act states:

Sec. 436. (a)(1) None of the funds made available by a State water pollution control revolving fund as authorized by title VI of the Federal Water Pollution Control Act (33 U.S.C. 1381 et seq.) or made available by a drinking water treatment revolving loan fund as authorized by section 1452 of the Safe Drinking Water Act (42 U.S.C. 300j–12) shall be used for a project for the construction, alteration, maintenance, or repair of a public water system or treatment works unless all of the iron and steel products used in the project are produced in the United States.

(2) In this section, the term ''iron and steel products'' means the following products made primarily of iron or steel: lined or unlined pipes and fittings, manhole covers and other municipal castings, hydrants, tanks, flanges, pipe clamps and restraints, valves, structural steel, reinforced precast concrete, and construction materials.

(b) Subsection (a) shall not apply in any case or category of cases in which the Administrator of the Environmental Protection Agency (in this section referred to as the ''Administrator'') finds that—

(1) applying subsection (a) would be inconsistent with the public interest;

(2) iron and steel products are not produced in the United States in sufficient and reasonably available quantities and of a satisfactory quality; or

(3) inclusion of iron and steel products produced in the United States will increase the cost of the overall project by more than 25 percent.

(c) If the Administrator receives a request for a waiver under this section, the Administrator shall make available to the public on an informal basis a copy of the request and information available to the Administrator concerning the request, and shall allow for informal public input on the request for at least 15 days prior to making a finding based on the request. The Administrator shall make the request and accompanying information available by electronic means, including on the official public Internet Web site of the Environmental Protection Agency.

(d) This section shall be applied in a manner consistent with United States obligations under international agreements.

(e) The Administrator may retain up to 0.25 percent of the funds appropriated in this Act for the Clean and Drinking Water State Revolving Funds for carrying out

the provisions described in subsection (a)(1) for management and oversight of the requirements of this section.

(f) This section does not apply with respect to a project if a State agency approves the engineering plans and specifications for the project, in that agency's capacity to approve such plans and specifications prior to a project requesting bids, prior to the date of the enactment of this Act.

The following questions and answers provide guidance for implementing and complying with the AIS requirements:

Project Coverage

1) What classes of projects are covered by the AIS requirement?

All treatment works projects funded by a CWSRF assistance agreement, and all public water system projects funded by a DWSRF assistance agreement, from the date of enactment through the end of Federal Fiscal Year 2014, are covered. The AIS requirements apply to the entirety of the project, no matter when construction begins or ends. Additionally, the AIS requirements apply to all parts of the project, no matter the source of funding.

2) Does the AIS requirement apply to nonpoint source projects or national estuary projects?

No. Congress did not include an AIS requirement for nonpoint source and national estuary projects unless the project can also be classified as a 'treatment works' as defined by section 212 of the Clean Water Act.

3) Are any projects for the construction, alteration, maintenance, or repair of a public water system or treatment works excluded from the AIS requirement?

Any project, whether a treatment works project or a public water system project, for which engineering plans and specifications were approved by the responsible state agency prior to January 17, 2014, is excluded from the AIS requirements.

4) What if the project does not have approved engineering plans and specifications but has signed an assistance agreement with a CWSRF or DWSRF program prior to January 17, 2014?

The AIS requirements do not apply to any project for which an assistance agreement was signed prior to January 17, 2014.

5) What if the project does not have approved engineering plans and specifications, but bids were advertised prior to January 17, 2014 and an assistance agreement was signed after January 17, 2014?

If the project does not require approved engineering plans and specifications, the bid advertisement date will count in lieu of the approval date for purposes of the exemption in section 436(f).

6) What if the assistance agreement that was signed prior to January 17, 2014, only funded a part of the overall project, where the remainder of the project will be funded later with another SRF loan?

If the original assistance agreement funded any construction of the project, the date of the original assistance agreement counts for purposes of the exemption. If the original assistance agreement was only for planning and design, the date of that assistance agreement will count for purposes of the exemption only if there is a written commitment or expectation on the part of the assistance recipient to fund the remainder of the project with SRF funds.

7) What if the assistance agreement that was signed prior to January 17, 2014, funded the first phase of a multi-phase project, where the remaining phases will be funded by SRF assistance in the future?

In such a case, the phases of the project will be considered a single project if all construction necessary to complete the building or work, regardless of the number of contracts or assistance agreements involved, are closely related in purpose, time and place. However, there are many situations in which major construction activities are clearly undertaken in phases that are distinct in purpose, time, or place. In the case of distinct phases, projects with engineering plans and specifications approval or assistance agreements signed prior to January 17, 2014 would be excluded from AIS requirements while those approved/signed on January 17, 2014, or later would be covered by the AIS requirements.

8) What if a project has split funding from a non-SRF source?

Many States intend to fund projects with "split" funding, from the SRF program and from State or other programs. Based on the Act language in section 436, which requires that American iron and steel products be used in any project for the construction, alteration, maintenance, or repair of a public water system or treatment works receiving SRF funding between and including January 17, 2014 and September 30, 2014, any project that is funded in whole or in part with such funds must comply with the AIS requirement. A "project" consists of all construction necessary to complete the building or work regardless of the number of contracts or assistance agreements involved so long as all contracts and assistance agreements awarded are closely related in purpose, time and place. This precludes the intentional splitting of SRF projects into separate and smaller contracts or assistance agreements to avoid AIS coverage on some portion of a larger

project, particularly where the activities are integrally and proximately related to the whole. However, there are many situations in which major construction activities are clearly undertaken in separate phases that are distinct in purpose, time, or place, in which case, separate contracts or assistance agreement for SRF and State or other funding would carry separate requirements.

9) What about refinancing?

If a project began construction, financed from a non-SRF source, prior to January 17, 2014, but is refinanced through an SRF assistance agreement executed on or after January 17, 2014 and prior to October 1, 2014, AIS requirements will apply to all construction that occurs on or after January 17, 2014, through completion of construction, unless, as is likely, engineering plans and specifications were approved by a responsible state agency prior to January 17, 2014. There is no retroactive application of the AIS requirements where a refinancing occurs for a project that has completed construction prior to January 17, 2014.

10) Do the AIS requirements apply to any other EPA programs, besides the SRF program, such as the Tribal Set-aside grants or grants to the Territories and DC?

No, the AIS requirement only applies to funds made available by a State water pollution control revolving fund as authorized by title VI of the Federal Water Pollution Control Act (33 U.S.C. 1381 et seq.) or made available by a drinking water treatment revolving loan fund as authorized by section 1452 of the Safe Drinking Water Act (42 U.S.C. 300j–12)

Covered Iron and Steel Products

11) What is an iron or steel product?

For purposes of the CWSRF and DWSRF projects that must comply with the AIS requirement, an iron or steel product is one of the following made primarily of iron or steel that is permanently incorporated into the public water system or treatment works:

Lined or unlined pipes or fittings;
Manhole Covers;
Municipal Castings (defined in more detail below);
Hydrants;
Tanks;
Flanges;
Pipe clamps and restraints;
Valves;
Structural steel (defined in more detail below);
Reinforced precast concrete; and
Construction materials (defined in more detail below).

12) What does the term 'primarily iron or steel' mean?

'Primarily iron or steel' places constraints on the list of products above. For one of the listed products to be considered subject to the AIS requirements, it must be made of greater than 50% iron or steel, measured by cost. The cost should be based on the material costs.

13) Can you provide an example of how to perform a cost determination?

For example, the iron portion of a fire hydrant would likely be the bonnet, body and shoe, and the cost then would include the pouring and casting to create those components. The other material costs would include non-iron and steel internal workings of the fire hydrant (i.e., stem, coupling, valve, seals, etc). However, the assembly of the internal workings into the hydrant body would not be included in this cost calculation. If one of the listed products is not made primarily of iron or steel, United States (US) provenance is not required. An exception to this definition is reinforced precast concrete, which is addressed in a later question.

14) If a product is composed of more than 50% iron or steel, but is not listed in the above list of items, must the item be produced in the US? Alternatively, must the iron or steel in such a product be produced in the US?

The answer to both question is no. Only items on the above list must be produced in the US. Additionally, the iron or steel in a non-listed item can be sourced from outside the US.

15) What is the definition of steel?

Steel means an alloy that includes at least 50 percent iron, between .02 and 2 percent carbon, and may include other elements. Metallic elements such as chromium, nickel, molybdenum, manganese, and silicon may be added during the melting of steel for the purpose of enhancing properties such as corrosion resistance, hardness, or strength. The definition of steel covers carbon steel, alloy steel, stainless steel, tool steel and other specialty steels.

16) What does 'produced in the United States' mean?

Production in the United States of the iron or steel products used in the project requires that all manufacturing processes, including application of coatings, must take place in the United States, with the exception of metallurgical processes involving refinement of steel additives. All manufacturing processes includes processes such as melting, refining, forming, rolling, drawing, finishing, fabricating and coating. Further, if a domestic iron and steel product is taken out of the US for any part of the manufacturing process, it becomes foreign source material. However, raw materials such as iron ore, limestone and iron and steel scrap are not covered by the AIS requirement, and the

material(s), if any, being applied as a coating are similarly not covered. Non-iron or steel components of an iron and steel product may come from non-US sources. For example, for products such as valves and hydrants, the individual non-iron and steel components do not have to be of domestic origin.

17) Are the raw materials used in the production of iron or steel required to come from US sources?

No. Raw materials, such as iron ore, limestone, scrap iron, and scrap steel, can come from non-US sources.

18) If an above listed item is primarily made of iron or steel, but is only at the construction site temporarily, must such an item be produced in the US?

No. Only the above listed products made primarily of iron or steel, permanently incorporated into the project must be produced in the US. For example trench boxes, scaffolding or equipment, which are removed from the project site upon completion of the project, are not required to be made of U.S. Iron or Steel.

19) What is the definition of 'municipal castings'?

Municipal castings are cast iron or steel infrastructure products that are melted and cast. They typically provide access, protection, or housing for components incorporated into utility owned drinking water, storm water, wastewater, and surface infrastructure. They are typically made of grey or ductile iron, or steel. Examples of municipal castings are:

Access Hatches;
Ballast Screen;
Benches (Iron or Steel);
Bollards;
Cast Bases;
Cast Iron Hinged Hatches, Square and Rectangular;
Cast Iron Riser Rings;
Catch Basin Inlet;
Cleanout/Monument Boxes;
Construction Covers and Frames;
Curb and Corner Guards;
Curb Openings;
Detectable Warning Plates;
Downspout Shoes (Boot, Inlet);
Drainage Grates, Frames and Curb Inlets;
Inlets;
Junction Boxes;
Lampposts;
Manhole Covers, Rings and Frames, Risers;

Meter Boxes;
Service Boxes;
Steel Hinged Hatches, Square and Rectangular;
Steel Riser Rings;
Trash receptacles;
Tree Grates;
Tree Guards;
Trench Grates; and
Valve Boxes, Covers and Risers.

20) What is 'structural steel'?

Structural steel is rolled flanged shapes, having at least one dimension of their cross-section three inches or greater, which are used in the construction of bridges, buildings, ships, railroad rolling stock, and for numerous other constructional purposes. Such shapes are designated as wide-flange shapes, standard I-beams, channels, angles, tees and zees. Other shapes include H-piles, sheet piling, tie plates, cross ties, and those for other special purposes.

21) What is a 'construction material' for purposes of the AIS requirement?

Construction materials are those articles, materials, or supplies made primarily of iron and steel, that are permanently incorporated into the project, not including mechanical and/or electrical components, equipment and systems. Some of these products may overlap with what is also considered "structural steel". This includes, but is not limited to, the following products: wire rod, bar, angles, concrete reinforcing bar, wire, wire cloth, wire rope and cables, tubing, framing, joists, trusses, fasteners (i.e., nuts and bolts), welding rods, decking, grating, railings, stairs, access ramps, fire escapes, ladders, wall panels, dome structures, roofing, ductwork, surface drains, cable hanging systems, manhole steps, fencing and fence tubing, guardrails, doors, and stationary screens.

22) What is not considered a 'construction material' for purposes of the AIS requirement?

Mechanical and electrical components, equipment and systems are not considered construction materials. Mechanical equipment is typically that which has motorized parts and/or is powered by a motor. Electrical equipment is typically any machine powered by electricity and includes components that are part of the electrical distribution system.

The following examples (including their appurtenances necessary for their intended use and operation) are NOT considered construction materials: pumps, motors, gear reducers, drives (including variable frequency drives (VFDs)), electric/pneumatic/manual accessories used to operate valves (such as electric valve actuators), mixers, gates, motorized screens (such as traveling screens), blowers/aeration equipment, compressors, meters, sensors, controls and switches, supervisory control and

data acquisition (SCADA), membrane bioreactor systems, membrane filtration systems, filters, clarifiers and clarifier mechanisms, rakes, grinders, disinfection systems, presses (including belt presses), conveyors, cranes, HVAC (excluding ductwork), water heaters, heat exchangers, generators, cabinetry and housings (such as electrical boxes/enclosures), lighting fixtures, electrical conduit, emergency life systems, metal office furniture, shelving, laboratory equipment, analytical instrumentation, and dewatering equipment.

23) If the iron or steel is produced in the US, may other steps in the manufacturing process take place outside of the US, such as assembly?

No. Production in the US of the iron or steel used in a listed product requires that all manufacturing processes must take place in the United States, except metallurgical processes involving refinement of steel additives.

24) What processes must occur in the US to be compliant with the AIS requirement for reinforced precast concrete?

While reinforced precast concrete may not be at least 50% iron or steel, in this particular case, the reinforcing bar and wire must be produced in the US and meet the same standards as for any other iron or steel product. Additionally, the casting of the concrete product must take place in the US. The cement and other raw materials used in concrete production are not required to be of domestic origin.

If the reinforced concrete is cast at the construction site, the reinforcing bar and wire are considered to be a construction material and must be produced in the US.

Compliance

25) How should an assistance recipient document compliance with the AIS requirement?

In order to ensure compliance with the AIS requirement, specific AIS contract language must be included in each contract, starting with the assistance agreement, all the way down to the purchase agreements. Sample language for assistance agreements and contracts can be found in Appendix 3 and 4.

EPA recommends the use of a step certification process, similar to one used by the Federal Highway Administration. The step certification process is a method to ensure that producers adhere to the AIS requirement and assistance recipients can verify that products comply with the AIS requirement. The process also establishes accountability and better enables States to take enforcement actions against violators.

Step certification creates a paper trail which documents the location of the manufacturing process involved with the production of steel and iron materials. A step certification is a process under which each handler (supplier, fabricator, manufacturer,

processor, etc) of the iron and steel products certifies that their step in the process was domestically performed. Each time a step in the manufacturing process takes place, the manufacturer delivers its work along with a certification of its origin. A certification can be quite simple. Typically, it includes the name of the manufacturer, the location of the manufacturing facility where the product or process took place (not its headquarters), a description of the product or item being delivered, and a signature by a manufacturer's responsible party. Attached, as Appendix 5, are sample certifications. These certifications should be collected and maintained by assistance recipients.

Alternatively, the final manufacturer that delivers the iron or steel product to the worksite, vendor, or contractor, may provide a certification asserting that all manufacturing processes occurred in the US. While this type of certification may be acceptable, it may not provide the same degree of assurance. Additional documentation may be needed if the certification is lacking important information. Step certification is the best practice.

26) How should a State ensure assistance recipients are complying with the AIS requirement?

In order to ensure compliance with the AIS requirement, States SRF programs must include specific AIS contract language in the assistance agreement. Sample language for assistance agreements can be found in Appendix 3.

States should also, as a best practice, conduct site visits of projects during construction and review documentation demonstrating proof of compliance which the assistance recipient has gathered.

27) What happens if a State or EPA finds a non-compliant iron and/or steel product permanently incorporated in the project?

If a potentially non-compliant product is identified, the State should notify the assistance recipient of the apparent unauthorized use of the non-domestic component, including a proposed corrective action, and should be given the opportunity to reply. If unauthorized use is confirmed, the State can take one or more of the following actions: request a waiver where appropriate; require the removal of the non-domestic item; or withhold payment for all or part of the project. Only EPA can issue waivers to authorize the use of a non-domestic item. EPA may use remedies available to it under the Clean Water Act, the Safe Drinking Water Act, and 40 CFR part 31 grant regulations, in the event of a violation of a grant term and condition.

It is recommended that the State work collaboratively with EPA to determine the appropriate corrective action, especially in cases where the State is the one who identifies the item in noncompliance or there is a disagreement with the assistance recipient.

If fraud, waste, abuse, or any violation of the law is suspected, the Office of Inspector General (OIG) should be contacted immediately. The OIG can be reached at 1-

888-546-8740 or OIG_Hotline@epa.gov. More information can be found at this website: http://www.epa.gov/oig/hotline.htm.

28) How do international trade agreements affect the implementation of the AIS requirements?

The AIS provision applies in a manner consistent with United States obligations under international agreements. Typically, these obligations only apply to direct procurement by the entities that are signatories to such agreements. In general, SRF assistance recipients are not signatories to such agreements, so these agreements have no impact on this AIS provision. In the few instances where such an agreement applies to a municipality, that municipality is under the obligation to determine its applicability and requirements and document the actions taken to comply for the State.

Waiver Process

The statute permits EPA to issue waivers for a case or category of cases where EPA finds (1) that applying these requirements would be inconsistent with the public interest; (2) iron and steel products are not produced in the US in sufficient and reasonably available quantities and of a satisfactory quality; or (3) inclusion of iron and steel products produced in the US will increase the cost of the overall project by more than 25 percent.

In order to implement the AIS requirements, EPA has developed an approach to allow for effective and efficient implementation of the waiver process to allow projects to proceed in a timely manner. The framework described below will allow States, on behalf of the assistance recipients, to apply for waivers of the AIS requirement directly to EPA Headquarters. Only waiver requests received from states will be considered. Pursuant to the Act, EPA has the responsibility to make findings as to the issuance of waivers to the AIS requirements.

Definitions

The following terms are critical to the interpretation and implementation of the AIS requirements and apply to the process described in this memorandum:

Reasonably Available Quantity: The quantity of iron or steel products is available or will be available at the time needed and place needed, and in the proper form or specification as specified in the project plans and design.

Satisfactory Quality: The quality of iron or steel products, as specified in the project plans and designs.

Assistance Recipient: A borrower or grantee that receives funding from a State CWSRF or DWSRF program.

Step-By-Step Waiver Process

Application by Assistance Recipient

Each local entity that receives SRF water infrastructure financial assistance is required by section 436 of the Act to use American made iron and steel products in the construction of its project. However, the recipient may request a waiver. Until a waiver is granted by EPA, the AIS requirement stands, except as noted above with respect to municipalities covered by international agreements.

The waiver process begins with the SRF assistance recipient. In order to fulfill the AIS requirement, the assistance recipient must in good faith design the project (where applicable) and solicit bids for construction with American made iron and steel products. It is essential that the assistance recipient include the AIS terms in any request for proposals or solicitations for bids, and in all contracts (see Appendix 3 for sample construction contract language). The assistance recipient may receive a waiver at any point before, during, or after the bid process, if one or more of three conditions is met:

1. Applying the American Iron and Steel requirements of the Act would be inconsistent with the public interest;
2. Iron and steel products are not produced in the United States in sufficient and reasonably available quantities and of a satisfactory quality; or
3. Inclusion of iron and steel products produced in the United States will increase the cost of the overall project by more than 25 percent.

Proper and sufficient documentation must be provided by the assistance recipient. A checklist detailing the types of information required for a waiver to be processed is attached as Appendix 1.

Additionally, it is strongly encouraged that assistance recipients hold pre-bid conferences with potential bidders. A pre-bid conference can help to identify iron and steel products needed to complete the project as described in the plans and specifications that may not be available from domestic sources. It may also identify the need to seek a waiver prior to bid, and can help inform the recipient on compliance options.

In order to apply for a project waiver, the assistance recipient should email the request in the form of a Word document (.doc) to the State SRF program. It is strongly recommended that the State designate a single person for all AIS communications. The State SRF designee will review the application for the waiver and determine whether the necessary information has been included. Once the waiver application is complete, the State designee will forward the application to either of two email addresses. For CWSRF waiver requests, please send the application to: cwsrfwaiver@epa.gov. For DWSRF waiver requests, please send the application to: dwsrfwaiver@epa.gov.

Evaluation by EPA

After receiving an application for waiver of the AIS requirements, EPA Headquarters will publish the request on its website for 15 days and receive informal comment. EPA Headquarters will then use the checklist in Appendix 2 to determine whether the application properly and adequately documents and justifies the statutory basis cited for the waiver – that it is quantitatively and qualitatively sufficient – and to determine whether or not to grant the waiver.

In the event that EPA finds that adequate documentation and justification has been submitted, the Administrator may grant a waiver to the assistance recipient. EPA will notify the State designee that a waiver request has been approved or denied as soon as such a decision has been made. Granting such a waiver is a three-step process:

1. Posting – After receiving an application for a waiver, EPA is required to publish the application and all material submitted with the application on EPA's website for 15 days. During that period, the public will have the opportunity to review the request and provide informal comment to EPA. The website can be found at: http://water.epa.gov/grants_funding/aisrequirement.cfm

2. Evaluation – After receiving an application for waiver of the AIS requirements, EPA Headquarters will use the checklist in Appendix 2 to determine whether the application properly and adequately documents and justifies the statutory basis cited for the waiver – that it is quantitatively and qualitatively sufficient – and to determine whether or not to grant the waiver.

3. Signature of waiver approval by the Administrator or another agency official with delegated authority – As soon as the waiver is signed and dated, EPA will notify the State SRF program, and post the signed waiver on our website. The assistance recipient should keep a copy of the signed waiver in its project files.

Public Interest Waivers

EPA has the authority to issue public interest waivers. Evaluation of a public interest waiver request may be more complicated than that of other waiver requests so they may take more time than other waiver requests for a decision to be made. An example of a public interest waiver that might be issued could be for a community that has standardized on a particular type or manufacturer of a valve because of its performance to meet their specifications. Switching to an alternative valve may require staff to be trained on the new equipment and additional spare parts would need to be purchased and stocked, existing valves may need to be unnecessarily replaced, and portions of the system may need to be redesigned. Therefore, requiring the community to install an alternative valve would be inconsistent with public interest.

EPA also has the authority to issue a public interest waiver that covers categories of products that might apply to all projects.

EPA reserves the right to issue national waivers that may apply to particular classes of assistance recipients, particular classes of projects, or particular categories of iron or steel products. EPA may develop national or (US geographic) regional categorical waivers through the identification of similar circumstances in the detailed justifications presented to EPA in a waiver request or requests. EPA may issue a national waiver based on policy decisions regarding the public's interest or a determination that a particular item is not produced domestically in reasonably available quantities or of a sufficient quality. In such cases, EPA may determine it is necessary to issue a national waiver.

If you have any questions concerning the contents of this memorandum, you may contact us, or have your staff contact Jordan Dorfman, Attorney-Advisor, State Revolving Fund Branch, Municipal Support Division, at dorfman.jordan@epa.gov or (202) 564-0614 or Kiri Anderer, Environmental Engineer, Infrastructure Branch, Drinking Water Protection Division, at anderer.kirsten@epa.gov or (202) 564-3134.

Attachments

Appendix 1: Information Checklist for Waiver Request

The purpose of this checklist is to help ensure that all appropriate and necessary information is submitted to EPA. EPA recommends that States review this checklist carefully and provide all appropriate information to EPA. This checklist is for informational purposes only and does not need to be included as part of a waiver application.

Items	✓	Notes
General • Waiver request includes the following information: — Description of the foreign and domestic construction materials — Unit of measure — Quantity — Price — Time of delivery or availability — Location of the construction project — Name and address of the proposed supplier — A detailed justification for the use of foreign construction materials • Waiver request was submitted according to the instructions in the memorandum • Assistance recipient made a good faith effort to solicit bids for domestic iron and steel products, as demonstrated by language in requests for proposals, contracts, and communications with the prime contractor		
Cost Waiver Requests • Waiver request includes the following information: — Comparison of overall cost of project with domestic iron and steel products to overall cost of project with foreign iron and steel products — Relevant excerpts from the bid documents used by the contractors to complete the comparison — Supporting documentation indicating that the contractor made a reasonable survey of the market, such as a description of the process for identifying suppliers and a list of contacted suppliers		
Availability Waiver Requests • Waiver request includes the following supporting documentation necessary to demonstrate the availability, quantity, and/or quality of the materials for which the waiver is requested: — Supplier information or pricing information from a reasonable number of domestic suppliers indicating availability/delivery date for construction materials — Documentation of the assistance recipient's efforts to find available domestic sources, such as a description of the process for identifying suppliers and a list of contacted suppliers. — Project schedule — Relevant excerpts from project plans, specifications, and permits indicating the required quantity and quality of construction materials • Waiver request includes a statement from the prime contractor and/or supplier confirming the non-availability of the domestic construction materials for which the waiver is sought • Has the State received other waiver requests for the materials described in this waiver request, for comparable projects?		

Appendix 2: HQ Review Checklist for Waiver Request

Instructions: To be completed by EPA. Review all waiver requests using the questions in the checklist, and mark the appropriate box as Yes, No or N/A. Marks that fall inside the shaded boxes may be grounds for denying the waiver. If none of your review markings fall into a shaded box, the waiver is eligible for approval if it indicates that one or more of the following conditions applies to the domestic product for which the waiver is sought:

1. The iron and/or steel products are not produced in the United States in sufficient and reasonably available quantities and of a satisfactory quality.
2. The inclusion of iron and/or steel products produced in the United States will increase the cost of the overall project by more than 25 percent.

Review Items	Yes	No	N/A	Comments
Cost Waiver Requests • Does the waiver request include the following information? — Comparison of overall cost of project with domestic iron and steel products to overall cost of project with foreign iron and steel products — Relevant excerpts from the bid documents used by the contractors to complete the comparison — A sufficient number of bid documents or pricing information from domestic sources to constitute a reasonable survey of the market • Does the Total Domestic Project exceed the Total Foreign Project Cost by more than 25%?				
Availability Waiver Requests • Does the waiver request include supporting documentation sufficient to show the availability, quantity, and/or quality of the iron and/or steel product for which the waiver is requested? — Supplier information or other documentation indicating availability/delivery date for materials — Project schedule — Relevant excerpts from project plans, specifications, and permits indicating the required quantity and quality of materials • Does supporting documentation provide sufficient evidence that the contractors made a reasonable effort to locate domestic suppliers of materials, such as a description of the process for identifying suppliers and a list of contacted suppliers? • Based on the materials delivery/availability date indicated in the supporting documentation, will the materials be unavailable when they are needed according to the project schedule? (By item, list schedule date and domestic delivery quote date or other relevant information) • Is EPA aware of any other evidence indicating the non-availability of the materials for which the waiver is requested? Examples include: — Multiple waiver requests for the materials described in this waiver request, for comparable projects in the same State — Multiple waiver requests for the materials described in this waiver request, for comparable projects in other States — Correspondence with construction trade associations indicating the non-availability of the materials • Are the available domestic materials indicated in the bid documents of inadequate quality compared those required by the project plans, specifications, and/or permits?				

Appendix 3: Example Loan Agreement Language

ALL ASSISTANCE AGREEMENT MUST HAVE A CLAUSE REQUIRING COMPLIANCE WITH THE AIS REQUIREMENT. THIS IS AN EXAMPLE OF WHAT COULD BE INCLUDED IN SRF ASSISTANCE AGREEMENTS. EPA MAKES NO CLAIMS REGARDING THE LEGALITY OF THIS CLAUSE WITH RESPECT TO STATE LAW:

Comply with all federal requirements applicable to the Loan (including those imposed by the 2014 Appropriations Act and related SRF Policy Guidelines) which the Participant understands includes, among other, requirements that all of the iron and steel products used in the Project are to be produced in the United States ("American Iron and Steel Requirement") unless (i) the Participant has requested and obtained a waiver from the Agency pertaining to the Project or (ii) the Finance Authority has otherwise advised the Participant in writing that the American Iron and Steel Requirement is not applicable to the Project.

Comply with all record keeping and reporting requirements under the Clean Water Act/Safe Drinking Water Act, including any reports required by a Federal agency or the Finance Authority such as performance indicators of program deliverables, information on costs and project progress. The Participant understands that (i) each contract and subcontract related to the Project is subject to audit by appropriate federal and state entities and (ii) failure to comply with the Clean Water Act/Safe Drinking Water Act and this Agreement may be a default hereunder that results in a repayment of the Loan in advance of the maturity of the Bonds and/or other remedial actions.

Appendix 4: Sample Construction Contract Language

ALL CONTRACTS MUST HAVE A CLAUSE REQUIRING COMPLIANCE WITH THE AIS REQUIREMENT. THIS IS AN EXAMPLE OF WHAT COULD BE INCLUDED IN ALL CONTRACTS IN PROJECTS THAT USE SRF FUNDS. EPA MAKES NO CLAIMS REGARDING THE LEGALITY OF THIS CLAUSE WITH RESPECT TO STATE OR LOCAL LAW:

The Contractor acknowledges to and for the benefit of the City of _____ ("Purchaser") and the _____ (the "State") that it understands the goods and services under this Agreement are being funded with monies made available by the Clean Water State Revolving Fund and/or Drinking Water State Revolving Fund that have statutory requirements commonly known as "American Iron and Steel;" that requires all of the iron and steel products used in the project to be produced in the United States ("American Iron and Steel Requirement") including iron and steel products provided by the Contactor pursuant to this Agreement. The Contractor hereby represents and warrants to and for the benefit of the Purchaser and the State that (a) the Contractor has reviewed and understands the American Iron and Steel Requirement, (b) all of the iron and steel products used in the project will be and/or have been produced in the United States in a manner that complies with the American Iron and Steel Requirement, unless a waiver of the requirement is approved, and (c) the Contractor will provide any further verified information, certification or assurance of compliance with this paragraph, or information necessary to support a waiver of the American Iron and Steel Requirement, as may be requested by the Purchaser or the State. Notwithstanding any other provision of this Agreement, any failure to comply with this paragraph by the Contractor shall permit the Purchaser or State to recover as damages against the Contractor any loss, expense, or cost (including without limitation attorney's fees) incurred by the Purchaser or State resulting from any such failure (including without limitation any impairment or loss of funding, whether in whole or in part, from the State or any damages owed to the State by the Purchaser). While the Contractor has no direct contractual privity with the State, as a lender to the Purchaser for the funding of its project, the Purchaser and the Contractor agree that the State is a third-party beneficiary and neither this paragraph (nor any other provision of this Agreement necessary to give this paragraph force or effect) shall be amended or waived without the prior written consent of the State.

Appendix 5: Sample Certifications

The following information is provided as a sample letter of **step** certification for AIS compliance. Documentation must be provided on company letterhead.

Date

Company Name

Company Address

City, State Zip

Subject: American Iron and Steel Step Certification for Project (XXXXXXXXXX)

I, (company representative), certify that the (melting, bending, coating, galvanizing, cutting, etc.) process for (manufacturing or fabricating) the following products and/or materials shipped or provided for the subject project is in full compliance with the American Iron and Steel requirement as mandated in EPA's State Revolving Fund Programs.

Item, Products and/or Materials:

1. Xxxx
2. Xxxx
3. Xxxx

Such process took place at the following location:

_____

If any of the above compliance statements change while providing material to this project we will immediately notify the prime contractor and the engineer.

Signed by company representative

The following information is provided as a sample letter of certification for AIS compliance. Documentation must be provided on company letterhead.

Date

Company Name

Company Address

City, State Zip

Subject: American Iron and Steel Certification for Project (XXXXXXXXXX)

I, (company representative), certify that the following products and/or materials shipped/provided to the subject project are in full compliance with the American Iron and Steel requirement as mandated in EPA's State Revolving Fund Programs.

Item, Products and/or Materials:

1. Xxxx
2. Xxxx
3. Xxxx

Such process took place at the following location:

_____

If any of the above compliance statements change while providing material to this project we will immediately notify the prime contractor and the engineer.

Signed by company representative

DAVIS-BACON REQUIREMENTS

For purposes of this Exhibit only, “subrecipient” or “sub recipient” means the Recipient as defined in this Agreement.

For purposes of this Exhibit only, “recipient” or “State recipient” means the State Water Board.

I. Requirements For Sub recipients That Are Governmental Entities:

If a sub recipient has questions regarding when Davis-Bacon (DB) applies, obtaining the correct DB wage determinations, DB provisions, or compliance monitoring, it may contact the State Water Board at DavisBacon@waterboards.ca.gov or phone (916) 327-7323. The recipient or sub recipient may also obtain additional guidance from DOL’s web site at http://www.dol.gov/whd/

1. Applicability of the Davis- Bacon (DB) prevailing wage requirements.

DB prevailing wage requirements apply to the construction, alteration, and repair of treatment works carried out in whole or in part with assistance made available by a State water pollution control revolving fund and to any construction project carried out in whole or in part by assistance made available by a drinking water treatment revolving loan fund. If a sub recipient encounters a unique situation at a site that presents uncertainties regarding DB applicability, the sub recipient must discuss the situation with the recipient State before authorizing work on that site.

2. Obtaining Wage Determinations.

(a) Sub recipients shall obtain the wage determination for the locality in which a covered activity subject to DB will take place prior to issuing requests for bids, proposals, quotes or other methods for soliciting contracts (solicitation) for activities subject to DB. These wage determinations shall be incorporated into solicitations and any subsequent contracts. Prime contracts must contain a provision requiring that subcontractors follow the wage determination incorporated into the prime contract.

(i) While the solicitation remains open, the sub recipient shall monitor www.wdol.gov weekly to ensure that the wage determination contained in the solicitation remains current. The sub recipients shall amend the solicitation if DOL issues a modification more than 10 days prior to the closing date (i.e. bid opening) for the solicitation. If DOL modifies or supersedes the applicable wage determination less than 10 days prior to the closing date, the sub recipients may request a finding from the State recipient that there is not a reasonable time to notify interested contractors of the modification of the wage determination. The State recipient will provide a report of its findings to the sub recipient.

(ii) If the sub recipient does not award the contract within 90 days of the closure of the solicitation, any modifications or supersedes DOL makes to the wage determination contained in the solicitation shall be effective unless the State recipient, at the request of the sub recipient, obtains an extension of the 90 day period from DOL pursuant to 29 CFR 1.6(c)(3)(iv). The sub recipient shall monitor www.wdol.gov on a weekly basis if it does not award the contract within 90 days of closure of the solicitation to ensure that wage determinations contained in the solicitation remain current.

(b) If the sub recipient carries out activity subject to DB by issuing a task order, work assignment or similar instrument to an existing contractor (ordering instrument) rather than by publishing a solicitation, the sub recipient shall insert the appropriate DOL wage determination from www.wdol.gov into the ordering instrument.

(c) Sub recipients shall review all subcontracts subject to DB entered into by prime contractors to verify that the prime contractor has required its subcontractors to include the applicable wage determinations.

(d) As provided in 29 CFR 1.6(f), DOL may issue a revised wage determination applicable to a sub recipient's contract after the award of a contract or the issuance of an ordering instrument if DOL determines that the sub recipient has failed to incorporate a wage determination or has used a wage determination that clearly does not apply to the contract or ordering instrument. If this occurs, the sub recipient shall either terminate the contract or ordering instrument and issue a revised solicitation or ordering instrument or incorporate DOL's wage determination retroactive to the beginning of the contract or ordering instrument by change order. The sub recipient's contractor must be compensated for any increases in wages resulting from the use of DOL's revised wage determination.

3. Contract and Subcontract provisions.

(a) The Recipient shall insure that the sub recipient(s) shall insert in full in any contract in excess of $2,000 which is entered into for the actual construction, alteration and/or repair, including painting and decorating, of a treatment work under the CWSRF or a construction project under the DWSRF - financed in whole or in part from Federal funds or in accordance with guarantees of a Federal agency or financed from funds obtained by pledge of any contract of a Federal agency to make a loan, grant or annual contribution (except where a different meaning is expressly indicated), and which is subject to the labor standards provisions of any of the acts listed in 29 CFR § 5.1 or, for CWSRF projects, the FY 2015 Water Resource Reform and Development Act, or for DWSRF projects, the Consolidated Appropriations Act, 2017, the following clauses:

(1) Minimum wages.

(i) All laborers and mechanics employed or working upon the site of the work will be paid unconditionally and not less often than once a week, and without subsequent deduction or rebate on any account (except such payroll deductions as are permitted by regulations issued by the Secretary of Labor under the Copeland Act (29 CFR part 3)), the full amount of wages and bona fide fringe benefits (or cash equivalents thereof) due at time of payment computed at rates not less than those contained in the wage determination of the Secretary of Labor which is attached hereto and made a part hereof, regardless of any contractual relationship which may be alleged to exist between the contractor and such laborers and mechanics. Contributions made or costs reasonably anticipated for bona fide fringe benefits under section 1(b)(2) of the Davis-Bacon Act on behalf of laborers or mechanics are considered wages paid to such laborers or mechanics, subject to the provisions of paragraph (a)(1)(iv) of this section; also, regular contributions made or costs incurred for more than a weekly period (but not less often than quarterly) under plans, funds, or programs which cover the particular weekly period, are deemed to be constructively made or incurred during such weekly period. Such laborers and mechanics shall be paid the appropriate wage rate and fringe benefits on the wage determination for the classification of work actually performed, without regard to skill, except as provided in § 5.5(a)(4). Laborers or mechanics performing work in more than one classification may be compensated at the rate specified for each classification for the time actually worked therein: Provided that the employer's payroll records accurately set forth the time spent in each classification in which work is performed. The wage determination (including any additional classification and wage rates conformed under paragraph (a)(1)(ii) of this section) and the Davis-Bacon poster (WH-1321) shall be posted at all times by the contractor and its subcontractors at the site of the work in a prominent and accessible place where it can be easily seen by the workers. Sub recipients may obtain wage determinations from the U.S. Department of Labor's web site, www.dol.gov.

(ii)(A) The sub recipient(s), on behalf of EPA, shall require that any class of laborers or mechanics, including helpers, which is not listed in the wage determination and which is to be employed under the contract shall be classified in conformance with the wage determination. The State award official shall approve a request for an additional classification and wage rate and fringe benefits therefore only when the following criteria have been met:

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(1) The work to be performed by the classification requested is not performed by a classification in the wage determination; and
(2) The classification is utilized in the area by the construction industry; and

(3) The proposed wage rate, including any bona fide fringe benefits, bears a reasonable relationship to the wage rates contained in the wage determination.

(B) If the contractor and the laborers and mechanics to be employed in the classification (if known), or their representatives, and the sub recipient(s) agree on the classification and wage rate (including the amount designated for fringe benefits where appropriate), documentation of the action taken and the request, including the local wage determination shall be sent by the sub recipient (s) to the State award official. The State award official will transmit the request, to the Administrator of the Wage and Hour Division, Employment Standards Administration, U.S. Department of Labor, Washington, DC 20210 and to the EPA DB Regional Coordinator concurrently. The Administrator, or an authorized representative, will approve, modify, or disapprove every additional classification request within 30 days of receipt and so advise the State award official or will notify the State award official within the 30-day period that additional time is necessary.

(C) In the event the contractor, the laborers or mechanics to be employed in the classification or their representatives, and the sub recipient(s) do not agree on the proposed classification and wage rate (including the amount designated for fringe benefits, where appropriate), the award official shall refer the request and the local wage determination, including the views of all interested parties and the recommendation of the State award official, to the Administrator for determination. The request shall be sent to the EPA DB Regional Coordinator concurrently. The Administrator, or an authorized representative, will issue a determination within 30 days of receipt of the request and so advise the contracting officer or will notify the contracting officer within the 30-day period that additional time is necessary.

(D) The wage rate (including fringe benefits where appropriate) determined pursuant to paragraphs (a)(1)(ii)(B) or (C) of this section, shall be paid to all workers performing work in the classification under this contract from the first day on which work is performed in the classification.

(iii) Whenever the minimum wage rate prescribed in the contract for a class of laborers or mechanics includes a fringe benefit which is not expressed as an hourly rate, the contractor shall either pay the benefit as stated in the wage determination or shall pay another bona fide fringe benefit or an hourly cash equivalent thereof.

(iv) If the contractor does not make payments to a trustee or other third person, the contractor may consider as part of the wages of any laborer or mechanic the amount of any costs reasonably anticipated in providing bona fide fringe benefits under a plan or program, Provided, That the Secretary of Labor has found, upon the written request of the contractor, that the applicable standards of the Davis-Bacon Act have been met. The Secretary of Labor may require the contractor to set aside in a separate account assets for the meeting of obligations under the plan or program.

(2) Withholding. The sub recipient(s), shall upon written request of the EPA Award Official or an authorized representative of the Department of Labor, withhold or cause to be withheld from the contractor under this contract or any other Federal contract with the same prime contractor, or any other federally-assisted contract subject to Davis-Bacon prevailing wage requirements, which is held by the same prime contractor, so much of the accrued payments or advances as may be considered necessary to pay laborers and mechanics, including apprentices, trainees, and helpers, employed by the contractor or any subcontractor the full amount of wages required by the contract. In the event of failure to pay any laborer or mechanic, including any apprentice, trainee, or helper, employed or working on the site of the

work, all or part of the wages required by the contract, the (Agency) may, after written notice to the contractor, sponsor, applicant, or owner, take such action as may be necessary to cause the suspension of any further payment, advance, or guarantee of funds until such violations have ceased.

(3) Payrolls and basic records.

(i) Payrolls and basic records relating thereto shall be maintained by the contractor during the course of the work and preserved for a period of three years thereafter for all laborers and mechanics working at the site of the work. Such records shall contain the name, address, and social security number of each such worker, his or her correct classification, hourly rates of wages paid (including rates of contributions or costs anticipated for bona fide fringe benefits or cash equivalents thereof of the types described in section 1(b)(2)(B) of the Davis-Bacon Act), daily and weekly number of hours worked, deductions made and actual wages paid. Whenever the Secretary of Labor has found under 29 CFR 5.5(a)(1)(iv) that the wages of any laborer or mechanic include the amount of any costs reasonably anticipated in providing benefits under a plan or program described in section 1(b)(2)(B) of the Davis-Bacon Act, the contractor shall maintain records which show that the commitment to provide such benefits is enforceable, that the plan or program is financially responsible, and that the plan or program has been communicated in writing to the laborers or mechanics affected, and records which show the costs anticipated or the actual cost incurred in providing such benefits. Contractors employing apprentices or trainees under approved programs shall maintain written evidence of the registration of apprenticeship programs and certification of trainee programs, the registration of the apprentices and trainees, and the ratios and wage rates prescribed in the applicable programs.

(ii)(A) The contractor shall submit weekly, for each week in which any contract work is performed, a copy of all payrolls to the sub recipient, that is, the entity that receives the sub-grant or loan from the State capitalization grant recipient. Such documentation shall be available on request of the State recipient or EPA. As to each payroll copy received, the sub recipient shall provide written confirmation in a form satisfactory to the State indicating whether or not the project is in compliance with the requirements of 29 CFR 5.5(a)(1) based on the most recent payroll copies for the specified week. The payrolls shall set out accurately and completely all of the information required to be maintained under 29 CFR 5.5(a)(3)(i), except that full social security numbers and home addresses shall not be included on the weekly payrolls. Instead the payrolls shall only need to include an individually identifying number for each employee (e.g., the last four digits of the employee's social security number). The required weekly payroll information may be submitted in any form desired. Optional Form WH-347 is available for this purpose from the Wage and Hour Division Web site at https://www.dol.gov/whd/forms/index.htmor its successor site. The prime contractor is responsible for the submission of copies of payrolls by all subcontractors. Contractors and subcontractors shall maintain the full social security number and current address of each covered worker, and shall provide them upon request to the sub recipient(s) for transmission to the State or EPA if requested by EPA, the State, the contractor, or the Wage and Hour Division of the Department of Labor for purposes of an investigation or audit of compliance with prevailing wage requirements. It is not a violation of this section for a prime contractor to require a subcontractor to provide addresses and social security numbers to the prime contractor for its own records, without weekly submission to the sub recipient(s).

(B) Each payroll submitted shall be accompanied by a “Statement of Compliance,” signed by the contractor or subcontractor or his or her agent who pays or supervises the payment of the persons employed under the contract and shall certify the following:

(1) That the payroll for the payroll period contains the information required to be provided under § 5.5 (a)(3)(ii) of Regulations, 29 CFR part 5, the appropriate information is being maintained under § 5.5 (a)(3)(i) of Regulations, 29 CFR part 5, and that such information is correct and complete;

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(2) That each laborer or mechanic (including each helper, apprentice, and trainee) employed on the contract during the payroll period has been paid the full weekly wages earned, without rebate, either directly or indirectly, and that no deductions have been made either directly or indirectly from the full wages earned, other than permissible deductions as set forth in
Regulations, 29 CFR part 3;

(3) That each laborer or mechanic has been paid not less than the applicable wage rates and fringe benefits or cash equivalents for the classification of work performed, as specified in the applicable wage determination incorporated into the contract.

(C) The weekly submission of a properly executed certification set forth on the reverse side of Optional Form WH-347 shall satisfy the requirement for submission of the “Statement of Compliance” required by paragraph (a)(3)(ii)(B) of this section.

(D) The falsification of any of the above certifications may subject the contractor or subcontractor to civil or criminal prosecution under section 1001 of title 18 and section 231 of title 31 of the United States Code.

(iii) The contractor or subcontractor shall make the records required under paragraph (a)(3)(i) of this section available for inspection, copying, or transcription by authorized representatives of the State, EPA or the Department of Labor, and shall permit such representatives to interview employees during working hours on the job. If the contractor or subcontractor fails to submit the required records or to make them available, the Federal agency or State may, after written notice to the contractor, sponsor, applicant, or owner, take such action as may be necessary to cause the suspension of any further payment, advance, or guarantee of funds. Furthermore, failure to submit the required records upon request or to make such records available may be grounds for debarment action pursuant to 29 CFR 5.12.

(4) Apprentices and trainees

(i) Apprentices. Apprentices will be permitted to work at less than the predetermined rate for the work they performed when they are employed pursuant to and individually registered in a bona fide apprenticeship program registered with the U.S. Department of Labor, Employment and Training Administration, Office of Apprenticeship Training, Employer and Labor Services, or with a State Apprenticeship Agency recognized by the Office, or if a person is employed in his or her first 90 days of probationary employment as an apprentice in such an apprenticeship program, who is not individually registered in the program, but who has been certified by the Office of Apprenticeship Training, Employer and Labor Services or a State Apprenticeship Agency (where appropriate) to be eligible for probationary employment as an apprentice. The allowable ratio of apprentices to journeymen on the job site in any craft classification shall not be greater than the ratio permitted to the contractor as to the entire work force under the registered program. Any worker listed on a payroll at an apprentice wage rate, who is not registered or otherwise employed as stated above, shall be paid not less than the applicable wage rate on the wage determination for the classification of work actually performed. In addition, any apprentice performing work on the job site in excess of the ratio permitted under the registered program shall be paid not less than the applicable wage rate on the wage determination for the work actually performed. Where a contractor is performing construction on a project in a locality other than that in which its program is registered, the ratios and wage rates (expressed in percentages of the journeyman's hourly rate) specified in the contractor's or subcontractor's registered program shall be observed. Every apprentice must be paid at not less than the rate specified in the registered program for the apprentice's level of progress, expressed as a percentage of the journeymen hourly rate specified in the applicable wage determination. Apprentices shall be paid fringe benefits in accordance with the provisions of the apprenticeship program. If the apprenticeship program does not specify fringe benefits, apprentices must be paid the full amount of fringe benefits listed on the wage determination for the applicable classification. If the Administrator determines that a different practice prevails for the applicable apprentice classification, fringes shall be paid in accordance with that

determination. In the event the Office of Apprenticeship Training, Employer and Labor Services, or a State Apprenticeship Agency recognized by the Office, withdraws approval of an apprenticeship program, the contractor will no longer be permitted to utilize apprentices at less than the applicable predetermined rate for the work performed until an acceptable program is approved.

(ii) Trainees. Except as provided in 29 CFR 5.16, trainees will not be permitted to work at less than the predetermined rate for the work performed unless they are employed pursuant to and individually registered in a program which has received prior approval, evidenced by formal certification by the U.S. Department of Labor, Employment and Training Administration. The ratio of trainees to journeymen on the job site shall not be greater than permitted under the plan approved by the Employment and Training Administration. Every trainee must be paid at not less than the rate specified in the approved program for the trainee's level of progress, expressed as a percentage of the journeyman hourly rate specified in the applicable wage determination. Trainees shall be paid fringe benefits in accordance with the provisions of the trainee program. If the trainee program does not mention fringe benefits, trainees shall be paid the full amount of fringe benefits listed on the wage determination unless the Administrator of the Wage and Hour Division determines that there is an apprenticeship program associated with the corresponding journeyman wage rate on the wage determination which provides for less than full fringe benefits for apprentices. Any employee listed on the payroll at a trainee rate who is not registered and participating in a training plan approved by the Employment and Training Administration shall be paid not less than the applicable wage rate on the wage determination for the classification of work actually performed. In addition, any trainee performing work on the job site in excess of the ratio permitted under the registered program shall be paid not less than the applicable wage rate on the wage determination for the work actually performed. In the event the Employment and Training Administration withdraws approval of a training program, the contractor will no longer be permitted to utilize trainees at less than the applicable predetermined rate for the work performed until an acceptable program is approved.

(iii) Equal employment opportunity. The utilization of apprentices, trainees and journeymen under this part shall be in conformity with the equal employment opportunity requirements of Executive Order 11246, as amended and 29 CFR part 30.

(5) Compliance with Copeland Act requirements. The contractor shall comply with the requirements of 29 CFR part 3, which are incorporated by reference in this contract.

(6) Subcontracts. The contractor or subcontractor shall insert in any subcontracts the clauses contained in 29 CFR 5.5(a)(1) through (10) and such other clauses as the EPA determines may by appropriate, and also a clause requiring the subcontractors to include these clauses in any lower tier subcontracts. The prime contractor shall be responsible for the compliance by any subcontractor or lower tier subcontractor with all the contract clauses in 29 CFR 5.5.

(7) Contract termination; debarment. A breach of the contract clauses in 29 CFR 5.5 may be grounds for termination of the contract, and for debarment as a contractor and a subcontractor as provided in 29 CFR 5.12.

(8) Compliance with Davis-Bacon and Related Act requirements. All rulings and interpretations of the Davis-Bacon and Related Acts contained in 29 CFR parts 1, 3, and 5 are herein incorporated by reference in this contract.

(9) Disputes concerning labor standards. Disputes arising out of the labor standards provisions of this contract shall not be subject to the general disputes clause of this contract. Such disputes shall be resolved in accordance with the procedures of the Department of Labor set forth in 29 CFR parts 5, 6, and 7. Disputes within the meaning of this clause include disputes between the contractor (or any of its subcontractors) and sub recipient(s), State, EPA, the U.S. Department of Labor, or the employees or their representatives.

DAVIS-BACON REQUIREMENTS

(10) Certification of eligibility.
(i) By entering into this contract, the contractor certifies that neither it (nor he or she) nor any person or firm who has an interest in the contractor's firm is a person or firm ineligible to be awarded Government contracts by virtue of section 3(a) of the Davis-Bacon Act or 29 CFR 5.12(a)(1).

(ii) No part of this contract shall be subcontracted to any person or firm ineligible for award of a Government contract by virtue of section 3(a) of the Davis-Bacon Act or 29 CFR 5.12(a)(1).

(iii) The penalty for making false statements is prescribed in the U.S. Criminal Code, 18 U.S.C. 1001.

4. Contract Provision for Contracts in Excess of $100,000.

(a) Contract Work Hours and Safety Standards Act. The sub recipient shall insert the following clauses set forth in paragraphs (a)(1), (2), (3), and (4) of this section in full in any contract in an amount in excess of $100,000 and subject to the overtime provisions of the Contract Work Hours and Safety Standards Act. These clauses shall be inserted in addition to the clauses required by Item 3, above or 29 CFR 4.6. As used in this paragraph, the terms laborers and mechanics include watchmen and guards.

(1) Overtime requirements. No contractor or subcontractor contracting for any part of the contract work which may require or involve the employment of laborers or mechanics shall require or permit any such laborer or mechanic in any workweek in which he or she is employed on such work to work in excess of forty hours in such workweek unless such laborer or mechanic receives compensation at a rate not less than one and one-half times the basic rate of pay for all hours worked in excess of forty hours in such workweek.

(2) Violation; liability for unpaid wages; liquidated damages. In the event of any violation of the clause set forth in paragraph (a)(1) of this section the contractor and any subcontractor responsible therefore shall be liable for the unpaid wages. In addition, such contractor and subcontractor shall be liable to the United States (in the case of work done under contract for the District of Columbia or a territory, to such District or to such territory), for liquidated damages. Such liquidated damages shall be computed with respect to each individual laborer or mechanic, including watchmen and guards, employed in violation of the clause set forth in paragraph (a)(1) of this section, in the sum of $25 for each calendar day on which such individual was required or permitted to work in excess of the standard workweek of forty hours without payment of the overtime wages required by the clause set forth in paragraph (a)(1) of this section.

(3) Withholding for unpaid wages and liquidated damages. The sub recipient, upon written request of the EPA Award Official or an authorized representative of the Department of Labor, shall withhold or cause to be withheld, from any moneys payable on account of work performed by the contractor or subcontractor under any such contract or any other Federal contract with the same prime contractor, or any other federally-assisted contract subject to the Contract Work Hours and Safety Standards Act, which is held by the same prime contractor, such sums as may be determined to be necessary to satisfy any liabilities of such contractor or subcontractor for unpaid wages and liquidated damages as provided in the clause set forth in paragraph (b)(2) of this section.

(4) Subcontracts. The contractor or subcontractor shall insert in any subcontracts the clauses set forth in paragraph (a)(1) through (4) of this section and also a clause requiring the subcontractors to include these clauses in any lower tier subcontracts. The prime contractor shall be responsible for compliance by any subcontractor or lower tier subcontractor with the clauses set forth in paragraphs (a)(1) through (4) of this section. (b) In addition to the clauses contained in Item 3, above, in any contract subject only to the Contract Work Hours and Safety Standards Act and not to any of the other statutes cited in 29 CFR 5.1, the Sub recipient shall insert a clause requiring that the contractor or subcontractor shall maintain payrolls

and basic payroll records during the course of the work and shall preserve them for a period of three years from the completion of the contract for all laborers and mechanics, including guards and watchmen, working on the contract. Such records shall contain the name and address of each such employee, social security number, correct classifications, hourly rates of wages paid, daily and weekly number of hours worked, deductions made, and actual wages paid. Further, the Sub recipient shall insert in any such contract a clause providing that the records to be maintained under this paragraph shall be made available by the contractor or subcontractor for inspection, copying, or transcription by authorized representatives of the USEPA and the Department of Labor and the State Water Board, and the contractor or subcontractor will permit such representatives to interview employees during working hours on the job.

5. Compliance Verification

(a) The sub recipient shall periodically interview a sufficient number of employees entitled to DB prevailing wages (covered employees) to verify that contractors or subcontractors are paying the appropriate wage rates. As provided in 29 CFR 5.6(a)(3), all interviews must be conducted in confidence. The sub recipient must use Standard Form 1445 (SF 1445) or equivalent documentation to memorialize the interviews. Copies of the SF 1445 are available from EPA on request.

(b) The sub recipient shall establish and follow an interview schedule based on its assessment of the risks of noncompliance with DB posed by contractors or subcontractors and the duration of the contract or subcontract. Sub recipients must conduct more frequent interviews if the initial interviews or other information indicated that there is a risk that the contractor or subcontractor is not complying with DB. Sub recipients shall immediately conduct interviews in response to an alleged violation of the prevailing wage requirements. All interviews shall be conducted in confidence."

(c) The sub recipient shall periodically conduct spot checks of a representative sample of weekly payroll data to verify that contractors or subcontractors are paying the appropriate wage rates. The sub recipient shall establish and follow a spot check schedule based on its assessment of the risks of noncompliance with DB posed by contractors or subcontractors and the duration of the contract or subcontract. At a minimum, if practicable, the sub recipient should spot check payroll data within two weeks of each contractor or subcontractor’s submission of its initial payroll data and two weeks prior to the completion date the contract or subcontract. Sub recipients must conduct more frequent spot checks if the initial spot check or other information indicates that there is a risk that the contractor or subcontractor is not complying with DB. In addition, during the examinations the sub recipient shall verify evidence of fringe benefit plans and payments there under by contractors and subcontractors who claim credit for fringe benefit contributions.

(d) The sub recipient shall periodically review contractors’ and subcontractors’ use of apprentices and trainees to verify registration and certification with respect to apprenticeship and training programs approved by either the U.S Department of Labor or a state, as appropriate, and that contractors and subcontractors are not using disproportionate numbers of, laborers, trainees and apprentices. These reviews shall be conducted in accordance with the schedules for spot checks and interviews described in Item 5(b) and (c) above.

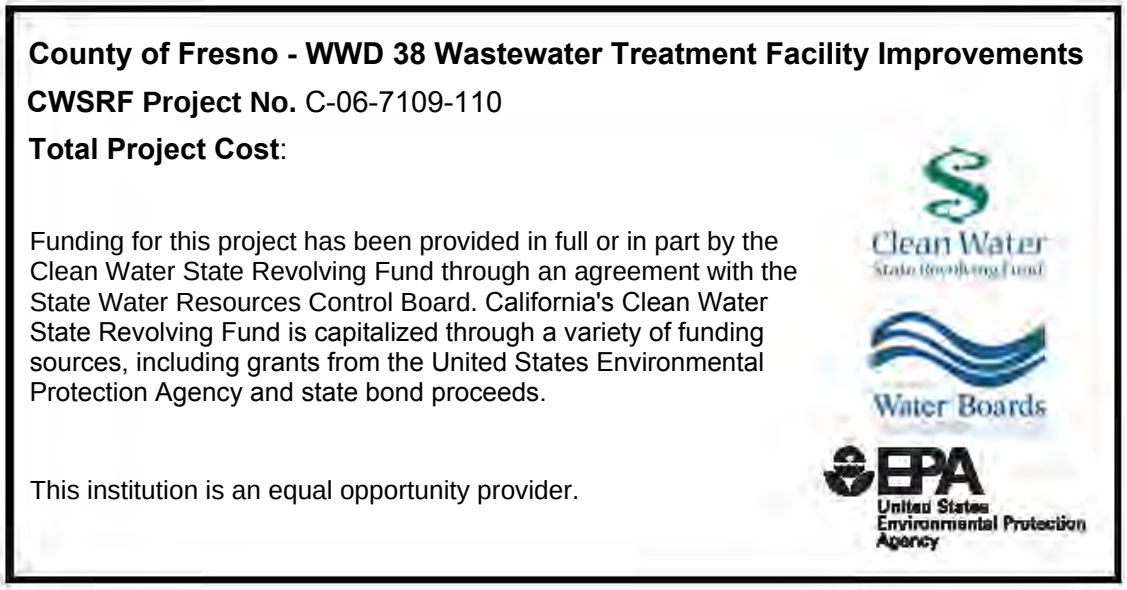
(e) Sub recipients must immediately report potential violations of the DB prevailing wage requirements to the EPA DB contact listed above and to the appropriate DOL Wage and Hour District Office listed at http://www.dol.gov/whd/america2.htm.

Project Details

PROJECT SIGNAGE

The Contactor shall place a Clean Water State Revolving Fund sign at a prominent location designated by the County. The sign shall be at least four feet tall by eight feet wide and made of ¾ inch thick exterior grade plywood. The sign shall be supported by two 16 feet tall, 4x4 smooth wood posts, painted white. All logos are available from the California State Water Resources Control Board, Division of Financial Assistance, and are downloadable on their website. The sign shall be prepared in a professional manner. The sign shall be kept in good condition for the duration of construction.

See below for the Clean Water State Revolving Fund sign template.



Actual Text size should reflect the text size depicted in the example.
Actual text style shall be Arial (normal) and the text color shall be black on a white background.
Actual Graphic Size should reflect the graphic size depicted in the example.
Project Cost should reflect the awarded bid.

****END OF SECTION****

Invoice

County of Fresno
Department of Public Works & Planning
Mailing Address: 2220 Tulare Street, 6th Floor Fresno, CA 93721
24-HR REQUEST LINE: 600-4131 LOCAL: 600-4560
TOLL FREE: 800742-1011 FAX: 600-4201

INVOICE TO: COUNTY OF FRESNO/RESOURCES DIVISION

INVOICE NO: 94699
INVOICE DATE: February 13, 2017
PERMIT #: Folder 17 100912 000 00 FC
REFERENCE #:
PROJECT LOCATION:28763 SKY HARBOUR FRIANT CA

PROJECT DESCRIPTION: UPDATE EXISTING WASTE WATER TREATMENT FACILITY

FEE DESCRIPTION	AMOUNT	COMMENT
Building Construction Permit	$148.00	$10000 Valuation
Motors 0 - 1 HP	$12.00	Qty 1
Exterior Lighting Standards	$23.00	Qty 1
Motors over 1 HP - 5 HP	$33.50	Qty 1
Non-Fluorescent Gas Fixtures	$36.00	Qty 3
Electrical Permit Issuance	$38.00	
Motors over 5 HP - 30 HP	$42.00	Qty 1
Motors over 30 HP - 50 HP	$128.00	Qty 2
CA Bldg Standards Comm. Fee (SB-1473)	$1.00	
SMI	$2.80	
Workers Comp.	$7.50	
Electrical Plan Check	$78.13	$312.5 Electrical Permit
TOTAL	**$549.93**	

SUMMARY

PLAN CHECK	$78.13
BUILDING PERMIT	$148.00
ELECTRICAL PERMIT	$312.50
OTHER	$11.30
TOTAL	**$549.93**
Total Billed:	$549.93
Payment Recieved:	$0.00
Balance Due:	**$549.93**

SELF-DEALING TRANSACTION DISCLOSURE FORM

(1) Company Board Member Information:

Name: _____ Date: _____

Job Title: _____

(2) Company/Agency Name and Address:

_____

_____

_____

_____

(3) Disclosure (Please describe the nature of the self-dealing transaction you are a party to)

_____

_____

_____

_____

(4) Explain why this self-dealing transaction is consistent with the requirements of Corporations Code 5233 (a)

_____

_____

_____

_____

_____

_____

_____

(5) Authorized Signature

Signature: _____ Date: _____

SELF-DEALING TRANSACTION DISCLOSURE FORM INSTRUCTIONS

In order to conduct business with the County of Fresno (hereinafter referred to as "County"), members of a contractor's board of directors (hereinafter referred to as "County Contractor"), must disclose any self-dealing transactions that they are a party to while providing goods, performing services, or both for the County. A self-dealing transaction is defined below:

"A self-dealing transaction means a transaction to which the corporation is a party and which one or more of its directors has a material financial interest"

The definition above will be utilized for purposes of completing the disclosure form.

(1) Enter board member's name, job title (if applicable), and date this disclosure is being made.

(2) Enter the board member's company/agency name and address.

(3) Describe in detail the nature of the self-dealing transaction that is being disclosed to the County. At a minimum, include a description of the following:

   a. The name of the agency/company with which the corporation has the transaction; and

   b. The nature of the material financial interest in the Corporation's transaction that the board member has.

(4) Describe in detail why the self-dealing transaction is appropriate based on applicable provisions of the Corporations Codes.

(5) Form must be signed by the board member that is involved in the self-dealing transaction described in Sections (3) and (4).

CONTRACTOR REQUEST FOR CLARIFICATION

Waterworks District 38
Wastewater Treatment Facility Improvements

CONTRACT NUMBER: 18-08-C

Requests for clarification of the plans and specifications regarding this project shall be submitted on this form. Any change or clarification of the project plans and specifications shall be in the form of a written addendum issued to planholders of record. Contractors requesting clarification shall complete the following:

Fax form to (559) 600-4399 or e-mail to DesignServices@co.fresno.ca.us

FIRM NAME: _____

SENDER / CONTACT NAME: _____

MAILING ADDRESS: _____
Zip Code

BUSINESS PHONE: (_____)_____ FAX NUMBER: (____)_____

Drawing No.:	Spec Section:

Question Type or print one question below

Response

The following section is for County use only.

Response By:_____ Date:_____

Included in Addendum No._____ Date:_____

Date Received:_____ Time Received:_____ am / pm RFC Number:_____

This form may be removed from the project specifications and/or reproduced as needed.

Amendments to the State of California, Department of Transportation May 2006 Standard Specifications

AMENDMENTS ISSUE DATE: 10-19-12

SECTION 0 GLOBAL REVISIONS
(Issued 01-20-12)

Global revisions are changes to contract documents not specific to a section of the Standard Specifications. In each contract document at each occurrence, interpret the following terms as shown:

Term	Interpretation	Conditions
AC	HMA	1. Where AC means asphalt concrete 2. Except where existing AC is described
Asphalt concrete	Hot mix asphalt	Except where existing asphalt concrete is described
Class 1 concrete	Concrete containing not less than 675 pounds of cementitious material per cubic yard	--
Class 2 concrete	Concrete containing not less than 590 pounds of cementitious material per cubic yard	--
Class 3 concrete	Concrete containing not less than 505 pounds of cementitious material per cubic yard	--
Class 4 concrete	Concrete containing not less than 420 pounds of cementitious material per cubic yard	--
Clause providing an option to use either a class concrete or minor concrete	Use minor concrete	--
Clause referring to a delay as a right-of-way delay	Delay under Section 8-1.09, "Delays"	--
Contact joint	Construction joint	--
Controlling operation	Controlling activity	--
Engineer's Estimate	Verified Bid Item List	--
Engineering fabrics	Geosynthetics	--
Notice to Contractors	Notice to Bidders	--
Partial payments	Progress payments	Except in Section 9-1.07D, "Mobilization"
PCC pavement	Concrete pavement	Except where existing PCC pavement is described
Portland cement concrete pavement	Concrete pavement	Except where existing portland cement concrete pavement is described
Project information	Supplemental project information	Except in "Contract Project Information Signs"
Reference to a working day or non–working day under Section 8-1.06, "Time of Completion"	Working day as defined in Section 1-4.02, "Glossary"	--
Section 9-1.015	Section 9-1.01C	--
Section 86, "Signal, Lighting and Electrical	Section 86, "Electrical Systems"	--

Systems"		
Section 86-2.08, "Conductors"	Section 86-2.08, "Conductors and Cables"	--
Section 86-5.01A(5), "Installation Details"	Section 86-5.01A(4), "Installation Details"	--
Section 86-6.05, "Sign Lighting Fixtures—Mercury"	Section 86-6.05, "Induction Sign Lighting Fixtures"	--
Time extension due to an unanticipated event not caused by either party or an issue involving a third party under Section 8-1.07, "Liquidated Damages"	Non–working day	--
Time extension due to an act of the Engineer or of the Department not contemplated by the contract	Time adjustment under Section 8-1.09B, "Time Adjustments"	--
Weakened plane joint	Contraction joint	--

^^

SECTION 1 DEFINITIONS AND TERMS
(Issued 06-20-12)

Replace Section 1 with:

SECTION 1 GENERAL
1-1 GENERAL

1-1.01 GENERAL

Section 1 includes general rules of interpretation.

The Department is gradually standardizing the style and language of the specifications. The new style and language includes:

1. Use of:

    1.1. Imperative mood
    1.2. Introductory modifiers
    1.3. Conditional clauses

2. Elimination of:

    2.1. Language variations
    2.2. Definitions for industry-standard terms
    2.3. Redundant specifications
    2.4. Needless cross-references

The use of this new style does not change the meaning of a specification not yet using this style.

Sections 1 through 9 include general specifications applicable to every contract unless specified as applicable under certain conditions.

Sections 10 through 15 include specifications for general construction applicable to every contract unless specified as applicable under certain conditions.

The specifications are written to the Bidder before award and the Contractor after. Before award, interpret sentences written in the imperative mood as starting with "The Bidder must" and interpret "you" as "the Bidder" and "your" as "the Bidder's." After award, interpret sentences written in the imperative mood as starting with "The Contractor must" and interpret "you" as "the Contractor" and "your" as "the Contractor's."

Omission of "a," "an," and "the" is intentional. These articles have been omitted in some specifications for streamlining purposes.

Unless an object or activity is specified to be less than the total, the quantity or amount is all of the object or activity.

A plural term includes the singular.

All items in a list apply unless the items are specified as choices.

Headings are included for the purposes of organization and referencing. Inclusion of a heading with no related content, "Reserved," or "Not Used" does not indicate that no specification exists for that subject; applicable specifications may be covered in a general or referenced specification.

1-2 REFERENCES

1-2.01 REFERENCES

Where Standard Specifications refer to the special provisions to describe the work, interpret the reference as a reference to the Bid Item List, the special provisions, or both.

Interpret a reference to a section of the Standard Specifications as a reference to the Standard Specifications as revised by any amendment, special provision, or both.

A reference within parentheses to a law or regulation is included in the contract for convenience only and is not a comprehensive listing of related laws and regulations. Lack of a reference does not indicate no related laws or regulations exist.

Where the version of a referenced document is not specified, use the current version in effect on the date of Notice to Bidders.

A reference to a subsection includes the section's general specifications of which the subsection is a part.

A code not specified as a Federal code is a California code.

1-3 ABBREVIATIONS AND MEASUREMENT UNITS

1-3.01 ABBREVIATIONS

Abbreviations

Abbreviation	Meaning
AAN	American Association of Nurserymen
AASHTO	American Association of State Highway and Transportation Officials
AISC	American Institute of Steel Construction
AISI	American Iron and Steel Institute
AMA	archaeological monitoring area
ANSI	American National Standards Institute
APHA	American Public Health Association
API	American Petroleum Institute
AREMA	American Railway Engineering and Maintenance-of-Way Association
ASME	American Society of Mechanical Engineers
ASTM	American Society for Testing and Materials
AWG	American Wire Gage
AWPA	American Wood-Preservers' Association
AWS	American Welding Society
AWWA	American Water Works Association
CIH	Certified Industrial Hygienist
DBE	Disadvantaged Business Enterprise
DVBE	Disabled Veteran Business Enterprise
EIA	Electronic Industries Alliance
ESA	environmentally sensitive area
ETL	Electrical Testing Laboratories
(F)	final pay item
FHWA	Federal Highway Administration
IEEE	Institute of Electrical and Electronics Engineers
ITE	Institute of Transportation Engineers
NEC	National Electrical Code
NETA	National Electrical Testing Association, Inc.
NEMA	National Electrical Manufacturers Association
PLAC	permit, license, agreement, certification, or any combination of these
RFI	request for information
SSPC	The Society for Protective Coatings
TIA	time impact analysis
UL	Underwriters' Laboratories Inc.

1-3.02 MEASUREMENT UNITS

Measurement Units

Symbols as used in the specifications	Symbols as used in the Bid Item List	Meaning
A	—	amperes
	ACRE	acre
	CF	cubic foot
	CY	cubic yard
--	EA	each
g	--	gram
ksi	--	kips per square inch
	GAL	gallon
h	H	hour
	LB	pound
--	LS	lump sum
	LF	linear foot
	LNMI	lane mile
	MFBM	thousand foot board measure
	MI	mile
	MSYD	thousand station yard
Ω	--	ohm
pcf	--	pounds per cubic foot
s	--	second
	STA	100 feet
	SQFT	square foot
	SQYD	square yard
	TAB	tablet
ton	TON	2,000 pounds
V	--	volt
W	--	watt
--	WDAY	working day

1-4 DEFINITIONS

1-4.01 GENERAL

Interpret terms as defined in the contract documents. A construction-industry term not defined in the contract documents has the meaning defined in Means Illustrated Construction Dictionary, Condensed Version, Second Edition.

1-4.02 GLOSSARY

aerially deposited lead: Lead primarily from vehicle emissions deposited within unpaved areas or formerly unpaved areas.

archaeological monitoring area: Area within, near, or straddling the project limits where access is allowed, but work is subject to archaeological monitoring.

archaeological resources: Remains of past human activity, including historic and prehistoric material (e.g., tools and tool fragments, hearth and food remains, structural remains, and human remains).

acceptance: Formal written acceptance by the Director of an entire contract that has been completed in all respects in accordance with the plans and specifications and any modifications to them previously approved.

base: Layer of specified material of planned thickness placed immediately below the pavement or surfacing.

basement material: Material in excavation or embankments underlying the lowest layer of subbase, base, pavement, surfacing, or other specified layer to be placed.

bid item: Specific work unit for which the bidder provides a price.

Bid Item List: List of bid items and the associated quantities.

Bid Item List, verified: Bid Item List with verified prices. The Contract Proposal of Low Bidder at the Department's Web site is the verified Bid Item List.

bridge: Structure, with a bridge number, that carries a utility facility, or railroad, highway, pedestrian or other traffic, over a water course or over or under or around any obstruction.

building-construction contract: Contract that has "building construction" on the cover of the Notice to Bidders and Special Provisions.

business day: Day on the calendar except Saturday or holiday.

California Manual on Uniform Traffic Control Devices: The California Manual on Uniform Traffic Control Devices for Streets and Highways (California MUTCD) is issued by the Department of Transportation and is the Federal Highway Administration's MUTCD 2003 Edition, as amended for use in California.

Certified Industrial Hygienist: Industrial hygienist certified in comprehensive practice by the American Board of Industrial Hygiene.

conduit: Pipe or tube in which smaller pipes, tubes, or electrical conductors are inserted or are to be inserted.

contract: Written and executed contract between the Department and the Contractor.

contract bonds: Security for the payment of workers and suppliers furnishing materials, labor, and services and for guaranteeing the Contractor's work performance.

contract item: Bid item.

Contractor: Person or business or its legal representative entering into a contract with the Department for performance of the work.

culvert: Structure, other than a bridge, that provides an opening under a roadway for drainage or other purposes.

day: 24 consecutive hours running from midnight to midnight; calendar day.

deduction: Amount of money permanently taken from progress payment and final payment. Deductions are not retentions under Pub Cont Code § 7107.

Department: Department of Transportation as defined in St & Hwy Code § 20 and authorized in St & Hwy Code § 90; its authorized representatives.

detour: Temporary route for traffic around a closed road part. A passageway through a job site is not a detour.

Director: Department's Director.

Disabled Veteran Business Enterprise: Business certified as a DVBE by the Office of Small Business and DVBE Services, Department of General Services.

Disadvantaged Business Enterprise: Disadvantaged Business Enterprise as defined in 49 CFR 26.5.

divided highway: Highway with separated traveled ways for traffic, generally in opposite directions.

Engineer: Department's Chief Engineer acting either directly or through properly authorized agents; the agents acting within the scope of the particular duties delegated to them.

environmentally sensitive area: Area within, near, or straddling the project limits where access is prohibited or limited to protect environmental resources.

Federal-aid contract: Contract that has a Federal-aid project number on the cover of the Notice to Bidders and Special Provisions.

fixed costs: Labor, material, or equipment cost directly incurred by the Contractor as a result of performing or supplying a particular bid item that remains constant regardless of the item's quantity.

frontage road: Local street or road auxiliary to and located generally on the side of an arterial highway for service to abutting property and adjacent areas and for control of access.

grading plane: Basement material surface on which the lowest layer of subbase, base, pavement, surfacing, or other specified layer is placed.

highway: Whole right of way or area that is reserved for and secured for use in constructing the roadway and its appurtenances.

holiday:

1. Every Sunday
2. January 1st, New Year's Day
3. 3rd Monday in January, Birthday of Martin Luther King, Jr.
4. February 12th, Lincoln's Birthday
5. 3rd Monday in February, Washington's Birthday
6. March 31st, Cesar Chavez Day
7. Last Monday in May, Memorial Day
8. July 4th, Independence Day
9. 1st Monday in September, Labor Day
10. 2nd Monday in October, Columbus Day
11. November 11th, Veterans Day
12. 4th Thursday in November, Thanksgiving Day

13. Day after Thanksgiving Day
14. December 25th, Christmas Day

If January 1st, February 12th, March 31st, July 4th, November 11th, or December 25th falls on a Sunday, the Monday following is a holiday. If November 11th falls on a Saturday, the preceding Friday is a holiday. Interpret "legal holiday" as "holiday."

idle equipment: Equipment:

1. On the job site at the start of a delay
2. Idled because of the delay
3. Not operated during the delay

informal-bid contract: Contract that has "Informal Bid Authorized by Pub Cont Code §10122" on the cover of the Notice to Bidders and Special Provisions.

Information Handout: Supplemental project information furnished to bidders as a handout.

laboratory: Laboratory authorized by the Department to test materials.

liquidated damages: Amount prescribed in the specifications, pursuant to the authority of Pub Cont Code § 10226, to be paid to the State or to be deducted for each day's delay in completing the whole or any specified portion of the work beyond the time allowed in the specifications.

listed species: Any species listed as threatened or endangered under (1) Federal Endangered Species Act of 1973, 16 USC §1531 et seq., (2) California Endangered Species Act, Fish & Game Code §§ 2050–2115.5, (3) or both.

material shortage: Shortage of raw or produced material that is area-wide and caused by an unusual market condition, except if any of the following occurs:

1. Shortage relates to a produced, nonstandard material
2. Supplier's and the Contractor's priority for filling an order differs
3. Event outside the U.S. for a material produced outside the U.S.

median: Portion of a divided highway separating the traveled ways for traffic in opposite directions including inside shoulders.

mobilization: Preparatory work that must be performed or costs incurred before starting work on the various items on the job site (Pub Cont Code § 10104).

Notice to Bidders: Document that provides a general work description, bidder and bid specifications, and the time and location the Department receives bids.

paleontological resources: Fossils and the deposits they are found in. Fossils are evidence of ancient life preserved in sediments and rock. Examples of paleontological resources are remains of (1) animals, (2) animal tracks, (3) plants, and (4) other organisms. Archaeological resources are not paleontological and fossils found within an archaeological resource are generally considered archaeological resources, not paleontological resources.

pavement: Uppermost layer of material placed on the traveled way or shoulders. This term is used interchangeably with surfacing.

permitted biological activities: Monitoring, surveying, or other practices that require a take permit and project specific permission from U.S. Fish and Wildlife Service or NOAA Fisheries or a take permit or Memorandum of Understanding with Department of Fish and Game.

plans: Official project plans and Standard Plans, profiles, typical cross sections, working drawings and supplemental drawings, or reproductions thereof, approved by the Engineer, which show the location, character, dimensions and details of the work to be performed. These documents are to be considered as a part of the plans.

In the above definition, the following terms are defined as follows:

Standard Plans: Standard Plans issued by the Department.

project plans: Specific details and dimensions peculiar to the work supplemented by the Standard Plans insofar as the same may apply.

protective radius: Minimum distance between construction activities and regulated species.

regulated species: Any species protected by one or any combination of the following:

1. Federal Endangered Species Act of 1973, 16 USC §1531 et seq.
2. California Endangered Species Act, Fish & Game Code §§2050–2115.5
3. Fish & Game Code §§1600–1616
4. National Environmental Policy Act, 42 USC §4321 et seq.
5. California Environmental Quality Act, Pub Res Code § 21000 et.seq.

6. Other law or regulation that governs activities that affect species or their habitats.

roadbed: Area between the intersection of the upper surface of the roadway and the side slopes or curb lines. The roadbed rises in elevation as each increment or layer of subbase, base, surfacing or pavement is placed. Where the medians are so wide as to include areas of undisturbed land, a divided highway is considered as including 2 separate roadbeds.

roadway: Highway portion included between the outside lines of sidewalks, or curbs, slopes, ditches, channels, waterways, and including all the appertaining structures, and other features necessary to proper drainage and protection.

routine biological activities: Biological monitoring, surveying, or other activity that does not require a take permit from the U.S. Fish and Wildlife Service or NOAA Fisheries or a take permit or Memorandum of Understanding with Department of Fish and Game.

service-approved biologist: Biologist whose activities must be approved by a state or federal agency as provided in PLACs.

shoulder: Roadway portion contiguous with the traveled way for accommodation of stopped vehicles, for emergency use, and for lateral support of base and surface courses.

small tool: Tool or piece of equipment not listed in Labor Surcharge and Equipment Rental Rates that has a replacement value of $500 or less.

special provisions: Specific clauses setting forth conditions or requirements peculiar to the work and supplementary to these Standard Specifications. The Department's publication titled "Labor Surcharge And Equipment Rental Rates" is part of the special provisions.

specifications: Directions, provisions, and requirements contained in these Standard Specifications, Amendments to the Standard Specifications, and the special provisions. Where the term "these specifications" or "these Standard Specifications" is used in this book, it means the provisions set forth in this book.

State: State of California, including its agencies, departments, or divisions, whose conduct or action is related to the work.

Structure Design: Offices of Structure Design of the Department.

subbase: Layer of specified material of planned thickness between a base and the basement material.

subgrade: Roadbed portion on which pavement, surfacing, base, subbase, or a layer of any other material is placed.

substructure: Bridge portions below the bridge seats, tops of piers, haunches of rigid frames, or below the spring lines of arches. Backwalls and parapets of abutments and wingwalls of bridges are portions of the substructure.

superstructure: Bridge portion except the bridge substructure.

supplemental project information: Information relevant to the project, specified as supplemental project information, and made available to bidders.

surfacing: Uppermost layer of material placed on the traveled way, or shoulders. This term is used interchangeably with pavement.

take: Legal definition regarding harm to listed species as defined in 16 USC §1532 and Fish & Game Code § 86.

take permit: Permit granted by the US Fish and Wildlife Service or by the NOAA Fisheries that allows take of federal listed species under 16 USC §1539 or by the Department of Fish & Game that allows take of state listed species under to Fish & Game Code § 2081.

traffic lane: Portion of a traveled way for the movement of a single line of vehicles.

traveled way: Portion of the roadway for the movement of vehicles, exclusive of shoulders.

total bid: Sum of the item totals as verified by the Department; original contract price.

withhold: Money temporarily or permanently taken from progress payment. Withholds are not retentions under Pub Cont Code § 7107.

work: All the work specified, indicated, shown or contemplated in the contract to construct the improvement, including all alterations, amendments, or extensions to it made by contract change order or other written orders of the Engineer.

working day: Time measure unit for work progress. A working day is any day except:

1. Saturdays and holidays
2. A day when you cannot perform work on the controlling activity for at least 50 percent of the day with at least 50 percent of the normal labor and equipment due to any of the following:

    2.1. Adverse weather-related conditions that cause you to dismiss the crew

2.2. Maintaining traffic under the contract
2.3. The Engineer's direction to suspend the controlling activities for reasons unrelated to your performance
2.4. An unanticipated event not caused by either party such as:

2.4.1. Act of God (Pub Cont Code § 7105)
2.4.2. Act of a public enemy
2.4.3. Epidemic
2.4.4. Fire
2.4.5. Flood
2.4.6. Governor-declared state of emergency
2.4.7. Landslide
2.4.8. Quarantine restriction

2.5. An issue involving a third-party, including:

2.5.1. Industry or area-wide labor strike
2.5.2. Material shortage
2.5.3. Freight embargo
2.5.4. Jurisdictional requirement of a law enforcement agency
2.5.5. Workforce labor dispute of a utility or non-highway facility owner resulting in a utility or non-highway facility reconstruction not described and not solely for the Contractor's convenience

1-5 DISTRICTS

District Composition and Office Addresses

District	Counties	Location Address	Mailing Address
1	Del Norte (DN), Humboldt (Hum), Lake (Lak), Mendocino (Men)	1656 UNION ST EUREKA, CA	PO BOX 3700 EUREKA CA 95502
2	Lassen (Las), Modoc (Mod), Plumas (Plu), Shasta (Sha), Siskiyou (Sis), Tehama (Teh), Trinity (Tri)	1657 RIVERSIDE DR REDDING, CA	PO BOX 496073 REDDING CA 96049-6073
3	Butte (But), Colusa (Col), El Dorado (ED), Glenn (Gle), Nevada (Nev), Placer (Pla), Sacramento (Sac), Sierra (Sie), Sutter (Sut), Yolo (Yol), Yuba (Yub)	703 B ST MARYSVILLE, CA	703 B ST MARYSVILLE CA 95901
4	Alameda (Ala), Contra Costa (CC), Marin (Mrn), Napa (Nap), San Francisco (SF), San Mateo (SM), Santa Clara (SCl), Solano (Sol), Sonoma (Son)	111 GRAND AVE OAKLAND, CA	PO BOX 23660 OAKLAND CA 94623-0660
5	Monterey (Mon), San Benito (SBt), San Luis Obispo (SLO), Santa Barbara (SB), Santa Cruz (SCr)	50 HIGUERA ST SAN LUIS OBISPO, CA	50 HIGUERA ST SAN LUIS OBISPO CA 93401-5415
6	Fresno (Fre), Kern (Ker), Kings (Kin), Madera (Mad), Tulare (Tul)	1352 W. OLIVE AVE FRESNO, CA	PO BOX 12616 FRESNO CA 93728-2616
7	Los Angeles (LA), Ventura (Ven)	100 S. MAIN ST LOS ANGELES	100 S MAIN ST LOS ANGELES CA 90012
8	Riverside (Riv), San Bernardino (SBd)	464 W 4TH ST SAN BERNARDINO, CA	464 W 4TH ST SAN BERNARDINO CA 92401-1400
9	Inyo (Iny), Mono (Mno)	500 S MAIN ST BISHOP, CA	500 S MAIN ST BISHOP CA 93514-3423
10	Alpine (Alp), Amador (Ama), Calaveras (Cal), Mariposa (Mpa), Merced (Mer), San Joaquin (SJ), Stanislaus (Sta), Tuolumne (Tuo)	1976 E CHARTER WAY STOCKTON, CA	PO BOX 2048 STOCKTON CA 95201
11	Imperial (Imp), San Diego (SD)	4050 TAYLOR ST SAN DIEGO, CA	4050 TAYLOR ST SAN DIEGO CA 92110-2737
12	Orange (Ora)	3347 MICHELSON DR STE 100 IRVINE, CA	3347 MICHELSON DR STE 100 IRVINE CA 92612-0661

A project with work in District 1, 2, or 3 is a North Region project. For Districts 1, 2, and 3, interpret each reference to the district office as the North Region office. The North Region office address is the District 3 address.

1-6 WEB SITES, ADDRESSES, AND TELEPHONE NUMBERS

Web Sites, Addresses, and Telephone Numbers

Agency, Department Unit, or Reference	Web Site	Address	Telephone No.
Bidders' Exchange	www.dot.ca.gov/hq/esc/oe/bidex	MSC 26 BIDDERS' EXCHANGE DEPARTMENT OF TRANSPORTATION 1727 30TH ST SACRAMENTO CA 95816-7005	(916) 227-6259
Department	www.dot.ca.gov		
Department of General Services, Office of Small Business and DVBE Services	www.pd.dgs.ca.gov/smbus/default.htm	OFFICE OF SMALL BUSINESS AND DVBE SERVICES DEPARTMENT OF GENERAL SERVICES 707 3RD ST WEST SACRAMENTO CA 95605-2811	(800) 559-5529 (916) 375-4940
Department of Industrial Relations	www.dir.ca.gov		
Department of Industrial Relations, Division of Apprenticeship Standards		455 GOLDEN GATE AVENUE SAN FRANCISCO, CA 94102	
Division of Accounting, Office of External Accounts Payable	http://www.dot.ca.gov/hq/asc/oap/payments/contact.htm#conpets1	MAJOR CONSTRUCTION PAYMENT AND INFORMATION UNIT OFFICE OF EXTERNAL ACCOUNTS PAYABLE DIVISION OF ACCOUNTING DEPARTMENT OF TRANSPORTATION P.O. BOX 168043 SACRAMENTO, CA 95816-8043	(916) 227-9013
Office Engineer		MSC 43 OFFICE ENGINEER DEPARTMENT OF TRANSPORTATION 1727 30TH ST SACRAMENTO CA 95816-7005	
Office Engineer–All Projects Currently Advertised	http://www.dot.ca.gov/hq/esc/oe/weekly_ads/all_advertised.php		
Offices of Structure Design, Documents Unit		MSC 9-4/4I DOCUMENTS UNIT OFFICES OF STRUCTURE DESIGN DEPARTMENT OF TRANSPORTATION 1801 30TH ST SACRAMENTO CA 95816-7006	(916) 227-0716
Publication Distribution Unit		PUBLICATION UNIT DEPARTMENT OF TRANSPORTATION 1900 ROYAL OAKS DRIVE SACRAMENTO CA 95815-3800	

Transportation Laboratory		MATERIALS AND ENGINEERING TESTING SERVICES AND GEOTECHNICAL SERVICES DEPARTMENT OF TRANSPORTATION 5900 FOLSOM BLVD SACRAMENTO CA 95819-4612	(916) 227-7000
Department's Pre-Qualified Products List	http://www.dot.ca.gov/hq/esc/approved_products_list		

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SECTION 2 PROPOSAL REQUIREMENTS AND CONDITIONS
(Issued 01-20-12)

Replace Section 2 with:

SECTION 2 BIDDING

2-1.01 GENERAL

Section 2, "Bidding," includes specifications related to bid eligibility and the bidding process.

2-1.02 BID INELIGIBILITY

A firm that has provided architectural or engineering services to the Department for this contract before bid submittal for this contract is prohibited from any of the following:

1. Submit a bid
2. Subcontract for a part of the work
3. Supply materials

2-1.03 BID DOCUMENTS

2-1.03A General

Standard Specifications and Standard Plans may be viewed at the Department's Web site and may be purchased at the Publication Distribution Unit.

Special provisions, Amendments to the Standard Specifications, and project plans may be viewed at the Bidders' Exchange. To obtain bid books, submit a request to the Bidders' Exchange. For an informal-bid contract, you may also obtain special provisions, Amendments to the Standard Specifications, and project plans at the Bidders' Exchange.

2-1.03B Supplemental Project Information

Logs of test borings attached to the project plans are supplemental project information. The Department makes other supplemental information available as specified in the special provisions.

If an Information Handout or cross sections are available:

1. You may view them at the Office Engineer–All Projects Currently Advertised Web site
2. For an informal-bid contract, you may obtain them at the Bidders' Exchange street address

If rock cores are available for inspection, you may view them by sending a request to Coreroom@dot.ca.gov.

If other supplemental project information is available for inspection, you may view it by phoning in a request. Make your request at least 7 days before viewing. Include in your request:

1. District-County-Route
2. Contract number
3. Viewing date
4. Contact information, including telephone number.

For rock cores, also include the bridge number in your request.
If bridge as-built drawings are available:

1. For a project in District 1 through 6 or 10, you may request them from the Office of Structure Maintenance and Investigations, fax (916) 227-8357
2. For a project in District 7, 8, 9, 11, or 12, you may request them from the Office of Structure Maintenance and Investigations, fax (916) 227-8357, and they are available at the Office of Structure Maintenance and Investigations, Los Angeles, CA, telephone (213) 897-0877

As-built drawings may not show existing dimensions and conditions. Where new construction dimensions are dependent on existing bridge dimensions, verify the field dimensions and adjust dimensions of the work to fit existing conditions.

2-1.04–2-1.10 RESERVED

2-1.11 JOB SITE AND DOCUMENT EXAMINATION

Examine the job site and bid documents.

Bid submission is your acknowledgment that you have examined the job site and bid documents and are satisfied with:

1. General and local conditions to be encountered
2. Character, quality, and scope of work to be performed
3. Quantities of materials to be furnished
4. Character, quality, and quantity of surface and subsurface materials or obstacles
5. Requirements of the contract

2-1.12 BID DOCUMENT COMPLETION

2-1.12A General

Complete forms in the Bid book.

Except for the bid item number and the percentage of each item subcontracted, do not fax submittals.

2-1.12B Bid Item List and Bid Comparison

Submit a bid based on the work item quantities the Department shows in the Bid Item List.

For a lump sum based bid, the Department compares bids based on the total price.

For a unit price based bid, the Department compares bids based on the sum of the item totals.

For a cost plus time based bid, the Department compares bids based on the sum of the item totals and the total bid for time. If your bid for time exceeds the number of working days described in the Notice to Bidders, your bid is nonresponsive.

2-1.12C Subcontractor List

In the Subcontractor List, list each subcontractor to perform work in an amount in excess of 1/2 of 1 percent of the total bid or $10,000, whichever is greater (Pub Cont Code § 4100 et seq.)

The Subcontractor List must show the name, address, and work portions to be performed by each subcontractor listed. Show work portion by bid item number, description, and percentage of each bid item subcontracted.

On the Subcontractor List you may either submit each subcontracted bid item number and corresponding percentage with your bid or fax these numbers and percentages to (916) 227-6282 within 24 hours after bid opening. Failure to do so results in a nonresponsive bid.

2-1.13 BIDDER'S SECURITY

Submit your bid with one of the following forms of bidder's security equal to at least 10 percent of the bid:

1. Cash
2. Cashier's check
3. Certified check
4. Bidder's bond signed by a surety insurer who is licensed in California

Make checks and bonds payable to the Department of Transportation.

If using a bidder's bond, you may use the form in the Bid book. If you do not use the form in the Bid book, use a form containing the same information.

2-1.14 BID SUBMITTAL

Submit your bid:

1. Under sealed cover
2. Marked as a bid
3. Identifying the contract number and the bid opening date

If an agent other than the authorized corporation officer or a partnership member signs the bid, file a Power of Attorney with the Department either before opening bids or with the bid. Otherwise, the bid may be nonresponsive.

2-1.15 BID WITHDRAWAL

An authorized agent may withdraw a bid before the bid opening date and time by submitting a written bid withdrawal request at the location where the bid was submitted. Withdrawing a bid does not prevent you from submitting a new bid.

After the bid opening time, you cannot withdraw a bid.

2-1.16 BID OPENING

The Department publicly opens and reads bids at the time and place described in the Notice to Bidders.

2-1.17 BID REJECTION

The Department may reject:

1. All bids
2. A nonresponsive bid

2-1.18 BID RELIEF

The Department may grant bid relief under Pub Cont Code § 5100 et seq. Submit any request for bid relief to the Office Engineer. For Relief of Bid Request form, go to:

http://www.dot.ca.gov/hq/esc/oe/contractor_info/relief.pdf

2-1.19 SUBMITTAL FAILURE HISTORY

The Department considers a bidder's past failure to submit documents required after bid opening in determining a bidder's responsibility.

2-1.20 BID RIGGING

Section 2-1.20, "Bid Rigging," applies to a Federal-aid contract.

The U.S. Department of Transportation (DOT) provides a toll-free hotline to report bid rigging activities. Use the hotline to report bid rigging, bidder collusion, and other fraudulent activities. The hotline number is (800) 424-9071. The service is available Monday through Friday between 11:00 a.m. and 8:00 p.m. and is confidential and anonymous. The hotline is part of the DOT's effort to identify and investigate highway construction contract fraud and abuse and is operated under the direction of the DOT Inspector General.

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SECTION 3 AWARD AND EXECUTION OF CONTRACT

(Issued 10-19-12)

Replace Section 3 with:

SECTION 3 CONTRACT AWARD AND EXECUTION

3-1.01 SCOPE

Section 3, "Contract Award and Execution," includes specifications related to contract award and execution.

3-1.02 CONTRACT AWARD

Submit any bid protest to the Office Engineer.

If the Department awards the contract, the award is made to the lowest responsible bidder within the number of days shown in the following table:

Contract Award Period

Days (after bid opening)	Project Estimated Cost shown in the Notice to Bidders
30	< $200 million
60	≥ $200 million

The Department may extend the specified award period if the bidder agrees.

You may request to extend the award period by faxing a request to (916) 227-6282 before 4:00 p.m. on the last day of the award period. If you do not make this request, after the specified award period:

1. Your bid becomes invalid
2. You are not eligible for the award of the contract

3-1.03 CONTRACT BONDS (PUB CONT CODE §§ 10221 AND 10222)

The successful bidder must furnish:

1. Payment bond to secure the claim payments of laborers, workers, mechanics, or materialmen providing goods, labor, or services under the contract. This bond must be equal to at least 100 percent of the total bid.
2. Performance bond to guarantee the faithful performance of the contract. This bond must be equal to at least 50 percent of the total bid.

The Department furnishes the successful bidder with the bond forms.

3-1.04 CONTRACTOR LICENSE

For a Federal-aid contract, the Bidder must be properly licensed (Pub Cont Code § 10164) from contract award through contract acceptance.

For a non-Federal-aid contract:

1. The Bidder must be properly licensed from bid opening through contract acceptance (Bus & Prof Code § 7028.15)
2. Joint venture bidders must obtain a joint venture license before contract award (Bus & Prof Code § 7029.1)

3-1.05 INSURANCE POLICIES

The successful bidder must submit:

1. Copy of its commercial general liability policy and its excess policy or binder until such time as a policy is available, including the declarations page, applicable endorsements, riders, and other modifications in effect at the time of contract execution. Standard ISO form No. CG 0001 or similar exclusions are allowed if not inconsistent with Section 7-1.12, "Indemnification and Insurance." Allowance of additional exclusions is at the discretion of the Department.
2. Certificate of insurance showing all other required coverages. Certificates of insurance, as evidence of required insurance for the auto liability and any other required policy, shall set forth deductible amounts applicable to each policy and all exclusions that are added by endorsement to each policy. The evidence of insurance shall provide that no cancellation, lapse, or reduction of coverage will occur without 10 days prior written notice to the Department.

3. A declaration under the penalty of perjury by a CPA certifying the accountant has applied GAAP guidelines confirming the successful bidder has sufficient funds and resources to cover any self-insured retentions if the self-insured retention is over $50,000.

If the successful bidder uses any form of self-insurance for workers compensation in lieu of an insurance policy, it shall submit a certificate of consent to self-insure under Labor Code § 3700.

3-1.06 FORM FHWA-1273

For a federal-aid contract, form FHWA-1273 is included with the Contract form in the documents sent to the successful bidder for execution. Comply with its provisions. Interpret the training and promotion section as specified in section 7-1.50A.

3-1.07–3-1.08 RESERVED

3-1.09 CONTRACT EXECUTION

The successful bidder must sign the contract and return it, including the attached form FHWA-1273, to the Office Engineer along with:

1. Contract bonds
2. Documents identified in Section 3-1.05, "Insurance Policies"

For an informal-bid contract, the Office Engineer must receive these documents before the 5th business day after the bidder receives the contract. For all other contracts, the Office Engineer must receive these documents before the 10th business day after the bidder receives the contract.

The bidder's security may be forfeited for failure to execute the contract within the time specified (Pub Cont Code §§ 10181, 10182, and 10183).

The following is a copy of the Contract form:

3-1.10 BIDDERS' SECURITIES

The Department keeps the securities of the 1st, 2nd, and 3rd low bidders until the contract has been executed. The other bidders' securities, other than bidders' bonds, are returned upon determination of the 1st, 2nd, and 3rd low bidders, and their bidders' bonds are of no further effect (Pub Cont Code § 10184).

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SECTION 4 SCOPE OF WORK
(Issued 06-05-09)

Add to Section 4-1.01:

Nothing in the specifications voids the Contractor's public safety responsibilities.

Add:

4-1.015 PROJECT DESCRIPTION

Construct the work described in the special provisions and on project plans and by the bid items. The special provisions, project plans, and bid item descriptions set forth the specifications that apply.

Replace Section 4-1.03 with:

4-1.03 CHANGES

4-1.03A General

The Department may make changes within the scope of work and add extra work. The Engineer describes the changes and extra work, the payment basis, and any time adjustment in a Contract Change Order.

A Contract Change Order is approved when the Department signs the Contract Change Order.

Submit detailed cost data for a payment adjustment for:

1. Request for a payment adjustment for a bid item
2. Payment adjustment resulting from a change of more than 25 percent in the bid item's quantity if requested

If ordered, start the work before receipt of an approved Contract Change Order.

You may protest a Contract Change Order.

4-1.03B Increased or Decreased Quantities

The Department adjusts payment for changed quantities and eliminated items under Section 9-1.05, "Changed Quantity Payment Adjustments."

4-1.03C Changes in Character of Work

The Department adjusts payment for an item if:

1. An ordered plan or specification change materially changes the character of a work item from that on which the bid price was based
2. The unit cost of the changed item differs when compared to the unit cost of that item under the original plans and specifications
3. No approved Contract Change Order addresses the payment

The Department adjusts the payment under Section 9-1.06, "Work-Character Changes."

4-1.03D Extra Work

The Department classes new and unforeseen work as extra work if the Engineer determines that the work is not covered by any of the various items for which there is a bid price or by combinations of those items. If portions of this work are covered by some of the various items for which there is a bid price or combinations of those items, the

remaining portion of the work will be classed as extra work. Extra work also includes work specifically designated as extra work in the plans or specifications.

Add:

4-1.035 VALUE ENGINEERING

4-1.035A General

Reserved

4-1.035B Value Engineering Change Proposal

You may submit a VECP to reduce any of the following:

1. Total cost of construction
2. Construction activity duration
3. Traffic congestion

Before preparing a VECP, meet with the Engineer to discuss:

1. Proposal concept
2. Permit issues
3. Impact on other projects
4. Project impacts, including traffic, schedule, and later stages
5. Peer reviews
6. Overall proposal merits
7. Review times required by the Department and other agencies

The VECP must not impair the project's essential functions or characteristics, such as:

1. Service life
2. Operation economy
3. Maintenance ease
4. Desired appearance
5. Design and safety

The VECP must include:

1. Description of the contract specifications and drawing details for performing the work and the proposed changes.
2. Itemization of contract specifications and drawing details that would be changed.
3. Detailed cost estimate for performing the work under the existing contract and under the proposed change. Determine the estimates under Section 9-1.03, "Force Account Payment."
4. Deadline for the Engineer to decide on the changes.
5. Bid items affected and resulting quantity changes.

The Department is not required to consider a VECP. If a VECP is similar to a change in the plans or specifications being considered by the Department at the time the proposal is submitted or if the proposal is based on or similar to drawings or specifications adopted by the Department before Contract award, the Department does not accept the VECP and may make these changes without VECP payments.

Until the Department approves a change order incorporating the VECP or parts of it, continue to perform the work under the contract. If the Department does not approve a change order before the deadline stated in the VECP or other date you subsequently stated in writing, the VECP is rejected. The Department does not adjust time or payment for a rejected VECP.

The Department decides whether to accept a VECP and the estimated net construction-cost savings from adopting the VECP or parts of it.

The Department may require you to accept a share of the investigation cost as a condition of reviewing a VECP. After written acceptance, the Department considers the VECP and deducts the agreed cost.

If the Department accepts the VECP or parts of it, the Department issues a change order that:

1. Incorporates changes in the contract necessary to implement the VECP or the parts adopted
2. Includes the Department's acceptance conditions
3. States the estimated net construction-cost savings resulting from the VECP
4. Obligates the Department to pay you 50 percent of the estimated net savings

In determining the estimated net construction-cost savings, the Department excludes your VECP preparation cost and the Department's VECP investigation cost, including parts paid by you.

If a VECP providing for a reduction in working days is accepted by the Department, 50 percent of the reduction is deducted from contract time.

If a VECP providing for a reduction in traffic congestion or avoiding traffic congestion is accepted by the Department, the Department pays 60 percent of the estimated net savings in construction costs attributable to the VECP. Submit detailed traffic handling comparisons between the existing contract and the proposed change, including estimates of the traffic volumes and congestion.

The Department may apply an accepted VECP for general use on other contracts.

If an accepted VECP is adopted for general use, the Department pays only the contractor who first submitted the VECP and only to the contracts awarded to that contractor before the submission of the accepted VECP.

If the Department does not adopt a general-use VECP, an identical or similar submitted proposal is eligible for acceptance.

4-1.035C Value Analysis Workshop

Section 4-1.035C, "Value Analysis Workshop," applies to a non-building-work contract with a total bid of over $5 million.

You may request a value analysis workshop by submitting a request after contract approval.

The Department offers a value analysis workshop to:

1. Identify value enhancing opportunities
2. Consider changes to the contract that will reduce the total cost of construction, construction activity duration, or traffic congestion without impairing the essential functions specified for a VECP in Section 4-1.035B, "Value Engineering Change Proposal."

If the request is authorized, you and the Engineer:

1. Schedule a value analysis workshop
2. Select a facilitator and workshop site
3. Agree to other workshop administrative details

The workshop must be conducted under the methods described in the Department's Value Analysis Team Guide available at:

http://www.dot.ca.gov/hq/oppd/value/

The facilitator must be a certified value specialist as recognized by the Society of American Value Engineers.

The Department reimburses you for 1/2 of the workshop cost. The workshop cost is the sum of the workshop-facilitator cost and the workshop-site cost. The Department determines the workshop cost based on the facilitator and workshop-site invoice prices minus any available or offered discounts. The Department does not pay you for any other associated costs.

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SECTION 5 CONTROL OF WORK
(Issued 06-01-11)

Add:

5-1.005 GENERAL

Failure to comply with any specification part is a waiver of your right to an adjustment of time and payment related to that part.

After contract approval, submit documents and direct questions to the Engineer. Orders, approvals, authorizations, and requests to the Contractor are by the Engineer.

The Engineer furnishes the following in writing:

1. Approvals
2. Authorizations
3. Certifications
4. Decisions
5. Notifications
6. Orders
7. Responses

The Contractor must furnish the following in writing:

1. Assignments
2. Notifications
3. Proposals
4. Reports
5. Requests, including RFIs, sequentially numbered
6. Subcontracts
7. Test results

The Department rejects a form if it has any error or any omission.

Convert foreign language documents to English.

Use contract administration forms available at the Department's Web site.

If the last day for submitting a document falls on a Saturday or holiday, it may be submitted on the next business day with the same effect as if it had been submitted on the day specified.

Add to 5-1.01:

Failure to enforce a contract provision does not waive enforcement of any contract provision.

Add:

5-1.011 PROTESTS

You may protest an Engineer's decision by submitting an RFI under Section 5-1.145, "Requests for Information."

Add:

5-1.012 PARTNERING

5-1.012A General

The Department strives to work cooperatively with all contractors; partnering is our way of doing business. The Department encourages project partnering among the project team, made up of significant contributors from the Department and the Contractor, and their invited stakeholders.

For a project with a total bid greater than $1 million, professionally facilitated project partnering is encouraged.

For a project with a total bid greater than $10 million, professionally facilitated project partnering is required.

In implementing project partnering, you and the Engineer manage the contract by:

1. Using early and regular communication with involved parties
2. Establishing and maintaining a relationship of shared trust, equity, and commitment
3. Identifying, quantifying, and supporting attainment of mutual goals

4. Developing strategies for using risk management concepts
5. Implementing timely communication and decision making
6. Resolving potential problems at the lowest possible level to avoid negative impacts
7. Holding periodic partnering meetings and workshops as appropriate to maintain partnering relationships and benefits throughout the life of the project
8. Establishing periodic joint evaluations of the partnering process and attainment of mutual goals

Partnering does not void any contract part.

The Department's "Field Guide to Partnering on Caltrans Construction Projects" current at the time of bid is available to the project team as reference. This guide provides structure, context, and clarity to the partnering process requirements. This guide is available at the Department's Partnering Program website:

http://www.dot.ca.gov/hq/construc/partnering.html

In implementing project partnering, the project team must:

1. Create a partnering charter that includes:

    1.1. Mutual goals, including core project goals and may also include project-specific goals and mutually supported individual goals.
    1.2. Partnering maintenance and close-out plan.
    1.3. Dispute resolution plan that includes a dispute resolution ladder and may also include use of facilitated dispute resolution sessions.
    1.4. Team commitment statement and signatures.

2. Participate in monthly partnering evaluation surveys to measure progress on mutual goals and may also measure short-term key issues as they arise.
3. Evaluate the partnering facilitator on Forms CEM-5501 and CEM-5502. The Engineer provides the evaluation forms to the project team and collects the results. The Department makes evaluation results available upon request. Facilitator evaluations must be completed:

    3.1. At the end of the initial partnering workshop on Form CEM-5501.
    3.2. At the end of the project close-out partnering workshop on Form CEM-5502.

4. Conduct a project close-out partnering workshop.
5. Document lessons learned before contract acceptance.

5-1.012B Partnering Facilitator, Workshops, and Monthly Evaluation Surveys

The Engineer sends you a written invitation to enter into a partnering relationship after contract approval. Respond within 15 days to accept the invitation and request the initial and additional partnering workshops. After the Engineer receives the request, you and the Engineer cooperatively:

1. Select a partnering facilitator that offers the service of a monthly partnering evaluation survey with a 5-point rating and agrees to follow the Department's "Partnering Facilitator Standards and Expectations" available at the Department's Partnering Program website
2. Schedule initial partnering workshop
3. Determine initial workshop site and duration
4. Agree to other workshop administrative details

Additional partnering workshops and sessions are encouraged throughout the life of the project as determined necessary by you and the Engineer, recommended quarterly.

5-1.012C Training in Partnering Skills Development

For a project with a total bid of $25 million or greater, training in partnering skills development is required.

For a project with a total bid between $10 million and $25 million, training in partnering skills is optional.

You and the Engineer cooperatively schedule the training session and select a professional trainer, training site, and 1 to 4 topics from the following list to be covered in the training:

1. Active Listening
2. Building Teams
3. Change Management
4. Communication
5. Conflict Resolution
6. Cultural Diversity
7. Dealing with Difficult People
8. Decision Making
9. Effective Escalation Ladders
10. Emotional Intelligence
11. Empathy
12. Ethics
13. Facilitation Skills
14. Leadership
15. Partnering Process and Concepts
16. Project Management
17. Project Organization
18. Problem Solving
19. Running Effective Meetings
20. Time Management
21. Win-Win Negotiation

Before the initial partnering workshop, the trainer conducts a 1-day training session in partnering skills development for the Contractor's and the Engineer's representatives. This training session must be a separate session from the initial partnering workshop and must be conducted locally. The training session must be consistent with the partnering principles under the Department's "Field Guide to Partnering on Caltrans Construction Projects."

Send at least 2 representatives to the training session. One of these must be your assigned representative as specified in Section 5-1.06, "Superintendence," of the Standard Specifications.

5-1.012D Payment

The Department pays you for:

1. 1/2 of partnering workshops and sessions based on facilitator and workshop site cost
2. 1/2 of monthly partnering evaluation survey service cost
3. Partnering skills development trainer and training site cost

The Department determines the costs based on invoice prices minus any available or offered discounts. The Department does not pay markups on these costs.

The Department does not pay for wages, travel expenses, or other costs associated with the partnering workshops and sessions, monthly partnering evaluation surveys, and training in partnering skills development.

Add:

5-1.015 RECORDS

5-1.015A General

Reserved

5-1.015B Record Retention

Retain project records from bid preparation through:

1. Final payment
2. Resolution of claims, if any

For at least 3 years after the later of these, retain cost records, including records of:

1. Bid preparation

2. Overhead
3. Payrolls
4. Payments to suppliers and subcontractors
5. Cost accounting

Maintain the records in an organized way in the original format, electronic and hard copy, conducive to professional review and audit.

5-1.015C Record Inspection, Copying, and Auditing

Make your records available for inspection, copying, and auditing by State representatives for the same time frame specified under Section 5-1.015B, "Record Retention." The records of subcontractors and suppliers must be made available for inspection, copying, and auditing by State representatives for the same period. Before contract acceptance, the State representative notifies the Contractor, subcontractor, or supplier 5 business days before inspection, copying, or auditing.

If an audit is to start more than 30 days after contract acceptance, the State representative notifies the Contractor, subcontractor, or supplier when the audit is to start.

5-1.015D Cost Accounting Records

Maintain cost accounting records for the project distinguishing between the following work cost categories:

1. Work performed based on bid item prices
2. Work performed by change order other than extra work. Distinguish this work by:

    2.1. Bid item prices
    2.2. Force account
    2.3. Agreed price

3. Extra work. Distinguish extra work by:

    3.1. Bid item prices
    3.2. Force account
    3.3. Agreed price
    3.4. Specialist billing

4. Work performed under potential claim records
5. Overhead
6. Subcontractors, suppliers, owner-operators, and professional services

Cost accounting records must include:

1. Final cost code lists and definitions
2. Itemization of the materials used and corresponding vendor's invoice copies
3. Direct cost of labor
4. Equipment rental charges
5. Workers' certified payrolls
6. Equipment:

    6.1. Size
    6.2. Type
    6.3. Identification number
    6.4. Hours operated

5-1.015E Extra Work Bills

Maintain separate records for costs of work performed by change order.

Within 7 days after performing the work, submit extra work bills using the Department's Internet extra work billing system.

The Contractor submitting and the Engineer approving an extra work bill using the Internet force account work billing system is the same as each party signing the bill.

The Department provides billing system:

1. Training within 30 days of your written request
2. Accounts and user identification to your assigned representatives after a representative has received training

Each representative must maintain a unique password.

Replace Section 5-1.04 with:

5-1.04 CONTRACT COMPONENTS

A component in one contract part applies as if appearing in each. The parts are complementary and describe and provide for a complete work.

If a discrepancy exists:

1. The governing ranking of contract parts in descending order is:

    1.1. Special provisions
    1.2. Project plans
    1.3. Revised Standard Plans
    1.4. Standard Plans
    1.5. Amendments to the Standard Specifications
    1.6. Standard Specifications
    1.7. Supplemental project information

2. Written numbers and notes on a drawing govern over graphics
3. A detail drawing governs over a general drawing
4. A detail specification governs over a general specification
5. A specification in a section governs over a specification referenced by that section

If a discrepancy is found or confusion arises, request correction or clarification.

Add:

5-1.055 SUBCONTRACTING

5-1.055A General

No subcontract releases you from the contract or relieves you of your responsibility for a subcontractor's work.

If you violate Pub Cont Code § 4100 et seq., the Department may exercise the remedies provided under Pub Cont Code § 4110. The Department may refer the violation to the Contractors State License Board as provided under Pub Cont Code § 4111.

Except for a building-construction non-federal-aid contract, perform work equaling at least 30 percent of the value of the original total bid with your employees and with equipment owned or rented by you, with or without operators.

Each subcontract must comply with the contract.

The Department encourages you to include a dispute resolution process in each subcontract.

Each subcontractor must have an active and valid State contractor's license with a classification appropriate for the work to be performed (Bus & Prof Code, § 7000 et seq.).

Submit copies of subcontracts upon request.

Before subcontracted work starts, submit a Subcontracting Request form.

Do not use a debarred contractor; a current list of debarred contractors is available at the Department of Industrial Relations' Web site.

Upon request, immediately remove and not again use a subcontractor who fails to prosecute the work satisfactorily.

Replace Section 5-1.07 with:

5-1.07 LINES AND GRADES

The Engineer places stakes and marks under Chapter 12, "Construction Surveys," of the Department's Surveys Manual.

Submit your request for Department-furnished stakes:

1. On a Request for Construction Stakes form. Ensure:
    1.1. Requested staking area is ready for stakes
    1.2. You use the stakes in a reasonable time
2. A reasonable time before starting an activity using the stakes

Establish priorities for stakes and note priorities on the request.

Preserve stakes and marks placed by the Engineer. If the stakes or marks are destroyed, the Engineer replaces them at the Engineer's earliest convenience and deducts the cost.

Replace Section 5-1.10 with:

5-1.10 EQUIPMENT

Clearly stencil or stamp at a clearly visible location on each piece of equipment except hand tools an identifying number and:

1. On compacting equipment, its make, model number, and empty gross weight that is either the producer's rated weight or the scale weight
2. On meters and on the load-receiving element and indicators of each scale, the make, model, serial number, and producer's rated capacity

Submit a list:

1. Describing each piece of equipment
2. Showing its identifying number

Upon request, submit producer's information that designates portable vehicle scale capacities.

For proportioning materials, use measuring devices, material plant controllers, and undersupports complying with Section 9-1.01B, "Weighing Equipment and Procedures."

Measuring devices must be tested and approved under California Test 109 in the Department's presence by any of the following:

1. County Sealer of Weights and Measures
2. Scale Service Agency
3. Division of Measurement Standards Official

The indicator over-travel must be at least 1/3 of the loading travel. The indicators must be enclosed against moisture and dust.

Group measuring system dials such that the smallest increment for each indicator can be read from the location at which proportioning is controlled.

Replace Section 5-1.116 with:

5-1.116 DIFFERING SITE CONDITIONS (23 CFR 635.109)

5-1.116A Contractor's Notification

Promptly notify the Engineer if you find either of the following:

1. Physical conditions differing materially from either of the following:
    1.1. Contract documents

1.2. Job site examination

2. Physical conditions of an unusual nature, differing materially from those ordinarily encountered and generally recognized as inherent in the work provided for in the contract

Include details explaining the information you relied on and the material differences you discovered.

If you fail to notify the Engineer promptly, you waive the differing site condition claim for the period between your discovery of the differing site condition and your notification to the Engineer.

If you disturb the site after discovery and before the Engineer's investigation, you waive the differing site condition claim.

5-1.116B Engineer's Investigation and Decision

Upon your notification, the Engineer investigates job site conditions and:

1. Notifies you whether to resume affected work
2. Decides whether the condition differs materially and is cause for an adjustment of time, payment, or both

You may protest the Engineer's decision.

Replace Section 5-1.14 with:

5-1.14 COST REDUCTION INCENTIVE

Comply with Section 4-1.035B, "Value Engineering Change Proposal."

Add:

5-1.145 REQUESTS FOR INFORMATION

Submit an RFI upon recognition of any event or question of fact arising under the Contract.

The Engineer responds to the RFI within 5 days. Proceed with the work unless otherwise ordered. You may protest the Engineer's response by:

1. Submitting an Initial Potential Claim Record within 5 days after receipt of the Engineer's response
2. Complying with Section 5-1.146, "Potential Claims and Dispute Resolution"

Add:

5-1.146 POTENTIAL CLAIMS AND DISPUTE RESOLUTION

5-1.146A General

Minimize and mitigate impacts of potentially claimed work or event.

For each potential claim, assign an identification number determined by chronological sequencing and the 1st date of the potential claim.

Use the identification number for each potential claim on the:

1. Initial Potential Claim Record
2. Supplemental Potential Claim Record
3. Full and Final Potential Claim Record

Failure to comply with this procedure is:

1. Waiver of the potential claim and a waiver of the right to a corresponding claim for the disputed work in the administrative claim procedure
2. Bar to arbitration (Pub Cont Code § 10240.2)

5-1.146B Initial Potential Claim Record

Submit an Initial Potential Claim Record within 5 days of the Engineer's response to the RFI or within 5 days from the date when a dispute arises due to an act or failure to act by the Engineer. The Initial Potential Claim Record establishes the claim nature and circumstances. The claim nature and circumstances must remain consistent.

The Engineer responds within 5 days of the date of the Initial Potential Claim Record. Proceed with the potentially claimed work unless ordered.

Within 20 days of a request, provide access to the project records determined necessary by the Engineer to evaluate the potential claim.

5-1.146C Supplemental Potential Claim Record

Within 15 days of submitting the Initial Potential Claim Record, submit a Supplemental Potential Claim Record including:

1. Complete nature and circumstances causing the potential claim or event
2. Contract specifications supporting the basis of a claim
3. Estimated claim cost and an itemized breakdown of individual costs stating how the estimate was determined
4. TIA

The Engineer evaluates the Supplemental Potential Claim Record and furnishes you a response within 20 days of submittal. If the estimated cost or effect on the scheduled completion date changes, update the Supplemental Potential Claim Record information as soon as the change is recognized and submit this information.

5-1.146D Full and Final Potential Claim Record

Notify the Engineer within 10 days of the completion date of the potentially claimed work. The Engineer approves this completion date or notifies you of a revised date.

Within 30 days of the completion of the potentially claimed work, submit a Full and Final Potential Claim Record including:

1. A detailed factual account of the events causing the potential claim, including:

    1.1. Necessary dates
    1.2. Locations
    1.3. Work items affected by the potential claim

2. The Contract documents supporting the potential claim and a statement of the reasons these parts support entitlement
3. If a payment adjustment is requested, an itemized cost breakdown. Segregate costs into the following categories:

    3.1. Labor, including:

        3.1.1. Individuals
        3.1.2. Classifications
        3.1.3. Regular and overtime hours worked
        3.1.4. Dates worked

    3.2. Materials, including:

        3.2.1. Invoices
        3.2.2. Purchase orders
        3.2.3. Location of materials either stored or incorporated into the work
        3.2.4. Dates materials were transported to the job site or incorporated into the work

    3.3. Equipment, including:

        3.3.1. Detailed descriptions, including make, model, and serial number
        3.3.2. Hours of use

3.3.3. Dates of use
3.3.4. Equipment rates at the rental rate listed in Labor Surcharge and Equipment Rental Rates in effect when the affected work related to the claim was performed

4. If a time adjustment is requested:

4.1. Dates for the requested time.
4.2. Reasons for a time adjustment.
4.3. Contract documentation supporting the requested time adjustment.
4.4. TIA. The TIA must demonstrate entitlement to a time adjustment.

5. Identification and copies of your documents and copies of communications supporting the potential claim, including certified payrolls, bills, cancelled checks, job cost reports, payment records, and rental agreements
6. Relevant information, references, and arguments that support the potential claim

The Department does not consider a Full and Final Potential Claim Record that does not have the same nature, circumstances, and basis of claim as those specified on the Initial Potential Claim Record and Supplemental Potential Claim Record.

The Engineer evaluates the information presented in the Full and Final Potential Claim Record and furnishes you a response within 30 days of its receipt unless the Full and Final Potential Claim Record is submitted after Contract acceptance; in which case, a response may not be furnished. The Engineer's receipt of the Full and Final Potential Claim Record must be evidenced by postal return receipt or the Engineer's written receipt if delivered by hand.

5-1.146E Dispute Resolution

Comply with Section 5-1.15, "Dispute Resolution."

Add:

5-1.15 DISPUTE RESOLUTION

5-1.15A General

Section 5-1.15, "Dispute Resolution," applies to a contract with 100 or more working days.

The dispute resolution process is not a substitute for the submitting an RFI or a potential claim record.

5-1.15B Dispute Resolution Advisor

Section 5-1.15B, "Dispute Resolution Advisor," applies to a contract with a total bid from $3 million to $10 million.

A dispute resolution advisor, hereinafter referred to as "DRA," is chosen by the Department and the Contractor to assist in the resolution of disputes.

The DRA shall be established by the Department and the Contractor within 30 days of contract approval.

The Department and the Contractor shall each propose 3 potential DRA candidates. Each potential candidate shall provide the Department and the Contractor with their disclosure statement. The disclosure statement shall include a resume of the potential candidate's experience and a declaration statement describing past, present, anticipated, and planned relationships with all parties involved in this contract.

The Department and the Contractor shall select one of the 6 nominees to be the DRA. If the Department and the Contractor cannot agree on one candidate, the Department and the Contractor shall each choose one of the 3 nominated by the other. The final selection of the DRA will be decided by a coin toss between the two candidates.

The Department and the Contractor shall complete and adhere to the Dispute Resolution Advisor Agreement. No DRA meeting shall take place until the Dispute Resolution Advisor Agreement has been signed by all parties, unless all parties agree to sign it at the first meeting.

If DRA needs outside technical services, technical services shall be preapproved by both the Department and the Contractor.

DRA recommendations are nonbinding.

The Contractor shall not use the DRA for disputes between subcontractors or suppliers that have no grounds for a lawsuit against the Department.

DRA replacement is selected in the same manner as the original selection. The appointment of a replacement DRA will begin promptly upon determination of the need for replacement. The Dispute Resolution Advisor Agreement shall be amended to reflect the change of the DRA.

Failure of the Contractor to participate in selecting DRA will result in the withhold of 25 percent of the estimated value of all work performed during each estimate period that the Contractor fails to comply. DRA withholds will be released for payment on the next monthly progress payment following the date that the Contractor has provided assistance in choosing the DRA and no interest will be due the Contractor.

The State and the Contractor shall bear the costs and expenses of the DRA equally.

The DRA shall be compensated at an agreed rate of $1,500 per day for time spent per meeting either at the start of the project or for a dispute. A member serving on more than one State DRA or Dispute Resolution Board, regardless the number of meetings per day shall not be paid more than the agreed rate per day. The agreed rate shall be considered full compensation for on-site time, travel expenses, transportation, lodging, time for travel, and incidentals for each day or portion thereof that the DRA is at an authorized DRA meeting.

No additional compensation will be made for time spent by the DRA to review and research activities outside the official DRA meetings unless that time, such as time spent evaluating and preparing recommendations on specific issues presented to the DRA, has been specifically agreed to in advance by the State and Contractor. Time away from the project that has been specifically agreed to in advance by the Department and the Contractor will be compensated at an agreed rate of $150 per hour. The agreed amount of $150 per hour shall include all incidentals including expenses for telephone, fax, and computer services.

The State will provide conference facilities for DRA meetings at no cost to the Contractor.

The Contractor shall make direct payments to the DRA for participation in authorized meetings and approved hourly rate charges from invoices submitted.

The State will reimburse the Contractor for the State's share of the costs.

There will be no markups applied to expenses associated with the DRA, either by the DRA or by the Contractor when requesting payment of the State's share of DRA expenses. Regardless of the DRA recommendation, neither party will be entitled to reimbursement of DRA costs from the other party.

The Contractor shall submit extra work bills and include invoices with original supporting documents for reimbursement of the State's share.

The cost of technical services will be borne equally by the State and Contractor. There will be no markups for these costs.

A copy of the "Dispute Resolution Advisor Agreement" to be executed by the Contractor, State and the DRA is as follows:

Form CEM 6206 Rev (04-06-07)

DISPUTE RESOLUTION ADVISOR AGREEMENT

_____
(Contract Identification)

Contract No. _____

THIS DISPUTE RESOLUTION ADVISOR AGREEMENT, hereinafter called "AGREEMENT", made and entered into this _____ day of _____, _____, between the State of California, acting through the California Department of Transportation and the Director of Transportation, hereinafter called the "STATE," _____ hereinafter called the "CONTRACTOR," and _____, the Dispute Resolution Advisor, hereinafter called the "DRA."

WITNESSETH, that

WHEREAS, the STATE and the CONTRACTOR, hereinafter called the "parties," are now engaged in the construction on the State Highway project referenced above; and

WHEREAS, the Standard Specifications for the above referenced contract provides for the establishment and operation of the DRA to assist in resolving disputes; and

WHEREAS, the DRA is composed of one person, chosen by the CONTRACTOR and the STATE;

NOW THEREFORE, in consideration of the terms, conditions, covenants, and performance contained herein, or attached and incorporated and made a part hereof, the STATE, the CONTRACTOR, and the DRA hereto agree as follows:

SECTION I DESCRIPTION OF WORK

To assist in the timely resolution of disputes between the parties, the contract provides for the establishment and the operation of the DRA. The DRA is to fairly and impartially consider disputes placed before it and provide recommendations for resolution of these disputes to the parties. The DRA shall provide recommendations based on the facts related to the dispute, the contract and applicable laws and regulations. The DRA shall perform the services necessary to participate in the DRA's actions as designated in Section III, Scope of Work.

SECTION II DRA QUALIFICATIONS

The DRA shall be knowledgeable in the type of construction and contract documents anticipated by the contract and shall have completed training through the Dispute Review Board Foundation. In addition, it is desirable for the DRA to have served on several State Dispute Resolution Boards (DRB).

No DRA shall have prior direct involvement in this contract. No DRA shall have a financial interest in this contract or parties thereto, including but not limited to the CONTRACTOR, subcontractors, suppliers, consultants, and legal and business services, within a period 6 months prior to award and during this contract. Exceptions to above are compensation for services on this or other DRAs and DRBs or retirement payments or pensions received from a party that are not tied to, dependent on or affected by the net worth of the party.

The DRA shall fully disclose all direct or indirect professional or personal relationships with all key members of the contract.

SECTION III SCOPE OF WORK

The Scope of Work of the DRA includes, but is not limited to, the following:

A. PROCEDURES

The DRA shall meet with the parties at the start of the project to establish procedures that will govern the conduct of its business and reporting procedures in conformance with the requirements of the contract and the terms of this AGREEMENT. The DRA established procedures shall only be implemented upon approval by the parties. Subsequent meetings shall be held only to hear disputes between the parties.

The DRA shall not meet with, or discuss contract issues with individual parties.

The State shall provide the DRA with the contract and all written correspondence regarding the dispute between the parties and, if available, the Contractor's supplemental potential claim record, and the Engineer's response to the supplemental potential claim record.

The parties shall not call the DRA who served on this contract as a witness in arbitration proceedings, which may arise from this contract.

The DRA shall have no claim against the STATE or the CONTRACTOR, or both, from claimed harm arising out of the parties' evaluations of the DRA's opinions.

B. DISPUTE MEETING

The term "dispute meeting" as used in this subsection shall refer to both the informal and traditional dispute meeting processes, unless otherwise noted.

If the CONTRACTOR requests a dispute meeting with the DRA, the Contractor must simultaneously notify the STATE. Upon being notified of the need for a dispute meeting, the DRA shall review and consider the dispute. The DRA shall determine the time and location of the dispute meeting with due consideration for the needs and preferences of the parties, while recognizing the importance of a speedy resolution to the dispute.

Dispute meetings shall be conducted at any location that would be convenient and provide required facilities and access to necessary documentation.

Only the STATE's Area Construction Engineer, Resident Engineer, and Structure Representative and the CONTRACTOR's or subcontractor's, Superintendent or Project Manager may present information at a dispute meeting. There shall be no participation of persons who are not directly involved in the contract or who do not have direct knowledge of the dispute. The exception to this is technical services, as described below:

> The DRA, with approval of the parties, may obtain technical services necessary to adequately review the disputes presented, including audit, geotechnical, schedule analysis and other services. The parties' technical staff may supply those services as appropriate. The cost of technical services, as agreed to by the parties, shall be borne equally by the two parties as specified in an approved contract change order. The CONTRACTOR shall not be entitled to markups for the payments made for these services.

At the dispute meeting the DRA may ask questions, seek clarification, and request further clarification of data presented by either of the parties as may be necessary to assist in making a fully informed recommendation. However, the DRA shall refrain from expressing opinions on the merits of statements on matters under dispute during the parties' presentations. Each party will be given ample time to fully present its position, make rebuttals, provide relevant documents, and respond to DRA questions and requests.

There shall be no testimony under oath or cross-examination, during DRA dispute meetings. There shall be no reporting of the procedures by a shorthand reporter or by electronic means. Documents and verbal statements shall be received by the DRA in conformance with the rules and regulations established at the first meeting between the DRA and parties. These established rules and regulations need not comply with prescribed legal laws of evidence.

Failure to attend a dispute meeting by either of the parties shall be conclusively considered by the DRA as indication that the non-attending party considers all written documents and correspondence submitted as their entire and complete argument. The claimant shall discuss the dispute, followed by the other party. Each party shall then be allowed one or more rebuttals at the meeting until all aspects of the dispute are thoroughly covered.

1. TRADITIONAL DISPUTE MEETING:

The following procedure shall be used for the traditional dispute meeting:

a. Within 5 days after receiving the STATE's written response to the CONTRACTOR's supplemental potential claim record, the CONTRACTOR shall refer the dispute to the DRA, if the CONTRACTOR wishes to further pursue the dispute. The CONTRACTOR shall make the referral in writing to the DRA, simultaneously copied to the STATE. The written dispute referral shall describe the disputed matter in individual discrete segments, so that it will be clear to both parties and the DRA what discrete elements of the dispute have been resolved, and which remain unresolved, and shall include an estimate of the cost of the affected work and impacts, if any, on project completion.

b. The parties shall each be afforded an opportunity to be present and to be heard by the DRA, and to offer evidence. Either party furnishing written evidence or documentation to the DRA must furnish copies of such information to the other party a minimum of 10 days prior to the date the DRA is scheduled to convene the meeting for the dispute. Either party shall produce such additional evidence as the DRA may deem necessary to reach an understanding and a determination of the dispute. The party furnishing additional evidence shall furnish copies of such additional evidence to the other party

at the same time the evidence is provided to the DRA. The DRA shall not consider evidence not furnished in conformance with the terms specified herein.

c. Upon receipt by the DRA of a written referral of a dispute, the DRA shall convene to review and consider the dispute. The dispute meeting shall be held no later than 25 days after receipt of the written referral unless otherwise agreed to by all parties.
d. The DRA shall furnish a written report to both parties. The DRA may request clarifying information of either party within 5 days after the DRA dispute meeting. Requested information shall be submitted to the DRA within 5 days of the DRA request. The DRA shall complete its report and submit it to the parties within 10 days of the DRA dispute meeting, except that time extensions may be granted at the request of the DRA with the written concurrence of both parties. The report shall summarize the facts considered, the contract language, law or regulation viewed by the DRA as pertinent to the dispute, and the DRA's interpretation and philosophy in arriving at its conclusions and recommendations and, if appropriate, recommends guidelines for determining compensation. The DRA's written opinion shall stand on its own, without attachments or appendices.
e. Within 10 days after receiving the DRA's report, both parties shall respond to the DRA in writing signifying that the dispute is either resolved or remains unresolved. Failure to provide the written response within the time specified, or a written rejection of the DRA's recommendation or response to a request for reconsideration presented in the report by either party, shall conclusively indicate that the party(s) failing to respond accepts the DRA recommendation. Immediately after responses have been received from both parties, the DRA shall provide copies of both responses to the parties simultaneously. Either party may request clarification of elements of the DRA's report from the DRA prior to responding to the report. The DRA shall consider any clarification request only if submitted within 5 days of receipt of the DRA's report, and if submitted simultaneously in writing to both the DRA and the other party. Each party may submit only one request for clarification for any individual DRA report. The DRA shall respond, in writing, to requests for clarification within 5 days of receipt of such requests.
f. Either party may seek a reconsideration of the DRA's recommendation. The DRA shall only grant reconsideration based upon submission of new evidence and if the request is submitted within the 10 day time limit specified for response to the DRA's written report. Each party may submit only one request for reconsideration regarding an individual DRA recommendation.
g. If the parties are able to settle their dispute with the aid of the DRA's report, the STATE and CONTRACTOR shall promptly accept and implement the settlement of the parties. If the parties cannot agree on compensation within 30 days of the acceptance by both parties of the settlement, either party may request the DRA to make a recommendation regarding compensation.

2. INFORMAL DISPUTE MEETING

An informal dispute meeting shall be convened, only if, the parties and the DRA agree that this dispute resolution process is appropriate to settle the dispute.
The following procedure shall be used for the informal dispute meeting:

a. The parties shall furnish the DRA with one copy of pertinent documents requested by the DRA that are or may become necessary for the DRA to perform its function. The party furnishing documents shall furnish such documents to the other party at the same time the document is provided to the DRA.
b. After the dispute meeting has concluded, the DRA shall deliberate in private the same day, until a response to the parties is reached or as otherwise agreed to by the parties.
c. The DRA then verbally delivers its recommendation with findings to the parties.
d. After the recommendation is presented, the parties may ask for clarifications.
e. Occasionally the DRA, on complex issues, may be unable to formulate a recommendation based on the information given at a dispute meeting. However, the DRA may provide the parties with advice on strengths and weaknesses of their prospective positions, in the hope of the parties reaching settlement.
f. If the parties are able to settle their dispute with the aid of the DRA's opinion, the STATE and CONTRACTOR shall promptly accept and implement the settlement of the parties.
g. The DRA will not be bound by its oral recommendation in the event that a dispute is later heard by the DRA in a traditional dispute meeting.

Unless the dispute is settled, use of the informal dispute meeting does not relieve the parties of their responsibilities under Section 5-1.15B, "Dispute Resolution Advisor," of the Standard Specifications or

Subsection, "Traditional Dispute Meeting," of this AGREEMENT. There will be no extension of time allowed for the process to permit the use of the informal dispute meeting, unless otherwise agreed to by the parties.

SECTION IV TIME FOR BEGINNING AND COMPLETION

Once established, the DRA shall be in operation until the day the Director accepts the contract. The DRA shall not begin work under the terms of this AGREEMENT until authorized in writing by the STATE or as agreed to by the parties.

SECTION V PAYMENT

The DRA shall be compensated at an agreed rate of $1,500 per day for time spent per meeting, either at the start of the project or for a dispute. A member serving on more than one State DRA or DRB, regardless the number of meetings per day, shall not be paid more than the agreed rate per day. The agreed rate shall be considered full compensation for onsite time, travel expenses, transportation, lodging, time for travel and incidentals for each day, or portion thereof that the DRA is at an authorized DRA meeting. No additional compensation will be made for time spent by the DRA to review and research activities outside the official DRA meetings unless that time, (such as time spent evaluating and preparing recommendations on specific issues presented to the DRA), has been specifically agreed to in advance by the parties. Time away from the project, which has been specifically agreed to in advance by the parties, will be compensated at an agreed rate of $150 per hour. The agreed amount of $150 per hour shall include all incidentals including expenses for telephone, fax, and computer services. The State will provide administrative services such as conference facilities to the DRA.

A. PAYMENT PROCESSING

The CONTRACTOR shall make direct payments to the DRA for their participation in authorized meetings and approved hourly rate charges, from invoices submitted by the DRA, and technical services.

The DRA may submit invoices to the CONTRACTOR for partial payment for work performed and services rendered for their participation in authorized meetings not more often than once per month during the progress of the work. The invoices shall be in a format approved by the parties and accompanied by a general description of activities performed during that billing period. Payment for hourly fees, at the agreed rate, shall not be paid to the DRA until the amount and extent of those fees are approved by the STATE and CONTRACTOR.

B. INSPECTION OF COSTS RECORDS

The DRA and the CONTRACTOR shall keep available for inspection by representatives of the STATE and the United States, for a period of 3 years after final payment, the cost records and accounts pertaining to this AGREEMENT. If any litigation, claim, or audit arising out of, in connection with, or related to this contract is initiated before the expiration of the 3-year period, the cost records and accounts shall be retained until such litigation, claim, or audit involving the records is completed.

SECTION VI ASSIGNMENT OF TASKS OF WORK

The DRA shall not assign the work of this AGREEMENT.

SECTION VII TERMINATION OF DRA

The DRA may resign after providing not less than 15 days written notice of the resignation to the STATE and CONTRACTOR. The DRA may be terminated, by either party, for failing to fully comply at all times with all required employment or financial disclosure conditions of DRA membership in conformance with the terms of the contract and this AGREEMENT. Each party shall document the need for replacement and substantiate the replacement request in writing to the other party and the DRA.

SECTION VIII LEGAL RELATIONS

The parties hereto mutually understand and agree that the DRA in the performance of duties is acting in the capacity of an independent agent and not as an employee of either party.

No party to this AGREEMENT shall bear a greater responsibility for damages or personal injury than is normally provided by Federal or State of California Law.

Notwithstanding the provisions of this contract that require the CONTRACTOR to indemnify and hold harmless the STATE, the parties shall jointly indemnify and hold harmless the DRA from and against all claims, damages, losses, and expenses, including but not limited to attorney's fees, arising out of and resulting from the findings and recommendations of the DRA.

SECTION IX CONFIDENTIALITY

The parties hereto mutually understand and agree that all documents and records provided by the parties in reference to issues brought before the DRA, which documents and records are marked "Confidential - for use by the DRA only," shall be kept in confidence and used only for the purpose of resolution of subject disputes, and for assisting in development of DRA findings and recommendations; that such documents and records will not be utilized or revealed to others, except to officials of the parties who are authorized to act on the subject disputes, for any purposes, during the life of this AGREEMENT. Upon termination of this AGREEMENT, said confidential documents and records, and all copies thereof, shall be returned to the parties who furnished them to the DRA. However, the parties understand that such documents may be subsequently discoverable and admissible in court or arbitration proceedings unless a protective order has been obtained by the party seeking further confidentiality.

SECTION X DISPUTES

Disputes between the parties arising out of the work or other terms of this AGREEMENT that cannot be resolved by negotiation and mutual concurrence between the parties or through the administrative process provided in the contract shall be resolved by arbitration as provided in Section 9-1.10, "Arbitration," of the Standard Specifications. Disputes between the DRA and the parties that cannot be resolved by negotiation and mutual concurrence shall be resolved in the appropriate forum.

SECTION XI VENUE, APPLICABLE LAW, AND PERSONAL JURISDICTION

In the event that any party, including the DRA, deems it necessary to institute arbitration proceedings to enforce any right or obligation under this AGREEMENT, the parties hereto agree that such action shall be initiated in the Office of Administrative Hearings of the State of California. The parties hereto agree that all questions shall be resolved by arbitration by application of California law and that the parties to such arbitration shall have the right of appeal from such decisions to the Superior Court in conformance with the laws of the State of California. Venue for the arbitration shall be Sacramento or any other location as agreed to by the parties.

SECTION XII FEDERAL REVIEW AND REQUIREMENTS

On Federal-Aid contracts, the Federal Highway Administration shall have the right to review the work of the DRA in progress, except for private meetings or deliberations of the DRA.

Other Federal requirements in this agreement shall only apply to Federal-Aid contracts.

SECTION XIII CERTIFICATION OF CONTRACTOR, DRA, AND STATE

IN WITNESS WHEREOF, the parties hereto have executed this AGREEMENT as of the day and year first above written.

DRA

By: _____

Title: _____

CONTRACTOR	CALIFORNIA DEPARTMENT OF TRANSPORTATION
By: _____	By: _____
Title: _____	Title: _____

5-1.15C Dispute Resolution Board

Section 5-1.15C, "Dispute Resolution Board," applies to a contract with a total bid of over $10 million.

The Dispute Resolution Board, hereinafter referred to as "DRB," is a three member board established by the Department and Contractor to assist in the resolution of disputes.

The DRB shall be established by the Department and the Contractor within 45 days after contract approval.

The DRB shall consist of one member selected by the Department and approved by the Contractor, one member selected by the Contractor and approved by the Department, and a third member selected by the first 2 members and approved by both the Department and the Contractor.

The Department and Contractor shall provide the other written notification for approval of the name of their DRB nominee along with the nominee's disclosure statement.

Disclosure statements shall include a resume of the nominee's experience and a declaration statement describing past, present, anticipated, and planned relationships with all parties involved in this contract. Objections to nominees shall be based on a specific breach or violation of nominee responsibilities or on nominee qualifications. The Department or the Contractor may, on a one-time basis, object to the other's nominee without specifying a reason and this person shall not be selected for the DRB. Another person shall then be nominated within 15 days.

The 2 DRB members shall proceed with the selection of the third DRB member immediately after receiving written notification from the Department of their selection. The 2 DRB members shall provide their recommendation simultaneously to the parties within 15 days. The third member shall provide disclosure statement to the first 2 DRB members, to the Department, and the Contractor. The professional experience of the third DRB member shall complement that of the first 2 DRB members. The third DRB member shall be subject to mutual approval of the Department and the Contractor. If the 2 DRB members cannot agree on the third nominee, they shall submit a list of nominees to the Department and the Contractor for final selection and approval.

If the Department and the Contractor cannot agree on the third DRB member, or if the first 2 DRB members are unable to agree upon a recommendation, the Department and the Contractor shall select 6 names from the current list of arbitrators certified by the Public Works Contract Arbitration Committee created by Article 7.2 of the State Contract Act. The 2 DRB members shall then select one of the 6 names by a blind draw.

The 3 DRB members shall appoint one member as a chairperson to provide leadership for the DRB's activities. The chairperson shall be approved by the Department and the Contractor. In the event of an impasse, the third DRB member shall become the chairperson.

The Department and Contractor shall complete and adhere to the Dispute Resolution Board Agreement. No DRB meeting shall take place until the Dispute Resolution Board Agreement has been signed by all parties, unless all parties agree to sign it at the first meeting.

If the DRB needs outside technical services, technical services shall be preapproved by both the Department and the Contractor.

DRB recommendations are nonbinding.

The Contractor shall not use the DRB for disputes between the subcontractors or suppliers that have no grounds for a lawsuit against the Department.

DRB member replacements are selected in the same manner as the original selection. The appointment of a replacement DRB member will begin promptly upon determination of the need for replacement. The Dispute Resolution Board Agreement shall be amended to reflect the change in the DRB.

Failure of the Contractor to participate in establishing the DRB will result in the withholding of 25 percent of the estimated value of all work performed during each estimate period that the Contractor fails to comply. DRB withholds will be released for payment on the next monthly progress payment following the date that the Contractor has provided assistance in establishing the DRB and no interest will be due the Contractor.

The Department and the Contractor shall bear the costs and expenses of the DRB equally.

Each DRB member shall be compensated at an agreed rate of $1,500 per day for time spent per meeting either at the start of the project, for scheduled progress, or dispute meetings. A member serving on more than one Department DRB or Dispute Resolution Advisor (DRA), regardless of the number of meetings per day shall not be paid more than the agreed rate per day. The agreed rate shall be considered full compensation for on-site time, travel expenses, transportation, lodging, time for travel, and incidentals for each day or portion thereof that the DRB member is at an authorized DRB meeting.

No additional compensation will be made for time spent by DRB members in review and research activities outside the official DRB meetings unless that time, such as time spent evaluating and preparing recommendations on specific issues presented to the DRB, has been specifically agreed to in advance by the Department and Contractor. Time away from the project, which has been specifically agreed to in advance by the Department and Contractor, will be compensated at an agreed rate of $150 per hour. The agreed amount of $150 per hour shall include all incidentals including expenses for telephone, fax, and computer services.

The Department will provide conference facilities for DRB meetings at no cost to the Contractor.

The Contractor shall make direct payments to each DRB member for their participation in authorized meetings and approved hourly rate charges from invoices submitted by each DRB member.

The Department will reimburse the Contractor for the Department's share of the costs.

There will be no markups applied to expenses connected with the DRB, either by the DRB members or by the Contractor when requesting payment of the Department's share of DRB expenses. Regardless of the DRB recommendation, neither party shall be entitled to reimbursement of DRB costs from the other party.

The Contractor shall submit extra work bills and include evidence of every payment to each DRB member in the form of a cancelled check or bank statement within 30 days of payment.

The cost of technical services requested by the DRB will be borne equally by the State and Contractor. There will be no markups for these costs.

A copy of the "Dispute Resolution Board Agreement" to be executed by the Department, Contractor, and the 3 DRB members after approval of the contract follows:

DISPUTE RESOLUTION BOARD AGREEMENT

_____
(Contract Identification)

Contract No. _____

THIS DISPUTE RESOLUTION BOARD AGREEMENT, hereinafter called "AGREEMENT", made and entered into this _____ day of _____, _____, between the State of California, acting through the California Department of Transportation and the Director of Transportation, hereinafter called the "STATE," _____ _____ hereinafter called the "CONTRACTOR," and the Dispute Resolution Board, hereinafter called the "DRB" consisting of the following members:

_____ ,
(DRB Member)

_____ ,
(DRB Member)

and _____
(DRB Chairperson)

WITNESSETH, that

WHEREAS, the STATE and the CONTRACTOR, hereinafter called the "parties," are now engaged in the construction on the State Highway project referenced above; and

WHEREAS, the Standard Specifications for the above referenced contract provides for the establishment and operation of the DRB to assist in resolving disputes; and

WHEREAS, the DRB is composed of three members, one selected by the STATE, one selected by the CONTRACTOR, and the third member selected by the other two members and approved by the parties; and

NOW THEREFORE, in consideration of the terms, conditions, covenants, and performance contained herein, or attached and incorporated and made a part hereof, the STATE, the CONTRACTOR, and the DRB members hereto agree as follows:

SECTION I DESCRIPTION OF WORK

To assist in the timely resolution of disputes between the parties, the contract provides for the establishment and the operation of the DRB. The DRB is to fairly and impartially consider disputes placed before it and provide recommendations for resolution of these disputes to the parties. The DRB shall provide recommendations based on the facts related to the dispute, the contract and applicable laws and regulations. The DRB shall perform the services necessary to participate in the DRB's actions as designated in Section III, Scope of Work.

SECTION II DRB QUALIFICATIONS

DRB members shall be knowledgeable in the type of construction and contract documents anticipated by the contract and shall have completed training through the Dispute Review Board Foundation.

No DRB member shall have prior direct involvement in this contract. No DRB member shall have a financial interest in this contract or parties thereto, including but not limited to the CONTRACTOR, subcontractors, suppliers, consultants, and legal and business services, within a period 6 months prior to award and during this contract. Exceptions to above are compensation for services on this or other DRBs and DRAs or retirement payments or pensions received from a party that are not tied to, dependent on or affected by the net worth of the party.

DRB members shall fully disclose all direct or indirect professional or personal relationships with all key members of the contract.

SECTION III SCOPE OF WORK

The scope of work of the DRB includes, but is not limited to, the following:

A. PROCEDURES

The DRB shall establish procedures that will govern the conduct of its business and reporting procedures in conformance with the requirements of the contract and the terms of this AGREEMENT. The DRB established procedures shall only be implemented upon approval of the parties.

The DRB Chairperson shall schedule progress and dispute meetings and any other DRB activities.

The parties shall not call on any of the DRB members, who served on this contract, as a witness in arbitration proceedings, which may arise from this contract.

DRB members shall have no claim against the STATE or the CONTRACTOR, or both, from claimed harm arising out of the parties' evaluations of the DRB's opinions.

During progress or dispute meetings, DRB members shall refrain from expressing opinions on the merits of statements on matters under dispute or potential dispute. Opinions of DRB members expressed in private sessions shall be kept strictly confidential. Individual DRB members shall not meet with, or discuss contract issues with individual parties. Discussions regarding the project between the DRB members and the parties shall be in the presence of all three members and both parties. Individual DRB members shall not undertake independent investigations of any kind pertaining to disputes or potential disputes, except with the knowledge of both parties and as expressly directed by the DRB Chairperson.

B. PROGRESS MEETINGS

DRB members shall visit the project site and meet with representatives of the parties to keep abreast of construction activities and to develop familiarity with the work in progress. Scheduled progress meetings shall be held at or near the project site. The DRB shall meet at least once at the start of the project, and at least once every 4 months thereafter. The frequency, exact time, and duration of additional site visits and progress meetings shall be as recommended by the DRB and approved by the parties consistent with the construction activities or matters under consideration and dispute. Scheduled progress meetings may be waived, if the parties are in agreement, when the only work remaining is plant establishment work. Each meeting shall consist of a round table discussion and a field inspection of the work being performed on the contract, if necessary. Each meeting shall be attended by representatives of both parties. The agenda shall generally be as follows:

1. Meeting opened by the DRB Chairperson.
2. Remarks by the STATE's representative.
3. A description by the CONTRACTOR's representative of work accomplished since the last meeting; the current schedule status of the work; and a forecast for the coming period.
4. An outline by the STATE's representative of the status of the work as the STATE views it.
5. An outline by the CONTRACTOR's representative of potential problems and a description of proposed solutions.
6. A brief description by the CONTRACTOR's and the STATE's representative of potential claims and disputes that have surfaced since the last meeting.
7. A summary by the STATE's representative, the CONTRACTOR's representative, or the DRB of the status of past potential claims and disputes.

The STATE's representative will prepare minutes of all progress meetings and circulate them for revision and approval by all concerned within 10 days of the meeting.

C. DISPUTE MEETING

The term "dispute meeting" as used in this subsection shall refer to both the informal and traditional dispute meeting processes, unless otherwise noted.

Either the STATE or the CONTRACTOR may request a dispute meeting with the DRB. The requesting party shall simultaneously notify the other party of each dispute meeting request. Upon being notified of the need for a dispute meeting, the DRB shall review and consider the dispute. The DRB shall determine the time and location of the dispute meeting with due consideration for the needs and preferences of the parties, while recognizing the importance of a speedy resolution to the dispute.

Dispute meetings shall be conducted at any location that would be convenient and provide required facilities and access to necessary documentation.

No DRB dispute meeting shall take place later than 30 days prior to acceptance of the contract.

Only the STATE's Area Construction Engineer, Resident Engineer, and Structure Representative and the CONTRACTOR's or subcontractor's, Superintendent or Project Manager may present information at a dispute meeting. There shall be no participation of persons who are not directly involved in the contract or who do not have direct knowledge of the dispute. The exception to this is technical services, as described below:

> The DRB, with approval of the parties, may obtain technical services necessary to adequately review the disputes presented, including audit, geotechnical, schedule analysis and other services. The parties' technical staff may supply those services as appropriate. The cost of technical services, as agreed to by the parties, shall be borne equally by the two parties as specified in an approved contract change order. The CONTRACTOR shall not be entitled to markups for the payments made for these services.

At the dispute meeting the DRB may ask questions, seek clarification, and request further clarification of data presented by either of the parties as may be necessary to assist in making a fully informed recommendation. However, the DRB shall refrain from expressing opinions on the merits of statements on matters under dispute during the parties' presentations. The claimant shall discuss the dispute, followed by the other party. Each party shall then be allowed one or more rebuttals at the meeting until all aspects of the dispute are thoroughly covered. Each party will be given ample time to fully present its position, make rebuttals, provide relevant documents, and respond to DRB questions and requests.

There shall be no testimony under oath or cross-examination, during DRB dispute meetings. There shall be no reporting of the procedures by a shorthand reporter or by electronic means. Documents and verbal statements shall be received by the DRB in conformance with the procedures established at the first meeting between the DRB and the parties. These established procedures need not comply with prescribed legal laws of evidence.

Failure to attend a dispute meeting by either of the parties shall be conclusively considered by the DRB as indication that the non-attending party considers all written documents and correspondence submitted as their entire and complete argument.

After dispute meetings are concluded, the DRB shall meet in private and reach a conclusion supported by two or more members. Private sessions of the DRB may be held at a location other than the job site or by electronic conferencing as deemed appropriate, in order to expedite the process.

The DRB shall make every effort to reach a unanimous decision.

1. TRADITIONAL DISPUTE MEETING:

The following procedure shall be used for the traditional dispute meeting:

a. Within 21 days after receiving the STATE's written response to the CONTRACTOR's supplemental potential claim record, the CONTRACTOR shall refer the dispute to the DRB if the CONTRACTOR wishes to further pursue the dispute. The CONTRACTOR shall make the referral in writing to the DRB, simultaneously copied to the STATE. The written dispute referral shall describe the disputed matter in individual discrete segments, so that it will be clear to both parties and the DRB what discrete elements of the dispute have been resolved, and which remain unresolved, and shall include an estimate of the cost of the affected work and impacts, if any, on project completion.

b. The parties shall each be afforded an opportunity to be present and to be heard by the DRB, and to offer evidence. Either party furnishing written evidence or documentation to the DRB must furnish copies of such information to the other party a minimum of 15 days prior to the date the DRB is scheduled to convene the meeting for the dispute. Either party shall produce such additional evidence as the DRB may deem necessary to reach an understanding and a determination of the dispute. The party furnishing additional evidence shall furnish copies of such additional evidence to the other party at the same time the evidence is provided to the DRB. The DRB shall not consider evidence not furnished in conformance with the terms specified herein.

c. Upon receipt by the DRB of a written referral of a dispute, the DRB shall convene to review and consider the dispute. The dispute meeting shall be held no earlier than 30 days and no later than 60 days after receipt of the written referral unless otherwise agreed to by all parties.

d. The DRB may request clarifying information of either party within 10 days after the dispute meeting. Requested information shall be submitted to the DRB within 10 days of the DRB request.

e. The DRB shall furnish a written report to the parties with its conclusion(s) and recommendation(s). The DRB shall complete its report, including minority opinion, if any, and submit it to the parties within 30 days of the dispute meeting, except that time extensions may be granted at the request of the DRB with the written concurrence of the parties. The report shall summarize the facts considered, the contract language, law or regulation viewed by the DRB as pertinent to the dispute, and the DRB's interpretation and

reasoning in arriving at its conclusion(s) and recommendation(s) and, if appropriate, recommends guidelines for determining compensation. The DRB's written opinion shall stand on its own, without attachments or appendices. The DRB Chairperson shall furnish a copy of the written recommendation report to the DRB Coordinator, Division of Construction, MS 44, P.O. Box 942874, Sacramento, CA 94274.

f. Within 30 days after receiving the DRB's report, the parties shall respond to the DRB in writing signifying that the dispute is either resolved or remains unresolved. Failure to provide the written response within the time specified, or a written rejection of the DRB's recommendation or a written response requesting the DRB reconsider their recommendation, shall conclusively indicate that the party(s) failing to respond accepts the DRB recommendation. Immediately after responses have been received from both parties, the DRB shall provide copies of both responses to the parties simultaneously. Either party may request clarification of elements of the DRB's report from the DRB prior to responding to the report. The DRB shall consider any clarification request only if submitted within 10 days of receipt of the DRB's report, and if submitted simultaneously in writing to both the DRB and the other party. Each party may submit only one request for clarification for any individual DRB report. The DRB shall respond, in writing, to requests for clarification within 10 days of receipt of such requests.
g. Either party may seek a reconsideration of the DRB's recommendation. The DRB shall only grant reconsideration based upon submission of new evidence and if the request is submitted within the 30 day time limit specified for response to the DRB's written report. Each party may submit only one request for reconsideration regarding an individual DRB recommendation.
h. If the parties are able to settle their dispute with the aid of the DRB's report, the STATE and the CONTRACTOR shall promptly accept and implement the settlement of the parties. If the parties cannot agree on compensation within 60 days of the acceptance by both parties of the settlement, either party may request the DRB to make a recommendation regarding compensation.

2. INFORMAL DISPUTE MEETING

An informal dispute meeting shall be convened, only if, the parties and the DRB agree that this dispute resolution process is appropriate to settle the dispute.

The following procedure shall be used for the informal dispute meeting:

a. The parties shall furnish the DRB with one copy of pertinent documents requested by the DRB that are or may become necessary for the DRB to perform its function. The party furnishing documents shall furnish such documents to the other party at the same time the document is provided to the DRB.
b. After the dispute meeting has concluded, the DRB members shall deliberate in private the same day until a response to the parties is reached or as otherwise agreed to by the parties.
c. The DRB then verbally delivers its recommendation with findings, including minority opinion, if any, to the parties.
d. After the recommendation is presented, the parties may ask for clarifications.
e. Occasionally the DRB may be unable to formulate a recommendation based on the information given at a dispute meeting. However, the DRB may provide the parties with advice on strengths and weaknesses of their prospective positions, in the hope of the parties reaching settlement.
f. If the parties are able to settle their dispute with the aid of the DRB's opinion, the STATE and the CONTRACTOR shall promptly accept and implement the settlement of the parties.
g. The DRB will not be bound by its verbal recommendation in the event that a dispute is later heard by the DRB in a traditional dispute meeting.

Unless the dispute is settled, use of the informal dispute meeting does not relieve the parties of their responsibilities under Section 5-1.15C, "Dispute Resolution Board," of the Standard Specifications or subsection, "Traditional Dispute Meeting," of this AGREEMENT. There will be no extension of time allowed for the process to permit the use of the informal dispute meeting, unless otherwise agreed to by the parties.

SECTION IV TIME FOR BEGINNING AND COMPLETION

DRB members shall not begin work under the terms of this AGREEMENT, until authorized in writing by the STATE or as agreed to by the parties. Once established, the DRB shall be in operation until the Director accepts the contract. If the contract is terminated in accordance with Section 8-1.08, "Termination of Control," of the Standard Specifications, the DRB will be dissolved.

SECTION V PAYMENT

Each DRB member shall be compensated at an agreed rate of $1,500 per day for time spent per meeting, either at start of project, or a scheduled progress or a dispute meeting. A member serving on more than one State DRB or DRA, regardless of the number of meetings per day, shall not be paid more than the agreed rate per day. The agreed rate shall be considered full compensation for on site time, travel expenses, transportation, lodging, time for travel and incidentals for each day, or portion thereof that the DRB member is at an authorized DRB meeting. No additional compensation will be made for time spent by DRB member to review and research activities outside the official DRB meetings unless that time, such as time spent evaluating and preparing recommendations on specific issues presented to the DRB, has been specifically agreed to in advance by the parties. Time away from the project, which has been specifically agreed to in advance by the parties, will be compensated at an agreed rate of $150 per hour. The agreed amount of $150 per hour shall include all incidentals including expenses for telephone, fax, and computer services. The State will provide administrative services such as conference facilities to the DRB.

A. PAYMENT PROCESSING

The CONTRACTOR shall make direct payments to each DRB member for their participation in authorized meetings and approved hourly rate charges, from invoices submitted by each DRB member, and technical services.

DRB members may submit invoices to the CONTRACTOR for partial payment for work performed and services rendered for their participation in authorized meetings not more often than once per month during the progress of the work. The invoices shall be in a format approved by the parties and accompanied by a general description of activities performed during that billing period. Payment for hourly fees, at the agreed rate, shall not be paid to a DRB member until the amount and extent of those fees are approved by the STATE and the CONTRACTOR.

B. INSPECTION OF COSTS RECORDS

DRB members and the CONTRACTOR shall keep available for inspection by representatives of the STATE and the United States federal government, for a period of 3 years after final payment, the cost records and accounts pertaining to this AGREEMENT. If any litigation, claim, or audit arising out of, in connection with, or related to this contract is initiated before the expiration of the 3-year period, the cost records and accounts shall be retained until such litigation, claim, or audit involving the records is completed.

SECTION VI ASSIGNMENT OF TASKS OF WORK

DRB members shall not assign the work of this AGREEMENT.

SECTION VII TERMINATION OF A DRB MEMBER

DRB members may resign after providing not less than 15 days written notice of their resignation to the STATE and the CONTRACTOR. A DRB member may be terminated, by either party, for failing to comply at all times with all required employment or financial disclosure conditions of DRB membership in conformance with the terms of the contract and this AGREEMENT.

Service of a DRB member may be terminated at any time with not less than 15 days notice as follows:

A. The State may terminate service of the State appointed member.
B. The Contractor may terminate service of the Contractor appointed member.
C. Upon the written recommendation of the State and Contractor appointed members for the removal of the third member.
D. Upon resignation of a member.

When a member of the DRB is replaced, the replacement member shall be appointed in the same manner as the replaced member was appointed. The appointment of a replacement DRB member will begin promptly upon determination of the need for replacement and shall be completed within 15 days. Changes in either of the DRB members chosen by the 2 parties will not require re-selection of the third member, unless both parties agree to such re-selection in writing. The Dispute Resolution Board Agreement shall be amended to reflect the change of a DRB member.

Each party shall document the need for replacement and substantiate the replacement request in writing to the other party and DRB members.

SECTION VIII LEGAL RELATIONS

The parties hereto mutually understand and agree that each DRB member in the performance of duties is acting in the capacity of an independent agent and not as an employee of either party.

No party to this AGREEMENT shall bear a greater responsibility for damages or personal injury than is normally provided by Federal or State of California Law.

Notwithstanding the provisions of this contract that require the CONTRACTOR to indemnify and hold harmless the STATE, the parties shall jointly indemnify and hold harmless the DRB members from and against all claims, damages, losses, and expenses, including but not limited to attorney's fees, arising out of and resulting from the findings and recommendations of the DRB.

SECTION IX CONFIDENTIALITY

The parties hereto mutually understand and agree that all documents and records provided by the parties in reference to issues brought before the DRB, which documents and records are marked "Confidential - for use by the DRB only," shall be kept in confidence and used only for the purpose of resolution of subject disputes, and for assisting in development of DRB findings and recommendations; that such documents and records will not be utilized or revealed to others, except to officials of the parties who are authorized to act on the subject disputes, for any purposes, during the life of this AGREEMENT. Upon termination of this AGREEMENT, said confidential documents and records, and all copies thereof, shall be returned to the parties who furnished them to the DRB. However, the parties understand that such documents may be subsequently discoverable and admissible in court or arbitration proceedings unless a protective order has been obtained by the party seeking further confidentiality.

SECTION X DISPUTES

Disputes between the parties arising out of the work or other terms of this AGREEMENT, which cannot be resolved by negotiation and mutual concurrence between the parties, or through the administrative process provided in the contract, shall be resolved by arbitration as provided in Section 9-1.10, "Arbitration," of the Standard Specifications. Disputes between the DRB and either party, which cannot be resolved by negotiation and mutual concurrence, shall be resolved in the appropriate forum.

SECTION XI VENUE, APPLICABLE LAW, AND PERSONAL JURISDICTION

In the event that any party deems it necessary to institute arbitration proceedings to enforce any right or obligation under this AGREEMENT, the parties hereto agree that such action shall be initiated in the Office of Administrative Hearings of the State of California. The parties hereto agree that all questions shall be resolved by arbitration by application of California law and that the parties to such arbitration shall have the right of appeal from such decisions to the Superior Court in conformance with the laws of the State of California. Venue for the arbitration shall be Sacramento or any other location as agreed to by the parties.

SECTION XII FEDERAL REVIEW AND REQUIREMENTS

On Federal-Aid contracts, the Federal Highway Administration shall have the right to review the work of the DRB in progress, except for private meetings or deliberations of the DRB that do not become part of the project records.

Other Federal requirements in this agreement shall only apply to Federal-Aid contracts.

SECTION XIII CERTIFICATION OF CONTRACTOR, DRB, AND STATE

IN WITNESS WHEREOF, the parties hereto have executed this AGREEMENT as of the day and year first above written.

DRB MEMBER

By: _____

Title: _____

DRB MEMBER

By: _____

Title :_____

DRB CHAIRPERSON

By :_____

Title :_____

CONTRACTOR

By: _____

Title: _____

CALIFORNIA DEPARTMENT
OF TRANSPORTATION

By: _____

Title: _____

Add:

5-1.16–5-17 (BLANK)

Add:

5-1.18 PROPERTY AND FACILITY PRESERVATION

5-1.18A General

Preserve property and facilities, including:

1. Adjacent property
2. Department's instrumentation
3. ESAs
4. Lands administered by other agencies
5. Railroads and railroad equipment
6. Roadside vegetation not to be removed
7. Utilities
8. Waterways

Immediately report damage to the Engineer.

If you cause damage, you are responsible.

Install sheet piling, cribbing, bulkheads, shores, or other supports necessary to support existing facilities or support material carrying the facilities.

Dispose of temporary facilities when they are no longer needed.

If you damage plants not to be removed:

1. Dispose of them outside the right of way unless the Engineer allows you to reduce them to chips and spread the chips within the highway at locations designated by the Engineer
2. Replace them

Replace plants with plants of the same species.

Replace trees with 24-inch-box trees.

Replace shrubs with No. 15 container shrubs.

Replace ground cover plants with plants from flats. Replace Carpobrutus ground cover plants with plants from cuttings. Plant ground cover plants 1 foot on center.

If a plant establishment period is specified, replace plants before the start of the plant establishment period; otherwise, replace plants at least 30 days before Contract acceptance.

Water each plant immediately after planting and saturate the backfill soil around and below the roots or ball of earth around the roots of each plant. Water as necessary to maintain plants in a healthy condition until Contract acceptance.

The Department may make a temporary repair to restore service to a damaged facility.

If working on or adjacent to railroad property, do not interfere with railroad operations.

For an excavation on or affecting railroad property, submit work plans showing the system to be used to protect railroad facilities. Allow 65 days for the Engineer's review of the plans. Do not perform work based on the plans until the Engineer notifies you they are accepted.

5-1.18B Nonhighway Facilities (Including Utilities)

The Department may rearrange a nonhighway facility during the Contract. Rearrangement of a nonhighway facility includes installation, relocation, alteration, or removal of the facility.The Department may authorize facility owners and their agents to enter the highway to perform rearrangement work for their facilities or to make connections or repairs to their property. Coordinate activities to avoid delays.

Notify the Engineer at least 3 business days before you contact the regional notification center under Govt Code § 4216 et seq. Failure to contact the notification center prohibits excavation.

Before starting work that could damage or interfere with underground infrastructure, locate the infrastructure described in the Contract, including laterals and other appurtenances, and determine the presence of other underground infrastructure inferred from visible facilities such as buildings, meters, or junction boxes.

Notify the Engineer if the infrastructure described in the Contract cannot be found. If after giving the notice, you find the infrastructure in a substantially different location than described, finding the infrastructure is paid for as extra work as specified in Section 4-1.03D, "Extra Work."

Underground infrastructure described in the Contract may be in different locations than described, and additional infrastructure may exist.

Upon discovering an underground main or trunk line not described in the Contract, immediately notify the Engineer and the infrastructure owner. The Engineer orders the locating and protecting of the infrastructure. The locating and protecting is paid for as extra work as specified in Section 4-1.03D, "Extra Work." If ordered, repair infrastructure damage. If the damage is not due to your negligence, the repair is paid for as extra work as specified in Section 4-1.03D, "Extra Work."

If necessary underground infrastructure rearrangement is not described in the Contract, the Engineer may order you to perform the work. The rearrangement is paid for as extra work as specified in Section 4-1.03D, "Extra Work."

If you want infrastructure rearrangement different from that described in the Contract:

1. Notify the Engineer
2. Make an arrangement with the infrastructure owner
3. Obtain authorization for the rearrangement
4. The Department does not adjust time or payment for rearrangement different from the Contract
5. Pay the infrastructure owner any additional cost

Immediately notify the Engineer of a delay due to the presence of main line underground infrastructure not described in the Contract or in a substantially different location or due to rearrangement different from the Contract. The Department pays for one of these delays in the same manner as specified for a right of way delay in Section 8-1.09, "Right of Way Delays."

^^

SECTION 6 CONTROL OF MATERIALS
(Issued 05-01-09)

Replace Section 6-1.05 with:

6-1.05 SPECIFIC BRAND OR TRADE NAME AND SUBSTITUTION

A reference to a specific brand or trade name establishes a quality standard and is not intended to limit competition. You may use a product that is equal to or better than the specified brand or trade name if approved.

Submit a substitution request within a time period that:

1. Follows Contract award
2. Allows 30 days for review
3. Causes no delay

Include substantiating data with the substitution request that proves the substitution:

1. Is of equal or better quality and suitability
2. Causes no delay in product delivery and installation

Add:

6-1.075 GUARANTEE

Guarantee the work remains free from substantial defects for 1 year after contract acceptance except for work parts for which you were relieved of maintenance and protection. Guarantee each of these relieved work parts for 1 year after the relief date.

The guarantee excludes damage or displacement caused by an event outside your control including:

1. Normal wear and tear

2. Improper operation
3. Insufficient maintenance
4. Abuse
5. Unauthorized change
6. Act of God

During the guarantee period, repair or replace each work portion having a substantial defect.

The Department does not pay for corrective work.

During corrective work activities, provide insurance coverage specified for coverage before contract acceptance.

The contract bonds must be in full force and effect until the later of:

1. Expiration of guarantee period
2. Completion of corrective work

If a warranty specification conflicts with Section 6-1.075, "Guarantee," comply with the warranty specification.

During the guarantee period, the Engineer monitors the completed work. If the Engineer finds work having a substantial defect, the Engineer lists work parts and furnishes you the list.

Within 10 days of receipt of the list, submit for authorization a detailed plan for correcting the work. Include a schedule that includes:

1. Start and completion dates
2. List of labor, equipment, materials, and any special services you plan to use
3. Work related to the corrective work, including traffic control and temporary and permanent pavement markings

The Engineer notifies you when the plan is authorized. Start corrective work and related work within 15 days of notice.

If the Engineer determines corrective work is urgently required to prevent injury or property damage:

1. The Engineer furnishes you a request to start emergency repair work and a list of parts requiring corrective work
2. Mobilize within 24 hours and start work
3. Submit a corrective work plan within 5 days of starting emergency repair work

If you fail to perform work as specified, the Department may perform the work and bill you.

In Section 6-1.08 delete the 2nd paragraph.

Add:

6-1.085 BUY AMERICA (23 CFR 635.410)

For a Federal-aid contract, furnish steel and iron materials to be incorporated into the work that are produced in the United States except:

1. Foreign pig iron and processed, pelletized, and reduced iron ore may be used in the domestic production of the steel and iron materials [60 Fed Reg 15478 (03/24/1995)]
2. If the total combined cost of the materials does not exceed the greater of 0.1 percent of the total bid or $2,500, material produced outside the United States may be used

Production includes:

1. Processing steel and iron materials, including smelting or other processes that alter the physical form or shape (such as rolling, extruding, machining, bending, grinding, and drilling) or chemical composition
2. Coating application, including epoxy coating, galvanizing, and painting, that protects or enhances the value of steel and iron materials

For steel and iron materials to be incorporated into the work, submit a Certificate of Compliance under Section 6-1.07, "Certificates of Compliance," of the Standard Specifications that certifies all production processes occurred in the United States except for the above exceptions.

Add:

6-1.087 BUY AMERICA (PUB RES CODE § 42703(d))

Furnish crumb rubber to be incorporated into the work that is produced in the United States and is derived from waste tires taken from vehicles owned and operated in the United States.

For crumb rubber to be incorporated into the work, submit a Certificate of Compliance under Section 6-1.07, "Certificates of Compliance," of the Standard Specifications that certifies only crumb rubber manufactured in the United States and derived from waste tires taken from vehicles owned and operated in the United States is used.

In Section 6-2.01 delete the 4th paragraph.

In Section 6-2.01 replace the 7th paragraph with:

Upon the Contractor's written request, the Department tests materials from an untested local source. If satisfactory material from that source is used in the work, the Department does not charge the Contractor for the tests; otherwise, the Department deducts the test cost.

In Section 6-2.01 delete the 8th paragraph.

In Section 6-2.02 delete the 3rd paragraph.

In Section 6-2.02 in the 7th paragraph, replace the 2nd sentence with:

The Department deducts the charges for the removed material.

In Section 6-2.03 in the 3rd paragraph, replace the 5th sentence with:

No allowance or additional compensation will be made for lost time or for delay in completing the work due to moving the Contractor's plant from the designated mandatory source to the alternative mandatory source, other than a time adjustment as specified in Section 8-1.09, "Delays."

In Section 6-3.01 delete the 4th paragraph.

In Section 6-3.01 in the 6th paragraph, delete the 1st sentence.

In Section 6-3.01 add:

As used in Section 6-3.01, "Testing," tests are tests to assure the quality and to determine the acceptability of the work.

The Department deducts costs of testing work found to be noncompliant.

^^

SECTION 7 LEGAL RELATIONS AND RESPONSIBILITY

(Issued 07-27-12)

Replace Section 7-1.01 with:

7-1.01 LAWS TO BE OBSERVED

Comply with laws, regulations, orders, decrees, and PLACs applicable to the project. Indemnify and defend the State against any claim or liability arising from the violation of a law, regulation, order, decree, or PLAC by you or your employees. Immediately report to the Engineer in writing a discrepancy or inconsistency between the contract and a law, regulation, order, decree, or PLAC.

In Section 7-1.01A replace the 1st clause with:

Work on the job site must comply with Labor Code §§ 1727 and 1770-1815 and 8 CA Code of Regs § 16000 et seq. Work includes roadside production and processing of materials.

In Section 7-1.01A(2) in the 1st paragraph, replace item 3 with:

3. Upon becoming aware of the subcontractor's failure to pay the specified prevailing rate of wages to the subcontractor's workers, the Contractor must diligently take corrective action to stop or rectify the failure, including withholding sufficient funds due the subcontractor for work performed on the public works project.

In Section 7-1.01A(2), replace the 2nd paragraph with:

Pursuant to Section 1775 of the Labor Code, the Division of Labor Standards Enforcement must notify the Contractor on a public works project within 15 days of the receipt by the Division of Labor Standards Enforcement of a complaint of the failure of a subcontractor on that public works project to pay workers the general prevailing rate of per diem wages. If the Division of Labor Standards Enforcement determines that employees of a subcontractor were not paid the general prevailing rate of per diem wages and if the Department did not withhold sufficient money under the contract to pay those employees the balance of wages owed under the general prevailing rate of per diem wages, the Contractor must withhold an amount of moneys due the subcontractor sufficient to pay those employees the general prevailing rate of per diem wages if requested by the Division of Labor Standards Enforcement. The Contractor must pay any money withheld from and owed to a subcontractor upon receipt of notification by the Division of Labor Standards Enforcement that the wage complaint has been resolved. If notice of the resolution of the wage complaint has not been received by the Contractor within 180 days of the filing of a valid notice of completion or acceptance of the public works project, whichever occurs later, the Contractor must pay all moneys withheld from the subcontractor to the Department. The Department withholds these moneys pending the final decision of an enforcement action.

In Section 7-1.01A(2) replace 7th paragraph with:

Changes in general prevailing wage determinations apply to the contract when the Director of Industrial Relations has issued them at least 10 days before advertisement (Labor Code § 1773.6 and 8 CA Code of Regs 16204).

In Section 7-1.01A(3) replace the 2nd paragraph with:

The Department withholds the penalties specified in subdivision (g) of Labor Code § 1776 for noncompliance with the requirements in Section 1776.

In Section 7-1.01A(3) replace the 4th paragraph with:

The Department withholds for delinquent or inadequate payroll records (Labor Code § 1771.5). If the Contractor has not submitted an adequate payroll record by the month's 15th day for the period ending on or before the 1st of that month, the Department withholds 10 percent of the monthly progress estimate, exclusive of mobilization. The Department does not withhold more than $10,000 or less than $1,000.

In Section 7-1.01A(3) delete the 5th paragraph.

Replace Section 7-1.01A(6) with:

7-1.01A(6) (Blank)

Replace Section 7-1.01A(7) with:

7-1.01A(7) (Blank)

Replace Section 7-1.01F with:

7-1.01F Environmental Stewardship

Comply with Section 14.

Replace Section 7-1.01I with:

7-1.01I (Blank)

In Section 7-1.02 in the 2nd paragraph, replace the 4th sentence with:

Trucks used to haul treated base, portland cement concrete, or hot mix asphalt shall enter onto the base to dump at the nearest practical entry point ahead of spreading equipment.

In Section 7-1.02 between the 4th and 5th paragraphs, add:

Loads imposed on existing, new, or partially completed structures shall not exceed the load carrying capacity of the structure or any portion of the structure as determined by AASHTO LRFD with interims and California Amendments, Design Strength Limit State II. The compressive strength of concrete (f'_c) to be used in computing the load carrying capacity shall be the smaller of the following:

1. Actual compressive strength at the time of loading
2. Value of f'_c shown on the plans for that portion of the structure or 2.5 times the value of f_c (extreme fiber compressive stress in concrete at service loads) shown on the plans for portions of the structure where no f'_c is shown

Replace Section 7-1.04 with:

7-1.04 PERMITS, LICENSES, AGREEMENTS, AND CERTIFICATIONS

7-1.04A General

Comply with PLACs. The Department makes PLAC changes under Section 4-1.03, "Changes."

7-1.04B Before Award

To make a change to a PLAC made available to you before award, submit the proposed change. The Department sends the proposed change to the appropriate authority for consideration.

7-1.04C After Award

Confirm with the Engineer which after-award PLACs are obtained by the Department and which are obtained by the Contractor.

To make a change to an after-award PLAC obtained by the Department, submit the proposed change. The Department sends the proposed change to the appropriate authority for consideration.

Obtain those PLACs to be issued to you and pay fees and costs associated with obtaining them. Submit copies of Contractor-obtained after-award PLACs for review.

In Section 7-1.06 in the 1st paragraph, add:

The Contractor's Injury and Illness Prevention Program shall be submitted to the Engineer. The program shall address the use of personal and company issued electronic devices during work. The use of entertainment and personal communication devices in the work zone shall not be allowed. Workers may use a communication device

for business purposes in the work area, at a location where their safety and the safety of other workers and the traveling public is not compromised.

Replace Section 7-1.07 with:

7-1.07 Lead Compliance Plan

Section 7-1.07 applies if a bid item for a lead compliance plan is included in the Contract.

Prepare a work plan to prevent or minimize worker exposure to lead while managing and handling earth materials, paint system debris, traffic stripe residue, and pavement marking residue containing lead. Regulations containing specific Cal/OSHA requirements when working with lead include 8 CA Code of Regs § 1532.1.

The plan must contain the items listed in 8 CA Code of Regs § 1532.1(e)(2)(B). Before submittal, a CIH must sign and seal the plan. Submit the plan at least 7 days before starting any activity that presents the potential for lead exposure. The Engineer notifies you of the acceptability of the plan within 4 business days of receipt.

Before starting any activity that presents the potential for lead exposure to employees who have no prior training, including State employees, provide a safety training program to these employees that complies with 8 CA Code of Regs § 1532.1 and your lead compliance program.

Submit copies of air monitoring or job site inspection reports made by or under the direction of the CIH under 8 CA Code of Regs § 1532.1 within 10 days after the date of monitoring or inspection.

Supply personal protective equipment, training, and washing facilities required by your lead compliance plan for 5 State employees.

The contract lump sum price paid for lead compliance plan includes full compensation for furnishing all labor, materials, tools, equipment, and incidentals, and for doing all the work involved in preparing and implementing the plan as specified in this section.

Replace Section 7-1.08 with:

7-1.08 PUBLIC CONVENIENCE

Compliance with the provisions of this section does not relieve you of your responsibility for public safety.

Construction activities must not inconvenience the public or abutting property owners. Schedule and conduct work to avoid unnecessary inconvenience to the public and abutting property owners. Avoid undue delay in construction activities to reduce the public's exposure to construction.

Where possible, route traffic on new or existing paved surfaces.

Maintain convenient access to driveways, houses, and buildings. When the abutting property owner's access across the right of way line is to be eliminated or replaced under the contract, the existing access must not be closed until the replacement access facilities are usable. Construct temporary approaches to crossings and intersecting highways.

Provide a reasonably smooth and even surface for use by traffic at all time during excavation of roadways and construction of embankments. Before other grading activities, place fill at culverts and bridges to allow traffic to cross. If ordered, excavate roadway cuts in layers and construct embankments in partial widths at a time alternating construction from one side to the other and routing traffic over the side opposite the one under construction. Install or construct culverts on only 1/2 the width of the traveled way at a time; keep the traveled way portion being used by traffic open and unobstructed until the opposite side of the traveled way is ready for use by traffic.

Upon completion of rough grading or placing any subsequent layer, bring the surface of the roadbed to a smooth and even condition, free of humps and depressions and satisfactory for the use of the public.

After subgrade preparation for a specified layer of material has been completed, repair any damage to the roadbed or completed subgrade, including damage due to use by the public.

While subgrade and paving activities are underway, allow the public to use the shoulders. If half-width paving methods are used, allow the public to use the side of the roadbed opposite the one under construction. If enough width is available, keep open a passageway wide enough to accommodate at least 2 lanes of traffic at locations where subgrade and paving activities are underway. Shape shoulders or reshape subgrade as necessary to accommodate traffic during subgrade preparation and paving activities.

Apply water or dust palliative for the prevention or alleviation of dust nuisance.

Install signs, lights, flares, temporary railing (Type K), barricades and other facilities to direct traffic. Furnish flaggers whenever necessary to direct the movement of the public through or around the work.

You will be required to pay the cost of replacing or repairing all facilities installed under extra work for the convenience or direction or warning of the public which are lost while in your custody, or are damaged by your operations to such an extent as to require replacement or repair.

The Engineer may order or consent to your request to open a completed section of surfacing, pavement, or structure roadway surface for public use. You will not be compensated for any delay to your construction activities caused by the public. This does not relieve you from any other contractual responsibility.

Replace Section 7-1.09 with:

7-1.09 PUBLIC SAFETY

You are responsible to provide for public safety.

Do not construct a temporary facility that interferes with the safe passage of traffic.

Control dust resulting from the work, inside and outside the right-of-way.

Move workers, equipment, and materials without endangering traffic.

Whenever your operations create a condition hazardous to the public, furnish, erect and maintain those fences, temporary railing, barricades, lights, signs, and other devices and take any other necessary protective measures to prevent damage or injury to the public.

Any fences, temporary railing, barricades, lights, signs, or other devices furnished, erected and maintained by you are in addition to those for which payment is provided elsewhere in the specifications.

Provide flaggers whenever necessary to ensure that the public is given safe guidance through the work zone. Except as ordered, at locations where traffic is being routed through construction under one-way controls, move your equipment in compliance with the one-way controls.

Use of signs, lights, flags, or other protective devices must conform with the California MUTCD and as ordered. Signs, lights, flags or other protective devices must not obscure the visibility of, nor conflict in intent, meaning and function of either existing signs, lights and traffic control devices or any construction area signs or traffic control devices.

Keep existing traffic signals and highway lighting in operation. Other entities perform routine maintenance of these facilities during the work.

Cover signs that direct traffic to a closed area. Providing, maintaining, and removing the covers on construction area signs is paid as extra work under Section 4-1.03D, "Extra Work."

Install temporary illumination in a manner which the illumination and the illumination equipment does not interfere with public safety. The installation of general roadway illumination does not relieve you from furnishing and maintaining any protective devices.

Equipment must enter and leave the highway via existing ramps and crossovers and must move in the direction of public traffic. All movements of workmen and construction equipment on or across lanes open to public traffic must be performed in a manner that will not endanger the public. Your vehicles or other mobile equipment leaving an open traffic lane to enter the construction area, must slow down gradually in advance of the location of the turnoff to give traffic following an opportunity to slow down. When leaving a work area and entering a roadway carrying public traffic, your vehicles and equipment must yield to public traffic.

Immediately remove hauling spillage from roadway lanes or shoulders open to traffic. When hauling on roadways, trim loads and remove material from shelf areas to minimize spillage.

Notify the Engineer not less than 25 days and not more than 125 days before the anticipated start of an activity that will change the vertical or horizontal clearance available to public traffic, including shoulders.

If vertical clearance is temporarily reduced to 15.5 feet or less, place low clearance warning signs in accordance with the California MUTCD and as ordered. Signs must comply with the dimensions, color, and legend requirements of the California MUTCD and these specifications except that the signs must have black letters and numbers on an orange retroreflective background. W12-2P signs must be illuminated so that the signs are clearly visible.

Pave or provide full width continuous and cleared wood walks for pedestrian openings through falsework. Protect pedestrians from falling objects and curing water for concrete. Extend overhead protection for pedestrians not less than 4 feet beyond the edge of the bridge deck. Illuminate all pedestrian openings through falsework. Temporary pedestrian facilities must comply with the American with Disabilities Act of 1990 (ADA).

Do not store vehicles, material, or equipment in a way that:

1. Creates a hazard to the public
2. Obstructs traffic control devices

Do not install or place temporary facilities used to perform the work which interfere with the free and safe passage of public traffic.

Temporary facilities which could be a hazard to public safety if improperly designed shall comply with design requirements specified in the contract for those facilities or, if none are specified, with standard design criteria or

codes appropriate for the facility involved. Working drawings and design calculations for the temporary facilities shall be prepared and signed by an engineer who is registered as a Civil Engineer in the State of California and shall be submitted to the Engineer for approval pursuant to Section 5-1.02, "Plans and Working Drawings." The submittals shall designate thereon the standard design criteria or codes used. Installation of the temporary facilities shall not start until the Engineer has reviewed and approved the drawings.

If you appear to be neglectful or negligent in furnishing warning devices and taking protective measures, the Engineer may direct your attention to the existence of a hazard and the necessary warning devices must be furnished and installed and protective measures taken by you. If the Engineer points out the inadequacy of warning devices and protective measures, that action on the part of the Engineer does not relieve you from your responsibility for public safety or abrogate the obligation to furnish and pay for these devices and measures.

Install temporary railing (Type K) or other approved protection system under the following conditions:

1. Excavations: Where the near edge of the excavation is within 15 feet from the edge of an open traffic lane
2. Temporarily Unprotected Permanent Obstacles: When the work includes the installation of a fixed obstacle together with a protective system, such as a sign structure together with protective railing, and you elect to install the obstacle before installing the protective system; or you, for your convenience and as authorized, remove a portion of an existing protective railing at an obstacle and do not replace such railing completely the same day
3. Storage Areas: When material or equipment is stored within 15 feet of the edge of an open traffic lane and the storage is not otherwise prohibited by the provisions of these Standard Specifications and the special provisions
4. Height Differentials: When construction operations create a height differential greater than 0.15 feet within 15 feet of the edge of traffic lane

Temporary railing (Type K) does not need to be installed where excavations within 15 feet from edge of an open traffic lane are:

1. Covered with steel plates or concrete covers of adequate thickness to prevent accidental entry by traffic or the public
2. In side slopes, where the downhill slope is 4:1 (horizontal:vertical) or less unless a naturally occurring condition
3. Protected by existing barrier or railing

Offset the approach end of temporary railing (Type K) a minimum of 15 feet from the edge of an open traffic lane. Install the temporary railing on a skew toward the edge of the traffic lane of not more than one foot transversely to 10 feet longitudinally with respect to the edge of the traffic lane. If the 15-foot minimum offset cannot be achieved, the temporary railing must be installed on the 10 to 1 skew to obtain the maximum available offset between the approach end of the railing and the edge of the traffic lane, and an array of temporary crash cushion modules must be installed at the approach end of the temporary railing.

Secure in place temporary railing (Type K) before starting work for which the temporary railing is required.

Where 2 or more lanes in the same direction are adjacent to the area where the work is being performed, including shoulders, the adjacent lane must be closed under any of the following conditions:

1. Work is off the traveled way but within 6 feet of the edge of traveled way, and approach speed is greater than 45 miles per hour
2. Work is off the traveled way but within 3 feet of the edge of traveled way, and approach speed is less than 45 miles per hour

Closure of the adjacent traffic lane is not required when:

1. Performing work behind a barrier
2. Paving, grinding, or grooving
3. Installing, maintaining, or removing traffic control devices except temporary railing (Type K)

Do not reduce an open traffic lane width to less than 10 feet. When traffic cones or delineators are used for temporary edge delineation, the line of cones or delineators is considered the edge of the traveled way.

If a traffic lane is closed with channelizers for excavation work, move the devices to the adjacent edge of the traveled way when not excavating. Space the devices the same as specified for the lane closure.

Do not move or temporarily suspend anything over a traffic lane open to the public unless the public is protected.

Replace Section 7-1.11 with:

7-1.11 PRESERVATION OF PROPERTY

Comply with Section 5-1.18, "Property and Facility Preservation."

Replace Section 7-1.12 with:

7-1.12 INDEMNIFICATION AND INSURANCE

The Contractor's obligations regarding indemnification of the State of California and the requirements for insurance shall conform to the provisions in Section 3-1.05, "Insurance Policies," and Sections 7-1.12A, "Indemnification," and 7-1.12B, "Insurance," of this Section 7-1.12.

7-1.12A Indemnification

The Contractor shall defend, indemnify, and save harmless the State, including its officers, employees, and agents (excluding agents who are design professionals) from any and all claims, demands, causes of action, damages, costs, expenses, actual attorneys' fees, losses or liabilities, in law or in equity (Section 7-1.12A Claims) arising out of or in connection with the Contractor's performance of this contract for:

1. Bodily injury including, but not limited to, bodily injury, sickness or disease, emotional injury or death to persons, including, but not limited to, the public, any employees or agents of the Contractor, the State, or any other contractor; and
2. Damage to property of anyone including loss of use thereof; caused or alleged to be caused in whole or in part by any negligent or otherwise legally actionable act or omission of the Contractor or anyone directly or indirectly employed by the Contractor or anyone for whose acts the Contractor may be liable.

Except as otherwise provided by law, these requirements apply regardless of the existence or degree of fault of the State. The Contractor is not obligated to indemnify the State for Claims arising from conduct delineated in Civil Code Section 2782 and to Claims arising from any defective or substandard condition of the highway that existed at or before the start of work, unless this condition has been changed by the work or the scope of the work requires the Contractor to maintain existing highway facilities and the Claim arises from the Contractor's failure to maintain. The Contractor's defense and indemnity obligation shall extend to Claims arising after the work is completed and accepted if the Claims are directly related to alleged acts or omissions by the Contractor that occurred during the course of the work. State inspection is not a waiver of full compliance with these requirements.

The Contractor's obligation to defend and indemnify shall not be excused because of the Contractor's inability to evaluate liability or because the Contractor evaluates liability and determine that the Contractor is not liable. The Contractor shall respond within 30 days to the tender of any Claim for defense and indemnity by the State, unless this time has been extended by the State. If the Contractor fails to accept or reject a tender of defense and indemnity within 30 days, in addition to any other remedy authorized by law, the Department may withhold such funds the State reasonably considers necessary for its defense and indemnity until disposition has been made of the Claim or until the Contractor accepts or rejects the tender of defense, whichever occurs first.

With respect to third-party claims against the Contractor, the Contractor waives all rights of any type to express or implied indemnity against the State, its officers, employees, or agents (excluding agents who are design professionals).

Nothing in the Contract is intended to establish a standard of care owed to any member of the public or to extend to the public the status of a third-party beneficiary for any of these indemnification specifications.

7-1.12B Insurance

7-1.12B(1) General

Nothing in the contract is intended to establish a standard of care owed to any member of the public or to extend to the public the status of a third-party beneficiary for any of these insurance specifications.

7-1.12B(2) Casualty Insurance

The Contractor shall procure and maintain insurance on all of its operations with companies acceptable to the State as follows:

1. The Contractor shall keep all insurance in full force and effect from the beginning of the work through contract acceptance.
2. All insurance shall be with an insurance company with a rating from A.M. Best Financial Strength Rating of A- or better and a Financial Size Category of VII or better.
3. The Contractor shall maintain completed operations coverage with a carrier acceptable to the State through the expiration of the patent deficiency in construction statute of repose set forth in Code of Civil Procedure Section 337.15.

7-1.12B(3) Workers' Compensation and Employer's Liability Insurance

In accordance with Labor Code Section 1860, the Contractor shall secure the payment of worker's compensation in accordance with Labor Code Section 3700.

In accordance with Labor Code Section 1861, the Contractor shall submit to the Department the following certification before performing the work:

> I am aware of the provisions of Section 3700 of the Labor Code which require every employer to be insured against liability for workers' compensation or to undertake self-insurance in accordance with the provisions of that code, and I will comply with such provisions before commencing the performance of the work of this contract.

Contract execution constitutes certification submittal.

The Contractor shall provide Employer's Liability Insurance in amounts not less than:

1. $1,000,000 for each accident for bodily injury by accident
2. $1,000,000 policy limit for bodily injury by disease
3. $1,000,000 for each employee for bodily injury by disease

If there is an exposure of injury to the Contractor's employees under the U.S. Longshoremen's and Harbor Workers' Compensation Act, the Jones Act, or under laws, regulations, or statutes applicable to maritime employees, coverage shall be included for such injuries or claims.

7-1.12B(4) Liability Insurance

7-1.12B(4)(a) General

The Contractor shall carry General Liability and Umbrella or Excess Liability Insurance covering all operations by or on behalf of the Contractor providing insurance for bodily injury liability and property damage liability for the following limits and including coverage for:

1. Premises, operations, and mobile equipment
2. Products and completed operations
3. Broad form property damage (including completed operations)
4. Explosion, collapse, and underground hazards
5. Personal injury
6. Contractual liability

7-1.12B(4)(b) Liability Limits/Additional Insureds

The limits of liability shall be at least the amounts shown in the following table:

Total Bid	For Each Occurrence[1]	Aggregate for Products/Completed Operation	General Aggregate[2]	Umbrella or Excess Liability[3]
≤$1,000,000	$1,000,000	$2,000,000	$2,000,000	$5,000,000
>$1,000,000 ≤$10,000,000	$1,000,000	$2,000,000	$2,000,000	$10,000,000
>$10,000,000 ≤$25,000,000	$2,000,000	$2,000,000	$4,000,000	$15,000,000
>$25,000,000	$2,000,000	$2,000,000	$4,000,000	$25,000,000

1. Combined single limit for bodily injury and property damage.
2. This limit shall apply separately to the Contractor's work under this contract.
3. The umbrella or excess policy shall contain a clause stating that it takes effect (drops down) in the event the primary limits are impaired or exhausted.

The Contractor shall not require certified Small Business subcontractors to carry Liability Insurance that exceeds the limits in the table above. Notwithstanding the limits specified herein, at the option of the Contractor, the liability insurance limits for certified Small Business subcontractors of any tier may be less than those limits specified in the table. For Small Business subcontracts, "Total Bid" shall be interpreted as the amount of subcontracted work to a certified Small Business.

The State, including its officers, directors, agents (excluding agents who are design professionals), and employees, shall be named as additional insureds under the General Liability and Umbrella Liability Policies with respect to liability arising out of or connected with work or operations performed by or on behalf of the Contractor under this contract. Coverage for such additional insureds does not extend to liability:

1. Arising from any defective or substandard condition of the roadway which existed at or before the time the Contractor started work, unless such condition has been changed by the work or the scope of the work requires the Contractor to maintain existing roadway facilities and the claim arises from the Contractor's failure to maintain;
2. For claims occurring after the work is completed and accepted unless these claims are directly related to alleged acts or omissions of the Contractor that occurred during the course of the work; or
3. To the extent prohibited by Insurance Code Section 11580.04

Additional insured coverage shall be provided by a policy provision or by an endorsement providing coverage at least as broad as Additional Insured (Form B) endorsement form CG 2010, as published by the Insurance Services Office (ISO), or other form designated by the Department.

7-1.12B(4)(c) Contractor's Insurance Policy is Primary

The policy shall stipulate that the insurance afforded the additional insureds applies as primary insurance. Any other insurance or self-insurance maintained by the State is excess only and shall not be called upon to contribute with this insurance.

7-1.12B(5) Automobile Liability Insurance

The Contractor shall carry automobile liability insurance, including coverage for all owned, hired, and nonowned automobiles. The primary limits of liability shall be not less than $1,000,000 combined single limit each accident for bodily injury and property damage. The umbrella or excess liability coverage required under Section 7-1.12B(4)(b) also applies to automobile liability.

7-1.12B(6) Policy Forms, Endorsements, and Certificates

The Contractor shall provide its General Liability Insurance under Commercial General Liability policy form No. CG0001 as published by the Insurance Services Office (ISO) or under a policy form at least as broad as policy form No. CG0001.

7-1.12B(7) Deductibles

The State may expressly allow deductible clauses, which it does not consider excessive, overly broad, or harmful to the interests of the State. Regardless of the allowance of exclusions or deductions by the State, the Contractor is responsible for any deductible amount and shall warrant that the coverage provided to the State is in accordance with Section 7-1.12B, "Insurance."

7-1.12B(8) Enforcement

The Department may assure the Contractor's compliance with its insurance obligations. Ten days before an insurance policy lapses or is canceled during the contract period, the Contractor shall submit to the Department evidence of renewal or replacement of the policy.

If the Contractor fails to maintain any required insurance coverage, the Department may maintain this coverage and withhold or charge the expense to the Contractor or terminate the Contractor's control of the work in accordance with Section 8-1.08, "Termination of Control."

The Contractor is not relieved of its duties and responsibilities to indemnify, defend, and hold harmless the State, its officers, agents, and employees by the Department's acceptance of insurance policies and certificates.

Minimum insurance coverage amounts do not relieve the Contractor for liability in excess of such coverage, nor do they preclude the State from taking other actions available to it, including the withholding of funds under this contract.

7-1.12B(9) Self-Insurance

Self-insurance programs and self-insured retentions in insurance policies are subject to separate annual review and approval by the State.

If the Contractor uses a self-insurance program or self-insured retention, the Contractor shall provide the State with the same protection from liability and defense of suits as would be afforded by first-dollar insurance. Execution of the contract is the Contractor's acknowledgement that the Contractor will be bound by all laws as if the Contractor were an insurer as defined under Insurance Code Section 23 and that the self-insurance program or self-insured retention shall operate as insurance as defined under Insurance Code Section 22.

Replace Section 7-1.125 with:

7-1.125 Legal Actions Against the Department

If legal action is brought against the Department over compliance with a State or Federal law, rule, or regulation applicable to highway work, then:

1. If the Department, in complying with a court order, prohibits you from performing work, the resulting delay is a suspension related to your performance, unless the Department terminates the contract.
2. If a court order other than an order to show cause or the final judgment in the action prohibits the Department from requiring you to perform work, the Department may delete the prohibited work or terminate the contract.

In Section 7-1.13 delete the 5th and 6th paragraphs.

Add:

7-1.50 FEDERAL LAWS FOR FEDERAL-AID CONTRACTS

7-1.50A General

Section 7-1.50, "Federal Laws for Federal-Aid Contracts," includes specifications required in a Federal-aid construction contract and applies to a Federal-aid contract.

A copy of form FHWA-1273 is included in Section 7-1.50B, "FHWA-1273." The training and promotion section of section II refers to training provisions as if they were included in the special provisions. The Department specifies the provisions in section 7-1.11D of the Standard Specifications. If a number of trainees or apprentices is required, the Department specifies the number in the special provisions. Interpret each FHWA-1273 clause shown in the following table as having the same meaning as the corresponding Department clause:

FHWA-1273 Nondiscrimination Clauses

FHWA-1273 section	FHWA-1273 clause	Department clause
Training and Promotion	In the event a special provision for training is provided under this contract, this subparagraph will be superseded as indicated in the special provision.	If section 7-1.11D applies, section 7-1.11D supersedes this subparagraph.
Records and Reports	If on-the-job training is being required by special provision, the contractor will be required to collect and report training data.	If the Contract requires on-the-job training, collect and report training data.

7-1.50B FHWA-1273

REQUIRED CONTRACT PROVISIONS
FEDERAL-AID CONSTRUCTION CONTRACTS

I. General
II. Nondiscrimination
III. Nonsegregated Facilities
IV. Davis-Bacon and Related Act Provisions
V. Contract Work Hours and Safety Standards Act Provisions
VI. Subletting or Assigning the Contract
VII. Safety: Accident Prevention
VIII. False Statements Concerning Highway Projects
IX. Implementation of Clean Air Act and Federal Water Pollution Control Act
X. Compliance with Governmentwide Suspension and Debarment Requirements
XI. Certification Regarding Use of Contract Funds for Lobbying

ATTACHMENTS

A. Employment and Materials Preference for Appalachian Development Highway System or Appalachian Local Access Road Contracts (included in Appalachian contracts only)

I. GENERAL

1. Form FHWA-1273 must be physically incorporated in each construction contract funded under Title 23 (excluding emergency contracts solely intended for debris removal). The contractor (or subcontractor) must insert this form in each subcontract and further require its inclusion in all lower tier subcontracts (excluding purchase orders, rental agreements and other agreements for supplies or services).

The applicable requirements of Form FHWA-1273 are incorporated by reference for work done under any purchase order, rental agreement or agreement for other services. The prime contractor shall be responsible for compliance by any subcontractor, lower-tier subcontractor or service provider.

Form FHWA-1273 must be included in all Federal-aid design-build contracts, in all subcontracts and in lower tier subcontracts (excluding subcontracts for design services, purchase orders, rental agreements and other agreements for supplies or services). The design-builder shall be responsible for compliance by any subcontractor, lower-tier subcontractor or service provider.

Contracting agencies may reference Form FHWA-1273 in bid proposal or request for proposal documents, however, the Form FHWA-1273 must be physically incorporated (not referenced) in all contracts, subcontracts and lower-tier subcontracts (excluding purchase orders, rental agreements and other agreements for supplies or services related to a construction contract).

2. Subject to the applicability criteria noted in the following sections, these contract provisions shall apply to all work performed on the contract by the contractor's own organization and with the assistance of workers under the contractor's immediate superintendence and to all work performed on the contract by piecework, station work, or by subcontract.

3. A breach of any of the stipulations contained in these Required Contract Provisions may be sufficient grounds for withholding of progress payments, withholding of final payment, termination of the contract, suspension / debarment or any other action determined to be appropriate by the contracting agency and FHWA.

4. Selection of Labor: During the performance of this contract, the contractor shall not use convict labor for any purpose within the limits of a construction project on a Federal-aid highway unless it is labor performed by convicts who are on parole, supervised release, or probation. The term Federal-aid highway does not include roadways functionally classified as local roads or rural minor collectors.

II. NONDISCRIMINATION

The provisions of this section related to 23 CFR Part 230 are applicable to all Federal-aid construction contracts and to all related construction subcontracts of $10,000 or more. The provisions of 23 CFR Part 230 are not applicable to material supply, engineering, or architectural service contracts.

In addition, the contractor and all subcontractors must comply with the following policies: Executive Order 11246, 41 CFR 60, 29 CFR 1625-1627, Title 23 USC Section 140, the Rehabilitation Act of 1973, as amended (29 USC 794), Title VI of the Civil Rights Act of 1964, as amended, and related regulations including 49 CFR Parts 21, 26 and 27; and 23 CFR Parts 200, 230, and 633.

The contractor and all subcontractors must comply with: the requirements of the Equal Opportunity Clause in 41 CFR 60-1.4(b) and, for all construction contracts exceeding $10,000, the Standard Federal Equal Employment Opportunity Construction Contract Specifications in 41 CFR 60-4.3.

Note: The U.S. Department of Labor has exclusive authority to determine compliance with Executive Order 11246 and the policies of the Secretary of Labor including 41 CFR 60, and 29 CFR 1625-1627. The contracting agency and the FHWA have the authority and the responsibility to ensure compliance with Title 23 USC Section 140, the Rehabilitation Act of 1973, as amended (29 USC 794), and Title VI of the Civil Rights Act of 1964, as amended, and related regulations including 49 CFR Parts 21, 26 and 27; and 23 CFR Parts 200, 230, and 633.

The following provision is adopted from 23 CFR 230, Appendix A, with appropriate revisions to conform to the U.S. Department of Labor (US DOL) and FHWA requirements.

1. Equal Employment Opportunity: Equal employment opportunity (EEO) requirements not to discriminate and to take affirmative action to assure equal opportunity as set forth under laws, executive orders, rules, regulations (28 CFR 35, 29 CFR 1630, 29 CFR 1625-1627, 41 CFR 60 and 49 CFR 27) and orders of the Secretary of Labor as modified by the provisions prescribed herein, and imposed pursuant to 23 U.S.C. 140 shall constitute the EEO and specific affirmative action standards for the contractor's project activities under

this contract. The provisions of the Americans with Disabilities Act of 1990 (42 U.S.C. 12101 et seq.) set forth under 28 CFR 35 and 29 CFR 1630 are incorporated by reference in this contract. In the execution of this contract, the contractor agrees to comply with the following minimum specific requirement activities of EEO:

a. The contractor will work with the contracting agency and the Federal Government to ensure that it has made every good faith effort to provide equal opportunity with respect to all of its terms and conditions of employment and in their review of activities under the contract.

b. The contractor will accept as its operating policy the following statement:

"It is the policy of this Company to assure that applicants are employed, and that employees are treated during employment, without regard to their race, religion, sex, color, national origin, age or disability. Such action shall include: employment, upgrading, demotion, or transfer; recruitment or recruitment advertising; layoff or termination; rates of pay or other forms of compensation; and selection for training, including apprenticeship, pre-apprenticeship, and/or on-the-job training."

2. EEO Officer: The contractor will designate and make known to the contracting officers an EEO Officer who will have the responsibility for and must be capable of effectively administering and promoting an active EEO program and who must be assigned adequate authority and responsibility to do so.

3. Dissemination of Policy: All members of the contractor's staff who are authorized to hire, supervise, promote, and discharge employees, or who recommend such action, or who are substantially involved in such action, will be made fully cognizant of, and will implement, the contractor's EEO policy and contractual responsibilities to provide EEO in each grade and classification of employment. To ensure that the above agreement will be met, the following actions will be taken as a minimum:

a. Periodic meetings of supervisory and personnel office employees will be conducted before the start of work and then not less often than once every six months, at which time the contractor's EEO policy and its implementation will be reviewed and explained. The meetings will be conducted by the EEO Officer.

b. All new supervisory or personnel office employees will be given a thorough indoctrination by the EEO Officer, covering all major aspects of the contractor's EEO obligations within thirty days following their reporting for duty with the contractor.

c. All personnel who are engaged in direct recruitment for the project will be instructed by the EEO Officer in the contractor's procedures for locating and hiring minorities and women.

d. Notices and posters setting forth the contractor's EEO policy will be placed in areas readily accessible to employees, applicants for employment and potential employees.

e. The contractor's EEO policy and the procedures to implement such policy will be brought to the attention of employees by means of meetings, employee handbooks, or other appropriate means.

4. Recruitment: When advertising for employees, the contractor will include in all advertisements for employees the notation: "An Equal Opportunity Employer." All such advertisements will be placed in publications having a large circulation among minorities and women in the area from which the project work force would normally be derived.

a. The contractor will, unless precluded by a valid bargaining agreement, conduct systematic and direct recruitment through public and private employee referral sources likely to yield qualified minorities and women. To meet this requirement, the contractor will identify sources of potential minority group employees, and establish with such identified sources procedures whereby minority and women applicants may be referred to the contractor for employment consideration.

b. In the event the contractor has a valid bargaining agreement providing for exclusive hiring hall referrals, the contractor is expected to observe the provisions of that agreement to the extent that the system meets the contractor's compliance with EEO contract provisions. Where implementation of such an agreement has the effect of discriminating against minorities or women, or obligates the contractor to do the same, such implementation violates Federal nondiscrimination provisions.

c. The contractor will encourage its present employees to refer minorities and women as applicants for employment. Information and procedures with regard to referring such applicants will be discussed with employees.

5. Personnel Actions: Wages, working conditions, and employee benefits shall be established and administered, and personnel actions of every type, including hiring, upgrading, promotion, transfer, demotion, layoff, and termination, shall be taken without regard to race, color, religion, sex, national origin, age or disability. The following procedures shall be followed:

a. The contractor will conduct periodic inspections of project sites to insure that working conditions and employee facilities do not indicate discriminatory treatment of project site personnel.

b. The contractor will periodically evaluate the spread of wages paid within each classification to determine any evidence of discriminatory wage practices.

c. The contractor will periodically review selected personnel actions in depth to determine whether there is evidence of discrimination. Where evidence is found, the contractor will promptly take corrective action. If the review indicates that the discrimination may extend beyond the actions reviewed, such corrective action shall include all affected persons.

d. The contractor will promptly investigate all complaints of alleged discrimination made to the contractor in connection with its obligations under this contract, will attempt to resolve such complaints, and will take appropriate corrective action within a reasonable time. If the investigation indicates that the discrimination may affect persons other than the complainant, such corrective action shall include such other persons. Upon completion of each investigation, the contractor will inform every complainant of all of their avenues of appeal.

6. Training and Promotion:

a. The contractor will assist in locating, qualifying, and increasing the skills of minorities and women who are

applicants for employment or current employees. Such efforts should be aimed at developing full journey level status employees in the type of trade or job classification involved.

b. Consistent with the contractor's work force requirements and as permissible under Federal and State regulations, the contractor shall make full use of training programs, i.e., apprenticeship, and on-the-job training programs for the geographical area of contract performance. In the event a special provision for training is provided under this contract, this subparagraph will be superseded as indicated in the special provision. The contracting agency may reserve training positions for persons who receive welfare assistance in accordance with 23 U.S.C. 140(a).

c. The contractor will advise employees and applicants for employment of available training programs and entrance requirements for each.

d. The contractor will periodically review the training and promotion potential of employees who are minorities and women and will encourage eligible employees to apply for such training and promotion.

7. Unions: If the contractor relies in whole or in part upon unions as a source of employees, the contractor will use good faith efforts to obtain the cooperation of such unions to increase opportunities for minorities and women. Actions by the contractor, either directly or through a contractor's association acting as agent, will include the procedures set forth below:

a. The contractor will use good faith efforts to develop, in cooperation with the unions, joint training programs aimed toward qualifying more minorities and women for membership in the unions and increasing the skills of minorities and women so that they may qualify for higher paying employment.

b. The contractor will use good faith efforts to incorporate an EEO clause into each union agreement to the end that such union will be contractually bound to refer applicants without regard to their race, color, religion, sex, national origin, age or disability.

c. The contractor is to obtain information as to the referral practices and policies of the labor union except that to the extent such information is within the exclusive possession of the labor union and such labor union refuses to furnish such information to the contractor, the contractor shall so certify to the contracting agency and shall set forth what efforts have been made to obtain such information.

d. In the event the union is unable to provide the contractor with a reasonable flow of referrals within the time limit set forth in the collective bargaining agreement, the contractor will, through independent recruitment efforts, fill the employment vacancies without regard to race, color, religion, sex, national origin, age or disability; making full efforts to obtain qualified and/or qualifiable minorities and women. The failure of a union to provide sufficient referrals (even though it is obligated to provide exclusive referrals under the terms of a collective bargaining agreement) does not relieve the contractor from the requirements of this paragraph. In the event the union referral practice prevents the contractor from meeting the obligations pursuant to Executive Order 11246, as amended, and these special provisions, such contractor shall immediately notify the contracting agency.

8. Reasonable Accommodation for Applicants / Employees with Disabilities: The contractor must be familiar with the requirements for and comply with the Americans with Disabilities Act and all rules and regulations established there under. Employers must provide reasonable accommodation in all employment activities unless to do so would cause an undue hardship.

9. Selection of Subcontractors, Procurement of Materials and Leasing of Equipment: The contractor shall not discriminate on the grounds of race, color, religion, sex, national origin, age or disability in the selection and retention of subcontractors, including procurement of materials and leases of equipment. The contractor shall take all necessary and reasonable steps to ensure nondiscrimination in the administration of this contract.

a. The contractor shall notify all potential subcontractors and suppliers and lessors of their EEO obligations under this contract.

b. The contractor will use good faith efforts to ensure subcontractor compliance with their EEO obligations.

10. Assurance Required by 49 CFR 26.13(b):

a. The requirements of 49 CFR Part 26 and the State DOT's U.S. DOT-approved DBE program are incorporated by reference.

b. The contractor or subcontractor shall not discriminate on the basis of race, color, national origin, or sex in the performance of this contract. The contractor shall carry out applicable requirements of 49 CFR Part 26 in the award and administration of DOT-assisted contracts. Failure by the contractor to carry out these requirements is a material breach of this contract, which may result in the termination of this contract or such other remedy as the contracting agency deems appropriate.

11. Records and Reports: The contractor shall keep such records as necessary to document compliance with the EEO requirements. Such records shall be retained for a period of three years following the date of the final payment to the contractor for all contract work and shall be available at reasonable times and places for inspection by authorized representatives of the contracting agency and the FHWA.

a. The records kept by the contractor shall document the following:

(1) The number and work hours of minority and non-minority group members and women employed in each work classification on the project;

(2) The progress and efforts being made in cooperation with unions, when applicable, to increase employment opportunities for minorities and women; and

(3) The progress and efforts being made in locating, hiring, training, qualifying, and upgrading minorities and women;

b. The contractors and subcontractors will submit an annual report to the contracting agency each July for the duration of the project, indicating the number of minority, women, and non-minority group employees currently engaged in each work classification required by the contract work. This information is to be reported on Form FHWA-1391. The staffing data should represent the project work force on board in all or any part of the last payroll period preceding the end of July. If on-the-job training is being required by special provision, the contractor

will be required to collect and report training data. The employment data should reflect the work force on board during all or any part of the last payroll period preceding the end of July.

III. NONSEGREGATED FACILITIES

This provision is applicable to all Federal-aid construction contracts and to all related construction subcontracts of $10,000 or more.

The contractor must ensure that facilities provided for employees are provided in such a manner that segregation on the basis of race, color, religion, sex, or national origin cannot result. The contractor may neither require such segregated use by written or oral policies nor tolerate such use by employee custom. The contractor's obligation extends further to ensure that its employees are not assigned to perform their services at any location, under the contractor's control, where the facilities are segregated. The term "facilities" includes waiting rooms, work areas, restaurants and other eating areas, time clocks, restrooms, washrooms, locker rooms, and other storage or dressing areas, parking lots, drinking fountains, recreation or entertainment areas, transportation, and housing provided for employees. The contractor shall provide separate or single-user restrooms and necessary dressing or sleeping areas to assure privacy between sexes.

IV. DAVIS-BACON AND RELATED ACT PROVISIONS

This section is applicable to all Federal-aid construction projects exceeding $2,000 and to all related subcontracts and lower-tier subcontracts (regardless of subcontract size). The requirements apply to all projects located within the right-of-way of a roadway that is functionally classified as Federal-aid highway. This excludes roadways functionally classified as local roads or rural minor collectors, which are exempt. Contracting agencies may elect to apply these requirements to other projects.

The following provisions are from the U.S. Department of Labor regulations in 29 CFR 5.5 "Contract provisions and related matters" with minor revisions to conform to the FHWA-1273 format and FHWA program requirements.

1. Minimum wages

a. All laborers and mechanics employed or working upon the site of the work, will be paid unconditionally and not less often than once a week, and without subsequent deduction or rebate on any account (except such payroll deductions as are permitted by regulations issued by the Secretary of Labor under the Copeland Act (29 CFR part 3)), the full amount of wages and bona fide fringe benefits (or cash equivalents thereof) due at time of payment computed at rates not less than those contained in the wage determination of the Secretary of Labor which is attached hereto and made a part hereof, regardless of any contractual relationship which may be alleged to exist between the contractor and such laborers and mechanics.

Contributions made or costs reasonably anticipated for bona fide fringe benefits under section 1(b)(2) of the Davis-Bacon Act on behalf of laborers or mechanics are considered wages paid to such laborers or mechanics, subject to the provisions of paragraph 1.d. of this section; also, regular contributions made or costs incurred for more than a weekly period (but not less often than quarterly) under plans, funds, or programs which cover the particular weekly period, are deemed to be constructively made or incurred during such weekly period. Such laborers and mechanics shall be paid the appropriate wage rate and fringe benefits on the wage determination for the classification of work actually performed, without regard to skill, except as provided in 29 CFR 5.5(a)(4). Laborers or mechanics performing work in more than one classification may be compensated at the rate specified for each classification for the time actually worked therein: Provided, That the employer's payroll records accurately set forth the time spent in each classification in which work is performed. The wage determination (including any additional classification and wage rates conformed under paragraph 1.b. of this section) and the Davis-Bacon poster (WH–1321) shall be posted at all times by the contractor and its subcontractors at the site of the work in a prominent and accessible place where it can be easily seen by the workers.

b.(1) The contracting officer shall require that any class of laborers or mechanics, including helpers, which is not listed in the wage determination and which is to be employed under the contract shall be classified in conformance with the wage determination. The contracting officer shall approve an additional classification and wage rate and fringe benefits therefore only when the following criteria have been met:

(i) The work to be performed by the classification requested is not performed by a classification in the wage determination; and

(ii) The classification is utilized in the area by the construction industry; and

(iii) The proposed wage rate, including any bona fide fringe benefits, bears a reasonable relationship to the wage rates contained in the wage determination.

(2) If the contractor and the laborers and mechanics to be employed in the classification (if known), or their representatives, and the contracting officer agree on the classification and wage rate (including the amount designated for fringe benefits where appropriate), a report of the action taken shall be sent by the contracting officer to the Administrator of the Wage and Hour Division, Employment Standards Administration, U.S. Department of Labor, Washington, DC 20210. The Administrator, or an authorized representative, will approve, modify, or disapprove every additional classification action within 30 days of receipt and so advise the contracting officer or will notify the contracting officer within the 30-day period that additional time is necessary.

(3) In the event the contractor, the laborers or mechanics to be employed in the classification or their representatives, and the contracting officer do not agree on the proposed classification and wage rate (including the amount designated for fringe benefits, where appropriate), the contracting officer shall refer the questions, including the views of all interested parties and the recommendation of the contracting officer, to the Wage and Hour Administrator for determination. The Wage and Hour Administrator, or an authorized representative, will issue a determination within 30 days of receipt and so advise the contracting officer or

will notify the contracting officer within the 30-day period that additional time is necessary.

(4) The wage rate (including fringe benefits where appropriate) determined pursuant to paragraphs 1.b.(2) or 1.b.(3) of this section, shall be paid to all workers performing work in the classification under this contract from the first day on which work is performed in the classification.

c. Whenever the minimum wage rate prescribed in the contract for a class of laborers or mechanics includes a fringe benefit which is not expressed as an hourly rate, the contractor shall either pay the benefit as stated in the wage determination or shall pay another bona fide fringe benefit or an hourly cash equivalent thereof.

d. If the contractor does not make payments to a trustee or other third person, the contractor may consider as part of the wages of any laborer or mechanic the amount of any costs reasonably anticipated in providing bona fide fringe benefits under a plan or program, Provided, That the Secretary of Labor has found, upon the written request of the contractor, that the applicable standards of the Davis-Bacon Act have been met. The Secretary of Labor may require the contractor to set aside in a separate account assets for the meeting of obligations under the plan or program.

2. Withholding

The contracting agency shall upon its own action or upon written request of an authorized representative of the Department of Labor, withhold or cause to be withheld from the contractor under this contract, or any other Federal contract with the same prime contractor, or any other federally-assisted contract subject to Davis-Bacon prevailing wage requirements, which is held by the same prime contractor, so much of the accrued payments or advances as may be considered necessary to pay laborers and mechanics, including apprentices, trainees, and helpers, employed by the contractor or any subcontractor the full amount of wages required by the contract. In the event of failure to pay any laborer or mechanic, including any apprentice, trainee, or helper, employed or working on the site of the work, all or part of the wages required by the contract, the contracting agency may, after written notice to the contractor, take such action as may be necessary to cause the suspension of any further payment, advance, or guarantee of funds until such violations have ceased.

3. Payrolls and basic records

a. Payrolls and basic records relating thereto shall be maintained by the contractor during the course of the work and preserved for a period of three years thereafter for all laborers and mechanics working at the site of the work. Such records shall contain the name, address, and social security number of each such worker, his or her correct classification, hourly rates of wages paid (including rates of contributions or costs anticipated for bona fide fringe benefits or cash equivalents thereof of the types described in section 1(b)(2)(B) of the Davis-Bacon Act), daily and weekly number of hours worked, deductions made and actual wages paid. Whenever the Secretary of Labor has found under 29 CFR 5.5(a)(1)(iv) that the wages of any laborer or mechanic include the amount of any costs reasonably anticipated in providing benefits under a plan or program described in section 1(b)(2)(B) of the Davis-Bacon Act, the contractor shall maintain records which show that the commitment to provide such benefits is enforceable, that the plan or program is financially responsible, and that the plan or program has been communicated in writing to the laborers or mechanics affected, and records which show the costs anticipated or the actual cost incurred in providing such benefits. Contractors employing apprentices or trainees under approved programs shall maintain written evidence of the registration of apprenticeship programs and certification of trainee programs, the registration of the apprentices and trainees, and the ratios and wage rates prescribed in the applicable programs.

b.(1) The contractor shall submit weekly for each week in which any contract work is performed a copy of all payrolls to the contracting agency. The payrolls submitted shall set out accurately and completely all of the information required to be maintained under 29 CFR 5.5(a)(3)(i), except that full social security numbers and home addresses shall not be included on weekly transmittals. Instead the payrolls shall only need to include an individually identifying number for each employee (e.g. , the last four digits of the employee's social security number). The required weekly payroll information may be submitted in any form desired. Optional Form WH–347 is available for this purpose from the Wage and Hour Division Web site at http://www.dol.gov/esa/whd/forms/wh347instr.htm or its successor site. The prime contractor is responsible for the submission of copies of payrolls by all subcontractors. Contractors and subcontractors shall maintain the full social security number and current address of each covered worker, and shall provide them upon request to the contracting agency for transmission to the State DOT, the FHWA or the Wage and Hour Division of the Department of Labor for purposes of an investigation or audit of compliance with prevailing wage requirements. It is not a violation of this section for a prime contractor to require a subcontractor to provide addresses and social security numbers to the prime contractor for its own records, without weekly submission to the contracting agency..

(2) Each payroll submitted shall be accompanied by a "Statement of Compliance," signed by the contractor or subcontractor or his or her agent who pays or supervises the payment of the persons employed under the contract and shall certify the following:

(i) That the payroll for the payroll period contains the information required to be provided under §5.5 (a)(3)(ii) of Regulations, 29 CFR part 5, the appropriate information is being maintained under §5.5 (a)(3)(i) of Regulations, 29 CFR part 5, and that such information is correct and complete;

(ii) That each laborer or mechanic (including each helper, apprentice, and trainee) employed on the contract during the payroll period has been paid the full weekly wages earned, without rebate, either directly or indirectly, and that no deductions have been made either directly or indirectly from the full wages earned, other than permissible deductions as set forth in Regulations, 29 CFR part 3;

(iii) That each laborer or mechanic has been paid not less than the applicable wage rates and fringe benefits or cash equivalents for the classification of work performed, as specified in the applicable wage determination incorporated into the contract.

(3) The weekly submission of a properly executed certification set forth on the reverse side of Optional Form WH–347 shall satisfy the requirement for submission of the "Statement of Compliance" required by paragraph 3.b.(2) of this section.

(4) The falsification of any of the above certifications may subject the contractor or subcontractor to civil or criminal prosecution under section 1001 of title 18 and section 231 of title 31 of the United States Code.

c. The contractor or subcontractor shall make the records required under paragraph 3.a. of this section available for inspection, copying, or transcription by authorized representatives of the contracting agency, the State DOT, the FHWA, or the Department of Labor, and shall permit such representatives to interview employees during working hours on the job. If the contractor or subcontractor fails to submit the required records or to make them available, the FHWA may, after written notice to the contractor, the contracting agency or the State DOT, take such action as may be necessary to cause the suspension of any further payment, advance, or guarantee of funds. Furthermore, failure to submit the required records upon request or to make such records available may be grounds for debarment action pursuant to 29 CFR 5.12.

4. Apprentices and trainees

a. Apprentices (programs of the USDOL).

Apprentices will be permitted to work at less than the predetermined rate for the work they performed when they are employed pursuant to and individually registered in a bona fide apprenticeship program registered with the U.S. Department of Labor, Employment and Training Administration, Office of Apprenticeship Training, Employer and Labor Services, or with a State Apprenticeship Agency recognized by the Office, or if a person is employed in his or her first 90 days of probationary employment as an apprentice in such an apprenticeship program, who is not individually registered in the program, but who has been certified by the Office of Apprenticeship Training, Employer and Labor Services or a State Apprenticeship Agency (where appropriate) to be eligible for probationary employment as an apprentice.

The allowable ratio of apprentices to journeymen on the job site in any craft classification shall not be greater than the ratio permitted to the contractor as to the entire work force under the registered program. Any worker listed on a payroll at an apprentice wage rate, who is not registered or otherwise employed as stated above, shall be paid not less than the applicable wage rate on the wage determination for the classification of work actually performed. In addition, any apprentice performing work on the job site in excess of the ratio permitted under the registered program shall be paid not less than the applicable wage rate on the wage determination for the work actually performed. Where a contractor is performing construction on a project in a locality other than that in which its program is registered, the ratios and wage rates (expressed in percentages of the journeyman's hourly rate) specified in the contractor's or subcontractor's registered program shall be observed.

Every apprentice must be paid at not less than the rate specified in the registered program for the apprentice's level of progress, expressed as a percentage of the journeymen hourly rate specified in the applicable wage determination. Apprentices shall be paid fringe benefits in accordance with the provisions of the apprenticeship program. If the apprenticeship program does not specify fringe benefits, apprentices must be paid the full amount of fringe benefits listed on the wage determination for the applicable classification. If the Administrator determines that a different practice prevails for the applicable apprentice classification, fringes shall be paid in accordance with that determination.

In the event the Office of Apprenticeship Training, Employer and Labor Services, or a State Apprenticeship Agency recognized by the Office, withdraws approval of an apprenticeship program, the contractor will no longer be permitted to utilize apprentices at less than the applicable predetermined rate for the work performed until an acceptable program is approved.

b. Trainees (programs of the USDOL).

Except as provided in 29 CFR 5.16, trainees will not be permitted to work at less than the predetermined rate for the work performed unless they are employed pursuant to and individually registered in a program which has received prior approval, evidenced by formal certification by the U.S. Department of Labor, Employment and Training Administration.

The ratio of trainees to journeymen on the job site shall not be greater than permitted under the plan approved by the Employment and Training Administration.

Every trainee must be paid at not less than the rate specified in the approved program for the trainee's level of progress, expressed as a percentage of the journeyman hourly rate specified in the applicable wage determination. Trainees shall be paid fringe benefits in accordance with the provisions of the trainee program. If the trainee program does not mention fringe benefits, trainees shall be paid the full amount of fringe benefits listed on the wage determination unless the Administrator of the Wage and Hour Division determines that there is an apprenticeship program associated with the corresponding journeyman wage rate on the wage determination which provides for less than full fringe benefits for apprentices. Any employee listed on the payroll at a trainee rate who is not registered and participating in a training plan approved by the Employment and Training Administration shall be paid not less than the applicable wage rate on the wage determination for the classification of work actually performed. In addition, any trainee performing work on the job site in excess of the ratio permitted under the registered program shall be paid not less than the applicable wage rate on the wage determination for the work actually performed.

In the event the Employment and Training Administration withdraws approval of a training program, the contractor will no longer be permitted to utilize trainees at less than the applicable predetermined rate for the work performed until an acceptable program is approved.

c. Equal employment opportunity. The utilization of apprentices, trainees and journeymen under this part shall be in conformity with the equal employment opportunity requirements of Executive Order 11246, as amended, and 29 CFR part 30.

d. Apprentices and Trainees (programs of the U.S. DOT).

Apprentices and trainees working under apprenticeship and skill training programs which have been certified by the Secretary of Transportation as promoting EEO in connection with Federal-aid highway construction programs are not subject to the requirements of paragraph 4 of this Section IV. The straight time hourly wage rates for apprentices and trainees under such programs will be established by the particular programs. The ratio of apprentices and trainees to journeymen shall not be greater than permitted by the terms of the particular program.

5. Compliance with Copeland Act requirements. The contractor shall comply with the requirements of 29 CFR part 3, which are incorporated by reference in this contract.

6. Subcontracts. The contractor or subcontractor shall insert Form FHWA-1273 in any subcontracts and also require the subcontractors to include Form FHWA-1273 in any lower tier subcontracts. The prime contractor shall be responsible for the compliance by any subcontractor or lower tier subcontractor with all the contract clauses in 29 CFR 5.5.

7. Contract termination: debarment. A breach of the contract clauses in 29 CFR 5.5 may be grounds for termination of the contract, and for debarment as a contractor and a subcontractor as provided in 29 CFR 5.12.

8. Compliance with Davis-Bacon and Related Act requirements. All rulings and interpretations of the Davis-Bacon and Related Acts contained in 29 CFR parts 1, 3, and 5 are herein incorporated by reference in this contract.

9. Disputes concerning labor standards. Disputes arising out of the labor standards provisions of this contract shall not be subject to the general disputes clause of this contract. Such disputes shall be resolved in accordance with the procedures of the Department of Labor set forth in 29 CFR parts 5, 6, and 7. Disputes within the meaning of this clause include disputes between the contractor (or any of its subcontractors) and the contracting agency, the U.S. Department of Labor, or the employees or their representatives.

10. Certification of eligibility.

a. By entering into this contract, the contractor certifies that neither it (nor he or she) nor any person or firm who has an interest in the contractor's firm is a person or firm ineligible to be awarded Government contracts by virtue of section 3(a) of the Davis-Bacon Act or 29 CFR 5.12(a)(1).

b. No part of this contract shall be subcontracted to any person or firm ineligible for award of a Government contract by virtue of section 3(a) of the Davis-Bacon Act or 29 CFR 5.12(a)(1).

c. The penalty for making false statements is prescribed in the U.S. Criminal Code, 18 U.S.C. 1001.

V. CONTRACT WORK HOURS AND SAFETY STANDARDS ACT

The following clauses apply to any Federal-aid construction contract in an amount in excess of $100,000 and subject to the overtime provisions of the Contract Work Hours and Safety Standards Act. These clauses shall be inserted in addition to the clauses required by 29 CFR 5.5(a) or 29 CFR 4.6. As used in this paragraph, the terms laborers and mechanics include watchmen and guards.

1. Overtime requirements. No contractor or subcontractor contracting for any part of the contract work which may require or involve the employment of laborers or mechanics shall require or permit any such laborer or mechanic in any workweek in which he or she is employed on such work to work in excess of forty hours in such workweek unless such laborer or mechanic receives compensation at a rate not less than one and one-half times the basic rate of pay for all hours worked in excess of forty hours in such workweek.

2. Violation; liability for unpaid wages; liquidated damages. In the event of any violation of the clause set forth in paragraph (1.) of this section, the contractor and any subcontractor responsible therefor shall be liable for the unpaid wages. In addition, such contractor and subcontractor shall be liable to the United States (in the case of work done under contract for the District of Columbia or a territory, to such District or to such territory), for liquidated damages. Such liquidated damages shall be computed with respect to each individual laborer or mechanic, including watchmen and guards, employed in violation of the clause set forth in paragraph (1.) of this section, in the sum of $10 for each calendar day on which such individual was required or permitted to work in excess of the standard workweek of forty hours without payment of the overtime wages required by the clause set forth in paragraph (1.) of this section.

3. Withholding for unpaid wages and liquidated damages. The FHWA or the contacting agency shall upon its own action or upon written request of an authorized representative of the Department of Labor withhold or cause to be withheld, from any moneys payable on account of work performed by the contractor or subcontractor under any such contract or any other Federal contract with the same prime contractor, or any other federally-assisted contract subject to the Contract Work Hours and Safety Standards Act, which is held by the same prime contractor, such sums as may be determined to be necessary to satisfy any liabilities of such contractor or subcontractor for unpaid wages and liquidated damages as provided in the clause set forth in paragraph (2.) of this section.

4. Subcontracts. The contractor or subcontractor shall insert in any subcontracts the clauses set forth in paragraph (1.) through (4.) of this section and also a clause requiring the subcontractors to include these clauses in any lower tier subcontracts. The prime contractor shall be responsible for compliance by any subcontractor or lower tier subcontractor with the clauses set forth in paragraphs (1.) through (4.) of this section.

VI. SUBLETTING OR ASSIGNING THE CONTRACT

This provision is applicable to all Federal-aid construction contracts on the National Highway System.

1. The contractor shall perform with its own organization contract work amounting to not less than 30 percent (or a greater percentage if specified elsewhere in the contract) of the total original contract price, excluding any specialty items designated by the contracting agency. Specialty items may be performed by subcontract and the amount of any such specialty items performed may be deducted from the total original contract price before computing the amount of work required to be performed by the contractor's own organization (23 CFR 635.116).

a. The term "perform work with its own organization" refers to workers employed or leased by the prime contractor, and equipment owned or rented by the prime contractor, with or without operators. Such term does not include employees or equipment of a subcontractor or lower tier subcontractor, agents of the prime contractor, or any other assignees. The term may include payments for the costs of hiring leased employees from an employee leasing firm meeting all relevant Federal and State regulatory requirements. Leased employees may only be included in this term if the prime contractor meets all of the following conditions:

(1) the prime contractor maintains control over the supervision of the day-to-day activities of the leased employees;
(2) the prime contractor remains responsible for the quality of the work of the leased employees;
(3) the prime contractor retains all power to accept or exclude individual employees from work on the project; and
(4) the prime contractor remains ultimately responsible for the payment of predetermined minimum wages, the submission of payrolls, statements of compliance and all other Federal regulatory requirements.

b. "Specialty Items" shall be construed to be limited to work that requires highly specialized knowledge, abilities, or equipment not ordinarily available in the type of contracting organizations qualified and expected to bid or propose on the contract as a whole and in general are to be limited to minor components of the overall contract.

2. The contract amount upon which the requirements set forth in paragraph (1) of Section VI is computed includes the cost of material and manufactured products which are to be purchased or produced by the contractor under the contract provisions.

3. The contractor shall furnish (a) a competent superintendent or supervisor who is employed by the firm, has full authority to direct performance of the work in accordance with the contract requirements, and is in charge of all construction operations (regardless of who performs the work) and (b) such other of its own organizational resources (supervision, management, and engineering services) as the contracting officer determines is necessary to assure the performance of the contract.

4. No portion of the contract shall be sublet, assigned or otherwise disposed of except with the written consent of the contracting officer, or authorized representative, and such consent when given shall not be construed to relieve the contractor of any responsibility for the fulfillment of the contract. Written consent will be given only after the contracting agency has assured that each subcontract is evidenced in writing and that it contains all pertinent provisions and requirements of the prime contract.

5. The 30% self-performance requirement of paragraph (1) is not applicable to design-build contracts; however, contracting agencies may establish their own self-performance requirements.

VII. SAFETY: ACCIDENT PREVENTION

This provision is applicable to all Federal-aid construction contracts and to all related subcontracts.

1. In the performance of this contract the contractor shall comply with all applicable Federal, State, and local laws governing safety, health, and sanitation (23 CFR 635). The contractor shall provide all safeguards, safety devices and protective equipment and take any other needed actions as it determines, or as the contracting officer may determine, to be reasonably necessary to protect the life and health of employees on the job and the safety of the public and to protect property in connection with the performance of the work covered by the contract.

2. It is a condition of this contract, and shall be made a condition of each subcontract, which the contractor enters into pursuant to this contract, that the contractor and any subcontractor shall not permit any employee, in performance of the contract, to work in surroundings or under conditions which are unsanitary, hazardous or dangerous to his/her health or safety, as determined under construction safety and health standards (29 CFR 1926) promulgated by the Secretary of Labor, in accordance with Section 107 of the Contract Work Hours and Safety Standards Act (40 U.S.C. 3704).

3. Pursuant to 29 CFR 1926.3, it is a condition of this contract that the Secretary of Labor or authorized representative thereof, shall have right of entry to any site of contract performance to inspect or investigate the matter of compliance with the construction safety and health standards and to carry out the duties of the Secretary under Section 107 of the Contract Work Hours and Safety Standards Act (40 U.S.C.3704).

VIII. FALSE STATEMENTS CONCERNING HIGHWAY PROJECTS

This provision is applicable to all Federal-aid construction contracts and to all related subcontracts.

In order to assure high quality and durable construction in conformity with approved plans and specifications and a high degree of reliability on statements and representations made by engineers, contractors, suppliers, and workers on Federal-aid highway projects, it is essential that all persons concerned with the project perform their functions as carefully, thoroughly, and honestly as possible. Willful falsification, distortion, or misrepresentation with respect to any facts related to the project is a violation of Federal law. To prevent any misunderstanding regarding the seriousness of these and similar acts, Form FHWA-1022 shall be posted on each Federal-aid highway project (23 CFR 635) in one or more places where it is readily available to all persons concerned with the project:

18 U.S.C. 1020 reads as follows:

"Whoever, being an officer, agent, or employee of the United States, or of any State or Territory, or whoever, whether a person, association, firm, or corporation, knowingly makes any false statement, false representation, or false report as to the character, quality, quantity, or cost of the material used or to be used, or the quantity or quality of the work performed or to be performed, or the cost thereof in connection with the submission of plans, maps, specifications, contracts, or costs of construction on any highway or related project submitted for approval to the Secretary of Transportation; or

Whoever knowingly makes any false statement, false representation, false report or false claim with respect to the character, quality, quantity, or cost of any work performed or to be performed, or materials furnished or to be furnished, in connection with the construction of any highway or related project approved by the Secretary of Transportation; or

Whoever knowingly makes any false statement or false representation as to material fact in any statement, certificate, or report submitted pursuant to provisions of the Federal-aid Roads Act approved July 1, 1916, (39 Stat. 355), as amended and supplemented;

Shall be fined under this title or imprisoned not more than 5 years or both."

IX. IMPLEMENTATION OF CLEAN AIR ACT AND FEDERAL WATER POLLUTION CONTROL ACT

This provision is applicable to all Federal-aid construction contracts and to all related subcontracts.

By submission of this bid/proposal or the execution of this contract, or subcontract, as appropriate, the bidder, proposer, Federal-aid construction contractor, or subcontractor, as appropriate, will be deemed to have stipulated as follows:

1. That any person who is or will be utilized in the performance of this contract is not prohibited from receiving an award due to a violation of Section 508 of the Clean Water Act or Section 306 of the Clean Air Act.
2. That the contractor agrees to include or cause to be included the requirements of paragraph (1) of this Section X in every subcontract, and further agrees to take such action as the contracting agency may direct as a means of enforcing such requirements.

X. CERTIFICATION REGARDING DEBARMENT, SUSPENSION, INELIGIBILITY AND VOLUNTARY EXCLUSION

This provision is applicable to all Federal-aid construction contracts, design-build contracts, subcontracts, lower-tier subcontracts, purchase orders, lease agreements, consultant contracts or any other covered transaction requiring FHWA approval or that is estimated to cost $25,000 or more – as defined in 2 CFR Parts 180 and 1200.

1. **Instructions for Certification – First Tier Participants:**

a. By signing and submitting this proposal, the prospective first tier participant is providing the certification set out below.

b. The inability of a person to provide the certification set out below will not necessarily result in denial of participation in this covered transaction. The prospective first tier participant shall submit an explanation of why it cannot provide the certification set out below. The certification or explanation will be considered in connection with the department or agency's determination whether to enter into this transaction. However, failure of the prospective first tier participant to furnish a certification or an explanation shall disqualify such a person from participation in this transaction.

c. The certification in this clause is a material representation of fact upon which reliance was placed when the contracting agency determined to enter into this transaction. If it is later determined that the prospective participant knowingly rendered an erroneous certification, in addition to other remedies available to the Federal Government, the contracting agency may terminate this transaction for cause of default.

d. The prospective first tier participant shall provide immediate written notice to the contracting agency to whom this proposal is submitted if any time the prospective first tier participant learns that its certification was erroneous when submitted or has become erroneous by reason of changed circumstances.

e. The terms "covered transaction," "debarred," "suspended," "ineligible," "participant," "person," "principal," and "voluntarily excluded," as used in this clause, are defined in 2 CFR Parts 180 and 1200. “First Tier Covered Transactions” refers to any covered transaction between a grantee or subgrantee of Federal funds and a participant (such as the prime or general contract). “Lower Tier Covered Transactions” refers to any covered transaction under a First Tier Covered Transaction (such as subcontracts). “First Tier Participant” refers to the participant who has entered into a covered transaction with a grantee or subgrantee of Federal funds (such as the prime or general contractor). “Lower Tier Participant” refers any participant who has entered into a covered transaction with a First Tier Participant or other Lower Tier Participants (such as subcontractors and suppliers).

f. The prospective first tier participant agrees by submitting this proposal that, should the proposed covered transaction be entered into, it shall not knowingly enter into any lower tier covered transaction with a person who is debarred, suspended, declared ineligible, or voluntarily excluded from participation in this covered transaction, unless authorized by the department or agency entering into this transaction.

g. The prospective first tier participant further agrees by submitting this proposal that it will include the clause titled "Certification Regarding Debarment, Suspension, Ineligibility and Voluntary Exclusion-Lower Tier Covered Transactions," provided by the department or contracting agency, entering into this covered transaction, without modification, in all lower tier covered transactions and in all solicitations for lower tier covered transactions exceeding the $25,000 threshold.

h. A participant in a covered transaction may rely upon a certification of a prospective participant in a lower tier covered transaction that is not debarred, suspended, ineligible, or voluntarily excluded from the covered transaction, unless it knows that the certification is erroneous. A participant is responsible for ensuring that its principals are not suspended, debarred, or otherwise ineligible to participate in covered transactions. To verify the eligibility of its principals, as well as the eligibility of any lower tier prospective participants, each participant may, but is not required to, check the Excluded Parties List System website (https://www.epls.gov/), which is compiled by the General Services Administration.

i. Nothing contained in the foregoing shall be construed to require the establishment of a system of records in order to render in good faith the certification required by this clause. The knowledge and information of the prospective participant is not required to exceed that which is normally possessed by a prudent person in the ordinary course of business dealings.

j. Except for transactions authorized under paragraph (f) of these instructions, if a participant in a covered transaction knowingly enters into a lower tier covered transaction with a person who is suspended, debarred, ineligible, or voluntarily excluded from participation in this transaction, in addition to other remedies available to the Federal Government, the department or agency may terminate this transaction for cause or default.

* * * * *

2. Certification Regarding Debarment, Suspension, Ineligibility and Voluntary Exclusion – First Tier Participants:

a. The prospective first tier participant certifies to the best of its knowledge and belief, that it and its principals:

(1) Are not presently debarred, suspended, proposed for debarment, declared ineligible, or voluntarily excluded from participating in covered transactions by any Federal department or agency;

(2) Have not within a three-year period preceding this proposal been convicted of or had a civil judgment rendered against them for commission of fraud or a criminal offense in connection with obtaining, attempting to obtain, or performing a public (Federal, State or local) transaction or contract under a public transaction; violation of Federal or State antitrust statutes or commission of embezzlement, theft, forgery, bribery, falsification or destruction of records, making false statements, or receiving stolen property;

(3) Are not presently indicted for or otherwise criminally or civilly charged by a governmental entity (Federal, State or local) with commission of any of the offenses enumerated in paragraph (a)(2) of this certification; and

(4) Have not within a three-year period preceding this application/proposal had one or more public transactions (Federal, State or local) terminated for cause or default.

b. Where the prospective participant is unable to certify to any of the statements in this certification, such prospective participant shall attach an explanation to this proposal.

2. **Instructions for Certification - Lower Tier Participants:**

(Applicable to all subcontracts, purchase orders and other lower tier transactions requiring prior FHWA approval or estimated to cost $25,000 or more - 2 CFR Parts 180 and 1200)

a. By signing and submitting this proposal, the prospective lower tier is providing the certification set out below.

b. The certification in this clause is a material representation of fact upon which reliance was placed when this transaction was entered into. If it is later determined that the prospective lower tier participant knowingly rendered an erroneous certification, in addition to other remedies available to the Federal Government, the department, or agency with which this transaction originated may pursue available remedies, including suspension and/or debarment.

c. The prospective lower tier participant shall provide immediate written notice to the person to which this proposal is submitted if at any time the prospective lower tier participant learns that its certification was erroneous by reason of changed circumstances.

d. The terms "covered transaction," "debarred," "suspended," "ineligible," "participant," "person," "principal," and "voluntarily excluded," as used in this clause, are defined in 2 CFR Parts 180 and 1200. You may contact the person to which this proposal is submitted for assistance in obtaining a copy of those regulations. "First Tier Covered Transactions" refers to any covered transaction between a grantee or subgrantee of Federal funds and a participant (such as the prime or general contract). "Lower Tier Covered Transactions" refers to any covered transaction under a First Tier Covered Transaction (such as subcontracts). "First Tier Participant" refers to the participant who has entered into a covered transaction with a grantee or subgrantee of Federal funds (such as the prime or general contractor). "Lower Tier Participant" refers any participant who has entered into a covered transaction with a First Tier Participant or other Lower Tier Participants (such as subcontractors and suppliers).

e. The prospective lower tier participant agrees by submitting this proposal that, should the proposed covered transaction be entered into, it shall not knowingly enter into any lower tier covered transaction with a person who is debarred, suspended, declared ineligible, or voluntarily excluded from participation in this covered transaction, unless authorized by the department or agency with which this transaction originated.

f. The prospective lower tier participant further agrees by submitting this proposal that it will include this clause titled "Certification Regarding Debarment, Suspension, Ineligibility and Voluntary Exclusion-Lower Tier Covered Transaction," without modification, in all lower tier covered transactions and in all solicitations for lower tier covered transactions exceeding the $25,000 threshold.

g. A participant in a covered transaction may rely upon a certification of a prospective participant in a lower tier covered transaction that is not debarred, suspended, ineligible, or voluntarily excluded from the covered transaction, unless it knows that the certification is erroneous. A participant is responsible for ensuring that its principals are not suspended, debarred, or otherwise ineligible to participate in covered transactions. To verify the eligibility of its principals, as well as the eligibility of any lower tier prospective participants, each participant may, but is not required to, check the Excluded Parties List System website (https://www.epls.gov/), which is compiled by the General Services Administration.

h. Nothing contained in the foregoing shall be construed to require establishment of a system of records in order to render in good faith the certification required by this clause. The knowledge and information of participant is not required to exceed that which is normally possessed by a prudent person in the ordinary course of business dealings.

i. Except for transactions authorized under paragraph e of these instructions, if a participant in a covered transaction knowingly enters into a lower tier covered transaction with a person who is suspended, debarred, ineligible, or voluntarily excluded from participation in this transaction, in addition to other remedies available to the Federal Government, the

department or agency with which this transaction originated may pursue available remedies, including suspension and/or debarment.

* * * * *

Certification Regarding Debarment, Suspension, Ineligibility and Voluntary Exclusion--Lower Tier Participants:

1. The prospective lower tier participant certifies, by submission of this proposal, that neither it nor its principals is presently debarred, suspended, proposed for debarment, declared ineligible, or voluntarily excluded from participating in covered transactions by any Federal department or agency.

2. Where the prospective lower tier participant is unable to certify to any of the statements in this certification, such prospective participant shall attach an explanation to this proposal.

* * * * *

XI. CERTIFICATION REGARDING USE OF CONTRACT FUNDS FOR LOBBYING

This provision is applicable to all Federal-aid construction contracts and to all related subcontracts which exceed $100,000 (49 CFR 20).

1. The prospective participant certifies, by signing and submitting this bid or proposal, to the best of his or her knowledge and belief, that:

a. No Federal appropriated funds have been paid or will be paid, by or on behalf of the undersigned, to any person for influencing or attempting to influence an officer or employee of any Federal agency, a Member of Congress, an officer or employee of Congress, or an employee of a Member of Congress in connection with the awarding of any Federal contract, the making of any Federal grant, the making of any Federal loan, the entering into of any cooperative agreement, and the extension, continuation, renewal, amendment, or modification of any Federal contract, grant, loan, or cooperative agreement.

b. If any funds other than Federal appropriated funds have been paid or will be paid to any person for influencing or attempting to influence an officer or employee of any Federal agency, a Member of Congress, an officer or employee of Congress, or an employee of a Member of Congress in connection with this Federal contract, grant, loan, or cooperative agreement, the undersigned shall complete and submit Standard Form-LLL, "Disclosure Form to Report Lobbying," in accordance with its instructions.

2. This certification is a material representation of fact upon which reliance was placed when this transaction was made or entered into. Submission of this certification is a prerequisite for making or entering into this transaction imposed by 31 U.S.C. 1352. Any person who fails to file the required certification shall be subject to a civil penalty of not less than $10,000 and not more than $100,000 for each such failure.

3. The prospective participant also agrees by submitting its bid or proposal that the participant shall require that the language of this certification be included in all lower tier subcontracts, which exceed $100,000 and that all such recipients shall certify and disclose accordingly.

7-1.50C Female and Minority Goals

To comply with Section II, "Nondiscrimination," of "Required Contract Provisions Federal-Aid Construction Contracts," the Department is including in Section 7-1.50C, "Female and Minority Goals," female and minority utilization goals for Federal-aid construction contracts and subcontracts that exceed $10,000.

The nationwide goal for female utilization is 6.9 percent.

The goals for minority utilization [45 Fed Reg 65984 (10/3/1980)] are as follows:

Minority Utilization Goals

Economic Area		Goal (Percent)
174	Redding CA: Non-SMSA Counties: CA Lassen; CA Modoc; CA Plumas; CA Shasta; CA Siskiyou; CA Tehema	6.8
175	Eureka, CA Non-SMSA Counties: CA Del Norte; CA Humboldt; CA Trinity	6.6
176	San Francisco-Oakland-San Jose, CA: SMSA Counties: 7120 Salinas-Seaside-Monterey, CA CA Monterey 7360 San Francisco-Oakland CA Alameda; CA Contra Costa; CA Marin; CA San Francisco; CA San Mateo 7400 San Jose, CA CA Santa Clara, CA 7485 Santa Cruz, CA CA Santa Cruz 7500 Santa Rosa CA Sonoma 8720 Vallejo-Fairfield-Napa, CA CA Napa; CA Solano Non-SMSA Counties: CA Lake; CA Mendocino; CA San Benito	 28.9 25.6 19.6 14.9 9.1 17.1 23.2
177	Sacramento, CA: SMSA Counties: 6920 Sacramento, CA CA Placer; CA Sacramento; CA Yolo Non-SMSA Counties CA Butte; CA Colusa; CA El Dorado; CA Glenn; CA Nevada; CA Sierra; CA Sutter; CA Yuba	 16.1 14.3
178	Stockton-Modesto, CA: SMSA Counties: 5170 Modesto, CA CA Stanislaus 8120 Stockton, CA CA San Joaquin Non-SMSA Counties CA Alpine; CA Amador; CA Calaveras; CA Mariposa; CA Merced; CA Toulumne	 12.3 24.3 19.8
179	Fresno-Bakersfield, CA SMSA Counties: 0680 Bakersfield, CA CA Kern 2840 Fresno, CA CA Fresno Non-SMSA Counties: CA Kings; CA Madera; CA Tulare	 19.1 26.1 23.6
180	Los Angeles, CA: SMSA Counties:	

	0360 Anaheim-Santa Ana-Garden Grove, CA CA Orange 4480 Los Angeles-Long Beach, CA CA Los Angeles 6000 Oxnard-Simi Valley-Ventura, CA CA Ventura 6780 Riverside-San Bernardino-Ontario, CA CA Riverside; CA San Bernardino 7480 Santa Barbara-Santa Maria-Lompoc, CA CA Santa Barbara Non-SMSA Counties CA Inyo; CA Mono; CA San Luis Obispo	11.9 28.3 21.5 19.0 19.7 24.6
181	San Diego, CA: SMSA Counties 7320 San Diego, CA CA San Diego Non-SMSA Counties CA Imperial	 16.9 18.2

For each July during which work is performed under the contract, you and each non-material-supplier subcontractor with a subcontract of $10,000 or more must complete Form FHWA PR-1391 (Appendix C to 23 CFR 230). Submit the forms by August 15.

7-1.50D Training

Section 7-1.50D, "Training," applies if a number of trainees or apprentices is specified in the special provisions.

As part of your equal opportunity affirmative action program, provide on-the-job training to develop full journeymen in the types of trades or job classifications involved.

You have primary responsibility for meeting this training requirement.

If you subcontract a contract part, determine how many trainees or apprentices are to be trained by the subcontractor.

Include these training requirements in your subcontract.

Where feasible, 25 percent of apprentices or trainees in each occupation must be in their 1st year of apprenticeship or training.

Distribute the number of apprentices or trainees among the work classifications on the basis of your needs and the availability of journeymen in the various classifications within a reasonable recruitment area.

Before starting work, submit to the Department:

1. Number of apprentices or trainees to be trained for each classification
2. Training program to be used
3. Training starting date for each classification

Obtain the Department's approval for this submitted information before you start work. The Department credits you for each apprentice or trainee you employ on the work who is currently enrolled or becomes enrolled in an approved program.

The primary objective of Section 7-1.50D, "Training," is to train and upgrade minorities and women toward journeymen status. Make every effort to enroll minority and women apprentices or trainees, such as conducting systematic and direct recruitment through public and private sources likely to yield minority and women apprentices or trainees, to the extent they are available within a reasonable recruitment area. Show that you have made the efforts. In making these efforts, do not discriminate against any applicant for training.

Do not employ as an apprentice or trainee an employee:

1. In any classification in which the employee has successfully completed a training course leading to journeyman status or in which the employee has been employed as a journeyman
2. Who is not registered in a program approved by the US Department of Labor, Bureau of Apprenticeship and Training

Ask the employee if the employee has successfully completed a training course leading to journeyman status or has been employed as a journeyman. Your records must show the employee's answers to the questions.

In your training program, establish the minimum length and training type for each classification. The Department and FHWA approves a program if one of the following is met:

1. It is calculated to:

    1.1. Meet the your equal employment opportunity responsibilities
    1.2. Qualify the average apprentice or trainee for journeyman status in the classification involved by the end of the training period

2. It is registered with the U.S. Department of Labor, Bureau of Apprenticeship and Training and it is administered in a way consistent with the equal employment responsibilities of federal-aid highway construction contracts

Obtain the State's approval for your training program before you start work involving the classification covered by the program.

Provide training in the construction crafts, not in clerk-typist or secretarial-type positions. Training is allowed in lower level management positions such as office engineers, estimators, and timekeepers if the training is oriented toward construction applications. Training is allowed in the laborer classification if significant and meaningful training is provided and approved by the division office. Off-site training is allowed if the training is an integral part of an approved training program and does not make up a significant part of the overall training.

The Department reimburses you 80 cents per hour of training given an employee on this contract under an approved training program:

1. For on-site training
2. For off-site training if the apprentice or trainee is currently employed on a federal-aid project and you do at least one of the following:

    2.1. Contribute to the cost of the training
    2.2. Provide the instruction to the apprentice or trainee
    2.3. Pay the apprentice's or trainee's wages during the off-site training period

3. If you comply with Section 7-1.50D, "Training"

Each apprentice or trainee must:

1. Begin training on the project as soon as feasible after the start of work involving the apprentice's or trainee's skill
2. Remain on the project as long as training opportunities exist in the apprentice's or trainee's work classification or until the apprentice or trainee has completed the training program

Furnish the apprentice or trainee:

1. Copy of the program you will comply with in providing the training
2. Certification showing the type and length of training satisfactorily completed

Maintain records and submit reports documenting your performance under Section 7-1.50D, "Training."

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SECTION 8 PROSECUTION AND PROGRESS
(Issued 06-05-09)

Replace Section 8 with:

SECTION 8 PROSECUTION AND PROGRESS

8-1.01 (BLANK)

8-1.02 ASSIGNMENT

No third-party agreement relieves you or your surety of your responsibility to complete the work. Do not sell, transfer, or otherwise dispose of any contract part without prior written consent from the Department.

If you assign the right to receive contract payments, the Department accepts the assignment upon the Engineer's receipt of a notice. Assigned payments remain subject to deductions and withholds described in the contract. The Department may use withheld payments for work completion whether payments are assigned or not.

8-1.025 PRECONSTRUCTION CONFERENCE

Attend a preconstruction conference with key personnel, including your assigned representative, at a time and location determined by the Engineer. Submit documents as required before the preconstruction conference. You may begin work before the preconstruction conference.

Be prepared to discuss the following topics and documents:

Topics	Document
Potential claim and dispute resolution	Potential claim forms
Contractor's representation	Assignment of Contractor's representative
DBE and DVBE	Final utilization reports
Equipment	Equipment list
Labor compliance and equal employment opportunity	Job site posters and benefit and payroll reports
Material inspection	Notice of Materials to be Used
Materials on hand	Request for Payment for Materials on Hand
Measurements	--
Partnering	Field Guide to Partnering on Caltrans Construction Projects
Quality control	QC plans
Safety	Injury and Illness Prevention Program and job site posters
Schedule	Baseline schedule and Weekly Statement of Working Days
Subcontracting	Subcontracting Request
Surveying	Survey Request
Traffic control	Traffic contingency plan and traffic control plans
Utility work	--
Weight limitations	--
Water pollution control	SWPPP or WPCP
Work restrictions	PLACs
Working drawings	--

8-1.03 BEGINNING OF WORK

Begin work within 15 days after receiving notice that the contract has been approved by the Attorney General or the attorney appointed and authorized to represent the Department. Submit a written notice 72 hours before beginning work. If the project has more than one location of work, submit a separate notice for each location.

You may begin work before receiving the notice of contract approval if you:

1. Deliver the signed contract, bonds, and evidence of insurance to the Department
2. Submit 72-hour notice
3. Obtain an encroachment permit from the Department
4. Are authorized by the Department to begin
5. Perform work at your own risk
6. Perform work under the contract

The Engineer does not count working days for days worked before contract approval.

If the contract is approved, work already performed that complies with the contract is authorized.

If the contract does not get approved, leave the job site in a neat condition. If a facility has been changed, restore it to its former or equivalent condition at your expense.

The Department does not adjust time for beginning before the approval date.

8-1.04 PROGRESS SCHEDULE

8-1.04A General

Reserved

8-1.04B Critical Path Method Schedule

The following definitions apply to critical path method schedules:

activity: Task, event, or other project element on a schedule that contributes to completing the project. Activities have a description, start date, finish date, duration, and one or more logic ties.

baseline schedule: The initial schedule showing the original work plan beginning on the date of contract approval. This schedule shows no completed work to date and no negative float or negative lag to any activity.

controlling activity: Construction activity that extends the scheduled completion date if delayed.

critical path: Longest continuous chain of activities for the project that has the least amount of total float of all chains. In general, a delay on the critical path extends the scheduled completion date.

critical path method (CPM): Network based planning technique using activity durations and relationships between activities to calculate a schedule for the entire project.

revised schedule: Schedule that incorporates a proposed or past change to logic or activity durations.

scheduled completion date: Planned project completion date shown on the current schedule.

updated schedule: Current schedule developed from the accepted baseline and any subsequent accepted updated or revised schedules through regular monthly review to incorporate actual past progress.

Before or at the preconstruction conference, submit a CPM baseline schedule.

Submit a monthly updated schedule that includes the status of work completed to date and the work yet to be performed as planned.

On each schedule, show:

1. Planned and actual start and completion date of each work activity, including applicable:
    1.1. Submittal development
    1.2. Submittal review and approval
    1.3. Material procurement
    1.4. Contract milestones and constraints
    1.5. Equipment and plant setup
    1.6. Interfaces with outside entities
    1.7. Erection and removal of falsework and shoring
    1.8. Test periods
    1.9. Major traffic stage change
    1.10. Final cleanup
2. Order that you propose to prosecute the work
3. Logical links between the time-scaled work activities
4. All controlling activities
5. Legible description of each activity
6. At least one predecessor and one successor to each activity, except for project start and project end milestones
7. Duration of not less than one working day for each activity
8. Start milestone date as the contract approval date

You may include changes on updated schedules that do not alter the critical path or extend the schedule completion date compared to the current schedule. Changes may include:

1. Adding or deleting activities
2. Changing activity constraints
3. Changing durations
4. Changing logic

If any proposed change in planned work results in altering the critical path or extending the scheduled completion date, submit a revised schedule within 15 days of the proposed change.

For each schedule submittal:

1. Submit a plotted original, time-scaled network diagram on a sheet of at least 8.5" x 11" with a title block and timeline
2. If a computer program is used to make the schedule, submit a read-only compact disc or diskette containing the schedule data. Label the compact disc or diskette with:

    2.1. Contract number
    2.2. CPM schedule number and date produced
    2.3. File name

If there is no contract item for progress schedule (critical path method), full compensation for this work is included in the contract prices paid for the items of work involved, and no additional compensation will be allowed therefor.

8-1.05 TEMPORARY SUSPENSION OF WORK

8-1.05A General

The Engineer may suspend work wholly or in part due to any of the following:

1. Conditions are unsuitable for work progress.
2. You fail to do any of the following:

    2.1. Fulfill the Engineer's orders.
    2.2. Fulfill a contract part.
    2.3. Perform weather-dependent work when conditions are favorable so that weather-related unsuitable conditions are avoided or do not occur.

Upon the Engineer's written order of suspension, suspend work immediately. Provide for public safety and a smooth and unobstructed passageway through the work zone during the suspension as specified in Sections 7-1.08, "Public Convenience," and 7-1.09, "Public Safety." Resume work when ordered.

8-1.05B Suspensions Unrelated to Contractor Performance

For a suspension unrelated to your performance, providing for a smooth and unobstructed passageway through the work during the suspension will be paid for as extra work as specified in Section 4-1.03D, "Extra Work."

The days during a suspension unrelated to your performance are non-working days.

8-1.05C Suspensions Related to Contractor Performance

For a suspension related to your performance, the Department may provide for a smooth and unobstructed passageway through the work during the suspension and deduct the cost from payments.

The days during a suspension related to your performance are working days.

8-1.06 TIME OF COMPLETION

The time to complete the work is specified in the special provisions.

The Engineer issues a Weekly Statement of Working Days by the end of the following week unless the contract is suspended for reasons unrelated to your performance.

The Weekly Statement of Working Days shows:

1. Working days and non–working days during the reporting week
2. Time adjustments
3. Work completion date computations, including working days remaining
4. Controlling activities

You may protest a Weekly Statement of Working Days.

8-1.07 LIQUIDATED DAMAGES

8-1.07A General

The Department specifies liquidated damages (Pub Cont Code § 10226). Liquidated damages, if any, accrue starting on the 1st day after the expiration of the working days through the day of contract acceptance except as specified in Sections 8-1.07B, "Failure to Complete Work Parts within Specified Times," and 8-1.07C, "Failure to Complete Work Parts by Specified Dates."

The Department withholds liquidated damages before the accrual date if the anticipated liquidated damages may exceed the value of the remaining work.

Liquidated damages for all work, except plant establishment, are:

Liquidated Damages		
Total Bid		Liquidated Damages per Day
From over	To	
$0	$50,000	$1,200
$50,000	$120,000	$1,500
$120,000	$1,000,000	$1,900
$1,000,000	$5,000,000	$3,000
$5,000,000	$10,000,000	$5,400
$10,000,000	$30,000,000	$8,300
$30,000,000	$100,000,000	$10,500
$100,000,000	$250,000,000	$28,500

If all work, except plant establishment, is complete and the total number of working days has expired, liquidated damages are $950 per day.

8-1.07B Failure to Complete Work Parts within Specified Times

The Department may deduct specified damages from payments for each day in completing a work part beyond the time specified for completing the work part.

Damages for untimely completion of work parts may not be equal to the daily amount specified as liquidated damages for the project as a whole, but the Department does not simultaneously assess damages for untimely completion of work parts and for the whole work.

Damages accrue starting the 1st day after a work part exceeds the specified time through the day the specified work part is complete.

8-1.07C Failure to Complete Work Parts by Specified Dates

The Department may deduct specified damages from payments for each day in completing a work part beyond the specified completion date for the work part.

Damages for untimely work part completion may not be equal to the daily amount specified as liquidated damages for the project as a whole, but the Department does not simultaneously assess damages for untimely work part completion and the whole work.

Damages accrue starting the 1st day after an unmet completion date through the day the work part is complete.

8-1.07D Director Days

If the work is not completed within the working days, the Director may grant director days if it serves the State's best interest.

By granting director days, the Director adds working days to the contract. The Director may either grant enough days to eliminate the liquidated damages or fewer. In the latter case, the Department deducts liquidated damages for the remaining overrun in contract time. The Director may deduct the Department's engineering, inspection, and overhead costs incurred during the period of extension granted as director days.

8-1.08 TERMINATION OF CONTROL

The Department may terminate your control of the work for failure to do any of the following (Pub Cont Code § 10253):

1. Supply an adequate workforce
2. Supply material as described

3. Pay subcontractors (Pub Cont Code §10262)
4. Prosecute the work as described in the contract

The Department may also terminate your control for failure to maintain insurance coverage.

For a Federal-aid contract, the Department may terminate your control of the work for failure to include "Required Contract Provisions, Federal-Aid Construction Contracts" in subcontracts.

The Department gives you and your surety notice at least 5 days before terminating control. The notice describes the failures and the time allowed to remedy the failures. If failures are not remedied within the time provided, the Department takes control of the work.

The Department may complete the work if the Department terminates your control or you abandon the project (Pub Cont Code § 10255). The Department determines the unpaid balance under Pub Cont Code § 10258 and the contract.

At any time before final payment of all claims, the Department may convert a termination of control to a termination of contract.

8-1.09 DELAYS

8-1.09A General

An excusable delay is a delay of a controlling activity beyond your control, not foreseeable when the work began such as:

1. Change in the work
2. Department action that is not part of the contract
3. Presence of an underground utility main not described in the contract or in a location different from that specified
4. Described facility reconstruction not reconstructed as described, by the utility owner by the date specified, unless the reconstruction is solely for your convenience
5. Department's failure to obtain timely access to the right-of-way
6. Department's failure to perform an action in the time specified

A critical delay is a delay that extends the schedule completion date.

To request a delay-related time or payment adjustment, submit an RFI.

8-1.09B Time Adjustments

For an excusable critical delay, the Department may make a time adjustment. The Engineer uses information from the schedule to evaluate requests for time adjustments.

If requesting an adjustment, submit a revised schedule showing the delay's effect on the controlling activity. If the delay has:

1. Occurred, submit records of dates and what work was performed during the delayed activity
2. Not occurred, submit the expected dates or duration of the delayed activity

If the Engineer requests, update the schedule to the last working day before the start of the delay.

8-1.09C Payment Adjustments

The Department may make a payment adjustment for an excusable delay that affects your costs.

Only losses for idle equipment, idle workers, and equipment moving or transporting are eligible for delay-related payment adjustments.

The Engineer determines payment for idle time of equipment in the same manner as determinations are made for equipment used in the performance of force account work under Section 9-1.03, "Force Account," with the following exceptions:

1. Delay factor in the Labor Surcharge and Equipment Rental Rates applies to each equipment rental rate.
2. Daily number of payable hours equals the normal working hours during the delay, not to exceed 8 hours per day.
3. Delay days exclude non–working days.
4. Markups are not added.

The Engineer determines payment adjustment for idle workers under Section 9-1.03B, "Labor," but does not add markups.

The Engineer includes costs due to necessary extra equipment moving or transporting.

8-1.10 (BLANK)

8-1.11 TERMINATION OF CONTRACT

8-1.11A General

The Director may terminate the contract if it serves the State's best interest. The Department issues you a written notice, implements the termination, and pays you.

8-1.11B Relief from Responsibility for Work

On receiving a termination notice:

1. Stop work
2. Notify subcontractors and suppliers of the contract termination and stop contract-related work
3. Perform the Engineer-ordered work to secure the job site for termination
4. Remove equipment
5. If authorized, settle termination-related claims and liabilities involving subcontractors and suppliers; assign to the Department the rights, titles, or interests held by you with respect to these parties

8-1.11C Responsibility for Materials

On receiving a termination notice, protect unused material until:

1. You submit an inventory of materials already produced, purchased, or ordered but not yet used; include the location of the material.
2. The Engineer identifies materials that will be retained by the Department. Submit bills of sales or other records of material title.
3. The Engineer confirms that unused materials paid by progress payment and materials furnished by the State have been delivered and stored as ordered.
4. Titles are transferred for materials purchased by the Department.

Dispose of materials that will not be retained by the Department.

8-1.11D Contract Acceptance after Termination

The Engineer recommends contract acceptance after determining completion of:

1. Contract work ordered to be completed before termination
2. Other work ordered to secure the project before termination
3. Material delivery and title transfer

The Department pays you under Section 9-1.08, "Payment After Contract Acceptance."

8-1.11E Payment Adjustment for Termination

If the Department issues a termination notice, the Engineer determines payment for termination based on the following:

1. Direct cost for the work:

    1.1. Including mobilization, demobilization, securing the job site for termination, and losses from the sale of materials

    1.2. Not including the cost of materials you keep, profit realized from the sale of materials, the cost of material damaged by an occurrence as defined in Section 7-1.165, "Damage by Storm, Flood, Tsunami or Earthquake," and other credits.

2. Cost of remedial work, as estimated by the Engineer, is not reimbursed.

3. Allowance for profit not to exceed 4 percent of the cost of the work. Prove a likelihood of having made a profit had the contract not been terminated.
4. Material handling costs for material returned to the vendor or disposed of as ordered.
5. Costs in determining the payment adjustment due to the termination, excluding attorney fees and litigation costs.

Termination of the contract does not relieve the surety of its obligation for any just claims arising out of the work performed.

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SECTION 9 MEASUREMENT AND PAYMENT
(Issued 03-11-10)

Replace Section 9 with:

SECTION 9 MEASUREMENT AND PAYMENT

9-1.01 MEASUREMENT OF QUANTITIES

9-1.01A General

The Department determines bid item quantities under U.S. customary units.

9-1.01B Weighing Equipment and Procedures

9-1.01B(1) General

The Engineer measures material quantities for payment with devices that comply with:

1. 4 CA Code of Regs § 4000 et seq.
2. Bus & Prof Code § 12001 et seq.

To determine the material payment quantities, use measuring devices that have been sealed by the Department of Food and Agriculture's Division of Measurement Standards or its designated representative.

If a device is not type approved by the Division of Measurement Standards, type approve it under California Test 109.

Notify the Engineer at least 1 business day in advance of equipment testing.

Use material plant controllers having elements affecting the data accuracy and delivery that have been sealed by the Engineer. Make these elements available to the Engineer for inspection. If the elements are adequate for use, the Engineer seals them. If security seal manipulation occurs, stop material production. Do not resume production until the Engineer reinspects and reseals the device.

The Engineer measures material paid for by weight on Contractor-furnished sealed scales regularly inspected by the Department of Food and Agriculture's Division of Measurement Standards or its designated representative.

Obtain authorization of portable vehicle scale installations before sealing.

Proportioning scales must comply with Section 5-1.10, "Equipment."

9-1.01B(2) Equipment

Each scale must be long enough to fit an entire vehicle or a combination vehicle on the scale deck. The Department allows you to weigh a combination vehicle separately if you disconnect the vehicles.

Construct scale undersupports:

1. Using portland cement concrete containing at least 470 pounds of cement per cubic yard produced from commercial quality materials
2. Such that footing heights are at least 20 inches thick
3. With a bearing surface at least 30 inches wide and bearing pressure on the footing not over 4000 pounds per square foot

In constructing a scale:

1. Furnish drainage to prevent water from saturating the ground under the scale
2. Use bulkheads that prevent displacement
3. If shimming is necessary:

    3.1. Use securely attached metal shims or grout
    3.2 Do not use wedges to shim the supports
    3.3. Do not use shim material in excess of 3 inches

4. Install mechanical indicating elements level, plumb, and rigidly mounted on the concrete undersupports
5. For a hopper scale, rigidly attach hopper scale lever systems and mechanical indicating elements so no weight is lost from bending or support distortion

Each scale used to determine material payment quantities must be operated by a licensed weighmaster (Bus & Prof Code § 12700 et seq.).

Submit a public weighmaster's certificate or certified daily summary weigh sheets for each weighed material quantity. The Department may witness material weighing and check and compile the daily scale weight record.

Each vehicle operator must obtain weight or load slips from the weighmaster. Submit these records at the delivery point.

9-1.01B(3) Procedures

Daily, weigh empty vehicles used to haul material paid for by weight. Each vehicle must have a legible identification mark. The Department may verify material weight by having an empty and loaded vehicle weighed on any scale the Engineer designates.

For imported topsoil measured by volume, soil amendment, and mulch:

1. Each vehicle must allow a ready and accurate contents determination
2. Unless vehicles are of uniform capacity, each vehicle must have a legible identification mark showing its volume capacity
3. Load vehicles to at least the volume capacity
4. Level vehicle loads on arrival at the delivery point

If determining a quantity paid on a volume basis is impractical or if you request and the Engineer authorizes the request, the Engineer weighs the material and converts the result to a volume measurement. The Engineer determines the conversion factors and, if you agree, adopts this method of measurement.

9-1.01C Final Pay Items

The Department shows a bid item quantity as a final pay item for payment purposes only. For a final pay item, accept payment based on the verified Bid Item List quantity, regardless of actual quantity used unless dimensions are changed by the Engineer.

9-1.01D Quantities of Aggregate and Other Roadway Materials

The Engineer determines the weight of aggregate and other roadway materials that are being paid for by weight as shown and does not include the deducted weight of water in their payment quantities.

Material	Quantity Determination
Aggregate or other roadway material except as otherwise shown in this table	By deducting the weight of water in the material[a] in excess of 3 percent of the dry weight of the material from the weight of the material
Imported borrow, imported topsoil, aggregate subbase	By deducting the weight of water in the material[a] in excess of 6 percent of the dry weight of the material from the weight of the material
Straw	By deducting the weight of water in the material[a] in excess of 15 percent of the dry weight of the material from the weight of the material
Fiber[b]	Engineer does not deduct the weight of water
Aggregate base and aggregate for cement treated bases	As specified in Section 26, "Aggregate Bases," and Section 27, "Cement Treated Bases"

NOTE: Percentage of water is determined by California Test 226.
[a]At the time of weighing
[b]Weight of water in the fiber[a] must not exceed 15 percent of the dry weight of the fiber.

9-1.02 SCOPE OF PAYMENT

The Department pays you for furnishing the resources and activities required to complete the Contract work. The Department's payment is full compensation for furnishing the resources and activities, including:

1. Risk, loss, damage repair, or cost of whatever character arising from or relating to the work and performance of the work
2. PLACs and taxes

Full compensation for work specified in Sections 1 through 9 is included in the payment for the bid items involved unless:

1. Bid item for the work is shown on the verified Bid Item List
2. Work is specified as paid for as extra work

The Department does not pay for your loss, damage, repair, or extra costs of whatever character arising from or relating to the work that is a direct or indirect result of your choice of construction methods, materials, equipment, or manpower, unless specifically mandated by the Contract.

Payment is:

1. Full compensation for each bid item specified by the description and measurement unit shown on the verified Bid Item List
2. For the price bid for each bid item shown on the verified Bid Item List or as changed by change order with a specified price adjustment

If an alternative is described in the Contract, the Department pays based on the bid items for the details and specifications not described as an alternative.

The Department pays for work performed by change order based on one or a combination of the following:

1. Bid item prices
2. Force account
3. Agreed price
4. Specialist billing

If the Engineer chooses to pay for work performed by change order based on an agreed price, but you and the Engineer cannot agree on the price, the Department pays by force account.

If a portion of extra work is covered by bid items, the Department pays for this work as changed quantities in those items. The Department pays for the remaining portion of the extra work by force account or agreed price.

The Department pays 10 percent annual interest for unpaid and undisputed:

1. Progress payments
2. After-acceptance payment except for claims

For these payments, interest starts to accrue 30 days after the 1st working day following the 20th day of the month payment is due. For extra work bills not submitted within 7 days after performing the work as specified in 5-1.015E, "Extra Work Bills," interest starts to accrue 60 days after the 1st working day following the 20th day of the month payment is due.

The Department pays 6 percent annual interest for unpaid and undisputed claims. Interest starts to accrue 61 days after the Department accepts a claim statement.

The Department pays 6 percent annual interest for awards in arbitration (Civ Code § 3289).

If the amount of a deduction or withhold exceeds final payment, the Department invoices you for the difference, to be paid upon receipt.

9-1.03 FORCE ACCOUNT PAYMENT

9-1.03A General

For work paid by force account, the Engineer compares the Department's records to your daily force account work report. When you and the Engineer agree on the contents of the daily force account work reports, the Engineer accepts the report and the Department pays for the work. If the records differ, the Department pays for the work based only on the information shown on the Department's records.

If a subcontractor performs work at force account, accept an additional 10 percent markup to the total cost of that work paid at force account, including markups specified in Section 9-1.03, as reimbursement for additional administrative costs.

The markups specified in labor, materials, and equipment include compensation for all delay costs, overhead costs, and profit.

If an item's payment is adjusted for work-character changes, the Department excludes your cost of determining the adjustment.

Payment for owner-operated labor and equipment is made at the market-priced invoice submitted.

9-1.03B Labor

Labor payment is full compensation for the cost of labor used in the direct performance of the work plus a 35 percent markup. Force account labor payment consists of:

1. Employer payment to the worker for:

    1.1. Basic hourly wage
    1.2. Health and welfare
    1.3. Pension
    1.4. Vacation
    1.5. Training
    1.6. Other State and federal recognized fringe benefit payments

2. Labor surcharge percentage in Labor Surcharge and Equipment Rental Rates current during the work paid at force account for:

    2.1. Workers' compensation insurance
    2.2. Social security
    2.3. Medicare
    2.4. Federal unemployment insurance
    2.5. State unemployment insurance
    2.6. State training taxes

3. Subsistence and travel allowances paid to the workers
4. Employer payment to supervisors, if authorized

The 35 percent markup consists of payment for all overhead costs related to labor but not designated as costs of labor used in the direct performance of the work including:

1. Home office overhead
2. Field office overhead
3. Bond costs

4. Profit
5. Labor liability insurance
6. Other fixed or administrative costs that are not costs of labor used in the direct performance of the work

9-1.03C Materials

Material payment is full compensation for materials you furnish and use in the work. The Engineer determines the cost based on the material purchase price, including delivery charges, except:

1. A 15 percent markup is added.
2. Supplier discounts are subtracted whether you took them or not.
3. If the Engineer believes the material purchase prices are excessive, the Department pays the lowest current wholesale price for a similar material quantity.
4. If you procured the materials from a source you wholly or partially own, the determined cost is based on the lower of the:

    4.1. Price paid by the purchaser for similar materials from that source on Contract items
    4.2. Current wholesale price for those materials

5. If you do not submit a material cost record within 30 days of billing, the determined cost is based on the lowest wholesale price:

    5.1. During that period
    5.2. In the quantities used

9-1.03D Equipment Rental

9-1.03D(1) General

Equipment rental payment is full compensation for:

1. Rental equipment costs, including moving rental equipment to and from the site of work performed by change order using its own power.
2. Transport equipment costs for rental equipment that cannot be transported economically using its own power. No payment is made during transport for the transported equipment.
3. 15 percent markup.

If you want to return the equipment to a location other than its original location, the payment to move the equipment must not exceed the cost of returning the equipment to its original location. If you use the equipment for work other than work paid by force account, the transportation cost is included in the other work.

Before moving or loading the equipment, obtain authorization for the equipment rental's original location.

The Engineer determines rental costs:

1. Using rates in Labor Surcharge and Equipment Rental Rates:

    1.1. By classifying equipment using manufacturer's ratings and manufacturer-approved changes.
    1.2. Current during the work paid by force account.
    1.3. Regardless of equipment ownership; but the Department uses the rental document rates or minimum rental cost terms if:

        1.3.1. Rented from equipment business you do not own.
        1.3.2. The Labor Surcharge and Equipment Rental Rates hourly rate is $10.00 per hour or less.

2. Using rates established by the Engineer for equipment not listed in Labor Surcharge and Equipment Rental Rates. You may submit cost information that helps the Engineer establish the rental rate; but the Department uses the rental document rates or minimum rental cost terms if:

    2.1. Rented from equipment business you do not own.
    2.2. The Engineer establishes a rate of $10.00 per hour or less.

3. Using rates for transport equipment not exceeding the hourly rates charged by established haulers.

Equipment rental rates include the cost of:

1. Fuel
2. Oil
3. Lubrication
4. Supplies
5. Small tools that are not consumed by use
6. Necessary attachments
7. Repairs and maintenance
8. Depreciation
9. Storage
10. Insurance
11. Incidentals

The Department pays for small tools consumed by use. The Engineer determines payment for small tools consumed by use based on Contractor-submitted invoices.

9-1.03D(2) Equipment On the Job Site

For equipment on the job site at the time required to perform work paid by force account, the time paid is the time:

1. To move the equipment to the location of work paid by force account plus an equal amount of time to move the equipment to another location on the job site when the work paid by force account is completed
2. To load and unload equipment
3. Equipment is operated to perform work paid by force account and:

    3.1. Hourly rates are paid in 1/2-hour increments
    3.2 Daily rates are paid in 1/2-day increments

When rented equipment on the job site is used to perform work at force account not required by the original contract work, the Engineer may authorize rates in excess of those in Labor Surcharge and Equipment Rental Rates if:

1. You submit a request to use rented equipment
2. Equipment is not available from your owned equipment fleet or from your subcontractors
3. Rented equipment is from an independent rental company
4. Proposed equipment rental rate is reasonable
5. Engineer authorizes the equipment source and the rental rate before you use the equipment

The Department pays for fuel consumed during operation of rented equipment not included in the invoiced rental rate.

9-1.03D(3) Equipment Not On the Job Site Required for Original Contract Work

For equipment not on the job site at the time required to perform work paid by force account and required for original Contract work, the time paid is the time the equipment is operated to perform work paid by force account and the time to move the equipment to a location on the job site when the work paid by force account is completed.

The minimum total time paid is:

1. 1 day if daily rates are paid
2. 8 hours if hourly rates are paid

If daily rates are recorded, equipment:

1. Idled is paid as 1/2 day
2. Operated 4 hours or less is paid as 1/2 day
3. Operated 4 hours or more is paid as 1 day

If the minimum total time exceeds 8 hours and if hourly rates are listed, the Department rounds up hours operated to the nearest 1/2-hour increment and pays based on the following table. The table does not apply when equipment is not operated due to breakdowns; in which case rental hours are the hours the equipment was operated.

Equipment Rental Hours

Hours operated	Hours paid
0.0	4.00
0.5	4.25
1.0	4.50
1.5	4.75
2.0	5.00
2.5	5.25
3.0	5.50
3.5	5.75
4.0	6.00
4.5	6.25
5.0	6.50
5.5	6.75
6.0	7.00
6.5	7.25
7.0	7.5
7.5	7.75
≥8.0	hours used

9-1.03D(4) Equipment Not On the Job Site Not Required for Original Contract Work

For equipment not on the job site at the time required to perform work paid by force account and not required for original Contract work, the time paid is the time:

1. To move the equipment to the location of work paid by force account plus an equal amount of time to return the equipment to its source when the work paid by force account is completed
2. To load and unload equipment
3. Equipment is operated to perform work paid by force account

For this equipment, the Engineer may authorize rates in excess of those in Labor Surcharge and Equipment Rental Rates subject to the following:

1. Equipment is not available from your normal sources or from one of your subcontractors
2. Proposed equipment rental rate is reasonable
3. Engineer authorizes the equipment source and the rental rate before you use the equipment

9-1.03D(5) Non-Owner-Operated Dump Truck Rental

Submit the rental rate for non-owner-operated dump truck rental. The Engineer determines the payment rate. Payment for non-owner-operated dump truck rental is for the cost of renting a dump truck, including its driver. For the purpose of markup payment only, the non-owner-operated dump truck is rental equipment and the owner is a subcontractor.

9-1.04 EXTRA WORK PERFORMED BY SPECIALISTS

If the Engineer determines that you or your subcontractors are not capable of performing specialty extra work, a specialist may be used. Itemize the labor, material, and equipment rental costs unless it is not the special service industry's established practice to provide itemization; in which case, the Engineer accepts current market-priced invoices for the work.

The Engineer may accept an invoice as a specialist billing for work performed at an off–job site manufacturing plant or machine shop.

The Engineer determines the cost based on the specialist invoice price minus any available or offered discounts plus a 10 percent markup.

9-1.05 CHANGED QUANTITY PAYMENT ADJUSTMENTS

9-1.05A General

The unit prices specified in Section 9-1.05 are adjusted under Section 9-1.03, "Force Account."

9-1.05B Increases of More Than 25 Percent

If the total bid item quantity exceeds 125 percent of the quantity shown on the verified Bid Item List and if no approved Contract Change Order addresses payment for the quantity exceeding 125 percent, the Engineer may adjust the unit price for the excess quantity under Section 9-1.03, "Force Account," or the following:

1. The adjustment is the difference between the unit price and the unit cost of the total item pay quantity.
2. In determining the unit cost, the Engineer excludes the item's fixed costs. You have recovered the fixed costs in the payment for 125 percent shown on the verified Bid Item List.
3. After excluding fixed costs, the Engineer determines the item unit cost under Section 9-1.03, "Force Account."

If the payment for the number of units of a bid item in excess of 125 percent of the verified Bid Item List is less than $5,000 at the unit price, the Engineer may not adjust the unit price unless you request it.

9-1.05C Decreases of More Than 25 Percent

If the total item pay quantity is less than 75 percent of the quantity shown on the verified Bid Item List and if no approved Contract Change Order addresses payment for the quantity less than 75 percent, you may request a unit price adjustment. The Engineer may adjust the unit price for the decreased quantity under Section 9-1.03, "Force Account" or the following:

1. The adjustment is the difference between the unit price and the unit cost of the total pay quantity.
2. In determining the unit cost, the Engineer includes the item's fixed costs.
3. After including fixed costs, the Engineer determines the item unit cost under Section 9-1.03, "Force Account."

The Department does not pay more than 75 percent of the item total in the verified Bid Item List.

9-1.05D Eliminated Items

If the Engineer eliminates an item, the Department pays your costs incurred before the Engineer's elimination notification date.

If you order authorized material for an eliminated item before the notification date and the order cannot be canceled, either of the following occurs:

1. If the material is returnable to the vendor, the Engineer orders you to return the material and the Department pays your handling costs and vendor charges.
2. The Department pays your cost for the material and its handling and becomes the material owner.

The Engineer determines the payment for the eliminated bid item under Section 9-1.03, "Force Account."

9-1.06 WORK-CHARACTER CHANGES

The Department adjusts a bid item unit price based on the difference between the cost to perform the work as planned and the cost to perform the work as changed. The Engineer determines the payment adjustment under Section 9-1.03, "Force Account." The Department adjusts payment for only the work portion that changed in character.

9-1.07 PROGRESS PAYMENTS

9-1.07A General

The Department pays you based on Engineer-prepared monthly progress estimates. Each estimate reflects:

1. Total work completed during the pay period
2. Extra work bills if:
   2.1. Submitted by the 15th of a month

2.2. Approved by the 20th of a month
3. Amount for materials on hand
4. Amount earned for mobilization
5. Deductions
6. Withholds
7. Resolved potential claims
8. Payment adjustments

Submit certification stating the work complies with the QC procedures. The Engineer does not process a progress estimate without a signed certification.

You may protest a progress payment.

9-1.07B Schedule of Values

Section 9-1.07B applies to a lump sum bid item for which a schedule of values is specified to be submitted.

The sum of the amounts for the work units listed in the schedule of values must equal the lump sum price bid for the bid item.

Obtain authorization of a schedule of values before you perform work shown on the schedule. The Department does not process a progress payment for the bid item without an authorized schedule of values.

Accept progress payments for overhead, profit, bond costs, and other fixed or administrative costs as distributed proportionally among the items listed except that for a contract with a bid item for mobilization, accept progress payments for bond costs as included in the mobilization bid item.

For changed quantities of the work units listed, the Department adjusts payments in the same manner as specified for changed quantities of bid items under Section 9-1.05, "Changed Quantity Payment Adjustments."

9-1.07C Materials On Hand

A material on hand but not incorporated into the work is eligible for progress payment if:

1. Listed in a special provision as eligible and is in compliance with other Contract parts
2. Purchased
3. An invoice is submitted
4. Stored within the State and you submit evidence that the stored material is subject to the Department's control
5. Requested on the Department-furnished form

9-1.07D Mobilization

Mobilization is eligible for partial payments if the Contract includes a bid item for mobilization. The Department makes the partial payments under Pub Cont Code § 10264. If the Contract does not include a mobilization bid item, mobilization is included in the payment for the various bid items.

The Department pays the item total for mobilization in excess of 10 percent of the total bid in the 1st payment after Contract acceptance.

9-1.07E Withholds

9-1.07E(1) General

The Department may withhold payment for noncompliance.

The Department returns the noncompliance withhold in the progress payment following correction of noncompliance.

Withholds are not retentions under Pub Cont Code § 7107 and do not accrue interest under Pub Cont Code § 10261.5.

Withholds are cumulative and independent of deductions.

Section 9-1.07E does not include all withholds that may be taken; the Department may withhold other payments as specified.

9-1.07E(2) Progress Withholds

The Department withholds 10 percent of a partial payment for noncompliant progress. Noncompliant progress occurs when:

1. Total days to date exceed 75 percent of the revised Contract working days

2. Percent of working days elapsed exceeds the percent of value of work completed by more than 15 percent

The Engineer determines the percent of working days elapsed by dividing the total days to date by the revised Contract working days and converting the quotient to a percentage.

The Engineer determines the percent of value of work completed by summing payments made to date and the amount due on the current progress estimate, dividing this sum by the current total estimated value of the work, and converting the quotient to a percentage. These amounts are shown on the Progress Payment Voucher.

When the percent of working days elapsed minus the percent of value of work completed is less than or equal to 15 percent, the Department returns the withhold in the next progress payment.

9-1.07E(3) Performance Failure Withholds

During each estimate period you fail to comply with a Contract part, including submittal of a document as specified, the Department withholds a part of the progress payment. The documents include QC plans, schedules, traffic control plans, and water pollution control submittals.

For 1 performance failure, the Department withholds 25 percent of the progress payment but does not withhold more than 10 percent of the total bid.

For multiple performance failures, the Department withholds 100 percent of the progress payment but does not withhold more than 10 percent of the total bid.

9-1.07E(4) Stop Notice Withholds

The Department may withhold payments to cover claims filed under Civ Code § 3179 et seq.

Stop notice information may be obtained from the Office of External Accounts Payable, Division of Accounting.

9-1.07E(5) Penalty Withholds

Penalties include fines and damages that are proposed, assessed, or levied against you or the Department by a governmental agency or private lawsuit. Penalties are also payments made or costs incurred in settling alleged violations of federal, state, or local laws, regulations, requirements, or PLACs. The cost incurred may include the amount spent for mitigation or correcting a violation.

If you or the Department is assessed a penalty, the Department may withhold the penalty amount until the penalty disposition has been resolved. The Department may withhold penalty funds without notifying you.

Instead of the withhold, you may provide a bond equal to the highest estimated liability for any disputed penalties proposed.

9-1.07E(6)–9-1.07E(10) Reserved

9-1.07F Retentions

The Department does not retain moneys from progress payments due to the Contractor for work performed (Pub Cont Code § 7202).

9-1.07G–9-1.07K Reserved

9-1.08 PAYMENT AFTER CONTRACT ACCEPTANCE

9-1.08A General

Reserved

9-1.08B Payment Before Final Estimate

After Contract acceptance, the Department pays you based on the Engineer-prepared estimate that includes withholds and the balance due after deduction of previous payments.

9-1.08C Proposed Final Estimate

The Engineer estimates the amount of work completed and shows the amount payable in a proposed final estimate based on:

1. Contract items
2. Payment adjustments

3. Work paid by force account or agreed price
4. Extra work
5. Deductions

Submit either a written final estimate acceptance or a claim statement no later than the 30th day after receiving the proposed final estimate. Evidence of the Contractor's receipt of the final estimate and the Engineer's receipt of the Contractor's written acceptance or claim statement is a delivery service's proof of delivery or Engineer's written receipt if hand delivered.

If you claim that the final estimate is less than 90 percent of your total bid, the Department adjusts the final payment to cover your overhead. The adjustment is 10 percent of the difference between the total bid and the final estimate. The Department does not make this adjustment on a terminated contract.

9-1.08D Final Payment and Claims

9-1.08D(1) General

If you accept the proposed final estimate or do not submit a claim statement within 30 days of receiving the estimate, the Engineer furnishes the final estimate to you and the Department pays the amount due within 30 days. This final estimate and payment is conclusive except as specified in Sections 5-1.015, "Records," 6-1.075, "Guarantee," and 9-1.09, "Clerical Errors."

If you submit a claim statement within 30 days of receiving the Engineer's proposed final estimate, the Engineer furnishes a semifinal estimate to the Contractor and the Department pays the amount due within 30 days. The semifinal estimate is conclusive as to the amount of work completed and the amount payable except as affected by the claims or as specified in Sections 5-1.015, "Records," 6-1.075, "Guarantee," and 9-1.09, "Clerical Errors."

9-1.08D(2) Claim Statement

9-1.08D(2)(a) General

For each claim, submit a claim statement showing only the identification number that corresponds to the Full and Final Potential Claim Record and the final amount of additional payment requested except:

1. If the final amount of requested payment differs from the amount requested in the Full and Final Potential Claim Record
2. For a claim for quantities, withholds, deductions, liquidated damages, or change order bills
3. For an overhead claim

If the final amount of requested payment differs from the amount requested in the Full and Final Potential Claim Record, submit:

1. Identification number that corresponds to the Full and Final Potential Claim Record
2. Final amount of additional payment requested
3. Basis for the changed amount
4. Contract documentation that supports the changed amount
5. Statement of the reasons the Contract documentation supports the claim

The Engineer notifies you of an omission of or a disparity in the exclusive identification number. Within 15 days of the notification, correct the omission or disparity. If the omission or disparity is not resolved after the 15 days, the Engineer assigns a new number.

For a claim for quantities, withholds, deductions, or change order bills submit:

1. Final amount of additional payment requested
2. Enough detail to enable the Engineer to determine the basis and amounts of the additional payment requested

9-1.08D(2)(b) Overhead Claims

Include with an overhead claim:

1. Final amount of additional payment requested
2. Independent CPA audit report

Failure to submit the audit report with an overhead claim with the claim statement is a waiver of the overhead claim and operates as a bar to arbitration on the claim (Pub Cont Code § 10240.2).

The Department deducts an amount for field and home office overhead paid on added work from any claim for overhead. The value of the added work equals the value of the work completed minus the total bid. The home office overhead deduction equals 5 percent of the added work. The field office overhead deduction equals 5-1/2 percent of the added work.

If you intend to pursue a claim for reimbursement for field or home office overhead beyond that provided expressly by the Contract:

1. Notify the Engineer within 30 days of receipt of the proposed final estimate of your intent to seek reimbursement for specific overhead costs beyond that provided by the Contract
2. Specifically identify each claim and each date associated with each claim from which you seek reimbursement for specific overhead costs beyond that provided by the Contract
3. Timely submit all other claims
4. Within 30 days of receipt of the proposed final estimate, submit an audit report prepared by an independent CPA

    4.1. The audit report must show calculations with supporting documentation of actual home office and project field overhead costs
    4.2. The calculations must specify the actual daily rates for both field and home office overhead for the entire duration of the project expressed as a rate per working day
    4.3. The start and end dates of the actual project performance period, number of working days, overhead cost pools, and all allocation bases must be disclosed in the calculations of your actual field and home office overhead daily rates
    4.4. Neither daily rate may include a markup for profit

5. Field overhead costs from which the daily rate is calculated must be:

    5.1. Allowable under 48 CFR 31
    5.2. Supported by reliable records
    5.3. Related solely to the project
    5.4. Incurred during the actual project performance period
    5.5. Comprised of only time-related field overhead costs
    5.6. Not a direct cost

6. Home office overhead costs from which the daily rate is calculated must be:

    6.1. Allowable under 48 CFR 31
    6.2. Supported by reliable records
    6.3. Incurred during the actual project performance period
    6.4. Comprised of only fixed home office overhead costs
    6.5. Not a direct cost

The actual rate of time-related overhead is subject to authorization by the Engineer.

The CPA's audit must be performed under the Attestation Standards published by the American Institute of Certified Public Accountants. The CPA's audit report must express an opinion whether or not your calculations of your actual field and home office overhead daily rates comply with Section 9-1.08D(2)(b), "Overhead Claims." The attest documentation prepared by the CPA in connection with the audit must be reproduced and submitted for review with the audit report.

The Department provides markups for all work paid by force account. Overhead for field and home office costs are included in the markups. Overhead claims in excess of Contract markups are not allowed under the Contract. If you seek reimbursement for costs not allowed under the Contract, the Department does not pay your cost of performing the independent CPA examination specified in section 9-1.08D(2)(b), "Overhead Claims," including preparation of the audit report.

9-1.08D(2)(c) Declaration

Submit a declaration that includes the following language with the claim statement:

I declare under penalty of perjury, according to the laws of the State of California, that the foregoing claims, with specific reference to the California False Claims Act (Govt Code § 12650 et seq.) and to the extent the project contains federal funding, the U.S. False Claims Act (31 USC § 3729 et seq.), are true and correct, and that this declaration was signed on _____(date)_____, 20__ at _____, California.

9-1.08D(2)(d) Waiver

A claim is waived if:

1. Claim does not have a corresponding Full and Final Potential Claim Record identification number
2. Claim does not have the same nature, circumstances, and basis of claim as the corresponding Full and Final Potential Claim Record
3. Claim is not included in the claim statement
4. You do not comply with the claim procedures
5. You do not submit the declaration specified in 9-1.08D(2)(c), "Declaration"

9-1.08D(3) Final Determination of Claims

Failure to allow timely access to claim supporting data when requested waives the claim.

The Department's costs in reviewing or auditing a claim not supported by the Contractor's accounting or other records are damages incurred by the State within the meaning of the California False Claims Act.

If the Engineer determines that a claim requires additional analysis, the Engineer schedules a board of review meeting. Meet with the board of review and make a presentation supporting the claim.

After claim review completion by the Engineer or board of review, the Department makes the final determination of claims and furnishes it to the Contractor.

After the determination, the Engineer furnishes a final estimate to the Contractor and the Department pays the amount due within 30 days. The final estimate is conclusive as to the amount of work completed and the amount payable except as specified in Sections 5-1.015, "Records," 6-1.075, "Guarantee," and 9-1.09, "Clerical Errors."

The Contractor's failure to comply with the claim procedures is a bar to arbitration under Pub Cont Code § 10240.2.

9-1.09 CLERICAL ERRORS

For 3 years after Contract acceptance, estimates and payments are open to correction and adjustment for clerical errors. Either the Department or the Contractor pays to the other the amount due except for clerical errors resulting in an adjustment less than $200; in which case, no payment is made.

9-1.10 ARBITRATION

Pub Cont Code § 10240 through 10240.13 provides for the resolution of contract claims by arbitration.

Start arbitration by filing a complaint with the Office of Administrative Hearings in Sacramento (1 CA Code Regs § 1350). File the arbitration complaint no later than 90 days after receiving the Department's final written decision on a claim (Pub Cont Code § 10240.1).

^^

SECTION 10 DUST CONTROL
(Issued 02-06-09)

Replace Section 10 with:
SECTION 10 (BLANK)

^^

SECTION 11 MOBILIZATION
(Issued 06-05-09)

Replace Section 11 with:
SECTION 11 (BLANK)

^^

SECTION 12 CONSTRUCTION AREA TRAFFIC CONTROL DEVICES
(Issued 11-07-08)

In Section 12-1.01 in the 2nd paragraph, replace the 1st sentence with:

Attention is directed to Part 6 of the California MUTCD.

Replace Section 12-2.01 with:

12-2.01 FLAGGERS

Flaggers while on duty and assigned to traffic control or to give warning to the public that the highway is under construction and of any dangerous conditions to be encountered as a result thereof, shall perform their duties and shall be provided with the necessary equipment in conformance with Part 6 of the California MUTCD. The equipment shall be furnished and kept clean and in good repair by the Contractor at the Contractor's expense.

All flaggers shall wear safety apparel meeting the requirements of ANSI/ISEA 107-2004 for Class 2 or 3 garment and complying with 71 Fed Reg 67792.

In Section 12-3.01 replace the 1st paragraph with:

In addition to the requirements in Part 6 of the California MUTCD, all devices used by the Contractor in the performance of the work shall conform to the provisions in this Section 12-3.

In Section 12-3.06 in the 1st paragraph, replace the 2nd sentence with:

Construction area signs are shown in or referred to in Part 6 of the California MUTCD.

In Section 12-3.06 in the 4th paragraph, replace the 1st sentence with:

All construction area signs shall conform to the dimensions, color and legend requirements of the plans, Part 6 of the California MUTCD and these specifications.

In Section 12-3.06 in the 8th paragraph, replace the 1st sentence with:

Used signs with the specified sheeting material will be considered satisfactory if they conform to the requirements for visibility and legibility and the colors conform to the requirements in Part 6 of the California MUTCD.

^^

SECTION 14 (BLANK)
(Issued 06-01-11)

Replace Section 14 with:

SECTION 14 ENVIRONMENTAL STEWARDSHIP

14-1 GENERAL

14-1.01 GENERAL

Environmental stewardship includes both environmental compliance and environmental resource management.

If an ESA is shown on the plans:

1. The boundaries shown are approximate; the Department marks the exact boundaries on the ground
2. Do not enter the ESA unless authorized
3. If the ESA is breached, immediately:
   3.1. Secure the area and stop all operations within 60 feet of the ESA boundary
   3.2. Notify the Engineer
4. If the ESA is damaged, the Department determines what efforts are necessary to remedy the damage and who performs the remedy; you are responsible for remedies and charges.

14-2 CULTURAL RESOURCES

14-2.01 GENERAL

Reserved

14-2.02 ARCHAEOLOGICAL RESOURCES

If archaeological resources are discovered at the job site, do not disturb the resources and immediately:

1. Stop all work within a 60-foot radius of the discovery
2. Protect the discovery area
3. Notify the Engineer

The Department investigates. Do not move archaeological resources or take them from the job site. Do not resume work within the discovery area until authorized.

If, in the opinion of the Engineer, completion of the work is delayed or interfered with by reason of an archaeological find, or investigation or recovery of archeological materials, you will be compensated for resulting losses, and an extension of time will be granted, in the same manner as provided for in Section 8-1.09, "Right of Way Delays."

If ordered, furnish resources to assist in the investigation or recovery of archaeological resources. This work will be paid for as extra work as specified in Section 4-1.03D, "Extra Work."

14-2.03 ARCHAEOLOGICAL MONITORING AREA

Section 14-2.03 applies if an AMA is described in the Contract.

The Department assigns an archaeological monitor to monitor job site activities within the AMA. Do not work within the AMA unless the archeological monitor is present.

The Engineer and the Department archaeological monitor conduct an AMA location field review with you at least 5 business days before start of work. The Department marks the exact boundaries of the AMA on the ground.

If temporary fence (Type ESA) or other exclosure for an AMA is described in the Contract, install temporary fence (Type ESA) or other exclosure to define the boundaries of the AMA during the AMA location field review.

At least 5 business days before starting work within an AMA, submit a schedule of days and hours to be worked for the Engineer's approval. If you require changes in the schedule, submit an update for the Engineer's approval at least 5 business days before any changed work day.

If archaeological resources are discovered within an AMA, comply with Section 14-2.02, "Archaeological Resources."

14-2.04 HISTORIC STRUCTURES

Reserved

14-3 COMMUNITY IMPACTS AND ENVIRONMENTAL JUSTICE

Reserved

14-4 NATIVE AMERICAN CONCERNS

Reserved

14-5 AESTHETICS

Reserved

14-6 BIOLOGICAL RESOURCES

14-6.01 GENERAL

Reserved

14-6.02 BIRD PROTECTION

Protect migratory and nongame birds, their occupied nests, and their eggs.

The Department anticipates nesting or attempted nesting from February 15 to September 1.

The federal Migratory Bird Treaty Act, 16 USC § 703–711, and 50 CFR Pt 10 and Fish & Game Code §§ 3503, 3513, and 3800 protect migratory and nongame birds, their occupied nests, and their eggs.

The federal Endangered Species Act of 1973, 16 USC §§ 1531 and 1543, and the California Endangered Species Act, Fish & Game Code §§ 2050–2115.5, prohibit the take of listed species and protect occupied and unoccupied nests of threatened and endangered bird species.

The Bald and Golden Eagle Protection Act, 16 USC § 668, prohibits the destruction of bald and golden eagles and their occupied and unoccupied nests.

If migratory or nongame bird nests are discovered that may be adversely affected by construction activities or an injured or killed bird is found, immediately:

1. Stop all work within a 100-foot radius of the discovery.
2. Notify the Engineer.

The Department investigates. Do not resume work within the specified radius of the discovery until authorized.

When ordered, use exclusion devices, take nesting prevention measures, remove and dispose of partially constructed and unoccupied nests of migratory or nongame birds on a regular basis to prevent their occupation, or perform any combination of these. This work will be paid for as extra work as specified in Section 4-1.03D, "Extra Work."

Prevent nest materials from falling into waterways.

Bird protection that causes a delay to the controlling activity is a condition unfavorable to the suitable prosecution of work as specified in Section 8-1.05, "Temporary Suspension of Work."

14-7 PALEONTOLOGICAL RESOURCES

If paleontological resources are discovered at the job site, do not disturb the material and immediately:

1. Stop all work within a 60-foot radius of the discovery
2. Protect the area
3. Notify the Engineer

The Department investigates and modifies the dimensions of the protected area if necessary. Do not move paleontological resources or take them from the job site. Do not resume work within the specified radius of the discovery until authorized.

14-8 NOISE AND VIBRATION

14-8.01 GENERAL

Reserved

14-8.02 NOISE CONTROL

Do not exceed 86 dBA LMax at 50 feet from the job site activities from 9 p.m. to 6 a.m.

Equip an internal combustion engine with the manufacturer-recommended muffler. Do not operate an internal combustion engine on the job site without the appropriate muffler.

14-9 AIR QUALITY

14-9.01 AIR POLLUTION CONTROL

Comply with air pollution control rules, regulations, ordinances, and statutes that apply to work performed under the Contract, including air pollution control rules, regulations, ordinances, and statutes provided in Govt Code § 11017 (Pub Cont Code § 10231).

Do not burn material to be disposed of.

14-9.02 DUST CONTROL

Prevent and alleviate dust by applying water, dust palliative, or both under Section 14-9.01.

Apply water under Section 17, "Watering."

Apply dust palliative under Section 18,"Dust Palliative."

If ordered, apply water, dust palliative, or both to control dust caused by public traffic. This work will be paid for as extra work as specified in Section 4-1.03D, "Extra Work."

14-10 SOLID WASTE DISPOSAL AND RECYCLING

14-10.01 SOLID WASTE DISPOSAL AND RECYCLING

Submit an annual Solid Waste Disposal and Recycling Report between January 1 and 15 for each year work is performed under the Contract at any time during the previous calendar year. Show the types and amounts of project-generated solid waste taken to or diverted from landfills or reused on the project from January 1 through December 31 of the previous calendar year.

Submit a final annual Solid Waste Disposal and Recycling Report within 5 business days after Contract acceptance. Show the types and amounts of project-generated solid waste taken to or diverted from landfills or reused on the project from January 1 to Contract acceptance.

For each failure to submit a completed form, the Department withholds $10,000.

14-11 HAZARDOUS WASTE AND CONTAMINATION

14-11.01 GENERAL

Reserved

14-11.02 ASBESTOS AND HAZARDOUS SUBSTANCES

Upon discovery, immediately stop working in and notify the Engineer of areas where asbestos or a hazardous substance is present if the:

1. Contractor reasonably believes the substance is asbestos as defined in Labor Code § 6501.7 or a hazardous substance as defined in Health & Safety Code §§ 25316 and 25317
2. Presence is not described in the Contract
3. Substance has not been made harmless

14-12 OTHER INTERAGENCY RELATIONS

Reserved

14-13 PAYMENT

Payment for work specified in Section 14 is included in the payment for the bid items involved unless:

1. Bid item for the work is shown in the verified Bid Item List
2. Work is specified as paid for as extra work

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SECTION 15 EXISTING HIGHWAY FACILITIES

(Issued 05-01-09)

In Section 15-1.02 replace the 1st paragraph with:

Existing facilities which are to remain in place shall be protected in conformance with the provisions in Sections 5-1.18, "Property and Facility Preservation," and 7-1.12, "Indemnification and Insurance."

^^

SECTION 19 EARTHWORK
(Issued 09-16-11)

Replace Section 19-1.02 with:

19-1.02 (BLANK)

Replace Section 19-1.03 with:

19-1.03 GRADE TOLERANCE

Immediately prior to placing subsequent layers of material thereon, the grading plane shall conform to one of the following:

A. When hot mix asphalt is to be placed on the grading plane, the grading plane at any point shall not vary more than 0.05 foot above or below the grade established by the Engineer.
B. When subbase or base material to be placed on the grading plane is to be paid for by the ton, the grading plane at any point shall not vary more than 0.10 foot above or below the grade established by the Engineer.
C. When the material to be placed on the grading plane is to be paid for by the cubic yard, the grading plane at any point shall be not more than 0.05 foot above the grade established by the Engineer.

In Section 19-3.025C replace the 1st paragraph with:

Cementitious material used in soil cement bedding shall conform to the provisions in Section 90-2.01, "Cementitious Materials." Supplementary cementitious material will not be required.

In Section 19-3.025C replace the 4th paragraph with:

The aggregate, cementitious material, and water shall be proportioned either by weight or by volume. Soil cement bedding shall contain not less than 282 pounds of cementitious material per cubic yard. The water content shall be sufficient to produce a fluid, workable mix that will flow and can be pumped without segregation of the aggregate while being placed.

In Section 19-3.06 replace the 9th paragraph with:

Unless otherwise shown on the plans or specified in these specifications or the special provisions, material for structure backfill to be compacted to a relative compaction of not less than 90 percent, except material to be placed behind retaining walls, shall consist of material free of rocks, broken concrete, other solid material exceeding 3 inches in greatest dimension, or organic or other unsatisfactory material.

In Section 19-3.062 replace the 1st paragraph with:

Slurry cement backfill shall consist of a fluid, workable mixture of aggregate, cementitious material, and water.

In Section 19-3.062 replace the 5th paragraph with:

Cementitious material shall conform to the provisions in Section 90-2.01, "Cementitious Materials." Supplementary cementitious material will not be required.

In Section 19-3.062 replace the 8th paragraph with:

The aggregate, cementitious material, and water shall be proportioned either by weight or by volume. Slurry cement backfill shall contain not less than 188 pounds of cementitious material per cubic yard. The water content

shall be sufficient to produce a fluid, workable mix that will flow and can be pumped without segregation of the aggregate while being placed.

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SECTION 20 EROSION CONTROL AND HIGHWAY PLANTING
(Issued 04-20-12)

Replace Section 20-2.03 with:

20-2.03 SOIL AMENDMENT

Soil amendment must comply with the Food & Agri Code.

In Section 20-2.10 delete the 8th, 9th, and 10th paragraphs.

In Section 20-3.04A delete the last paragraph.

In Section 20-4.026 replace the 3rd paragraph with:

Oil or pelleted forms of pesticides for weed control shall not be used.

Replace Section 20-4.055 with:

20-4.055 PRUNING

Prune plants under ANSI A300 (Part 1) published by the Tree Care Industry Association.

^^

SECTION 24 LIME STABILIZATION
(Issued 06-05-09)

Replace Section 24 with:

SECTION 24 LIME STABILIZED SOIL

24-1.01 GENERAL

24-1.01A Summary

Section 24 includes specifications for stabilizing soil by mixing lime and water with soil and compacting the mixture to the specified dimensions.

24-1.01B Definitions

lime: Quicklime made from high-calcium or dolomitic sources specified under ASTM C 51. For high-calcium quicklime, the calcium oxide content must be greater than 90 percent. For dolomitic quicklime, the calcium oxide content must be greater than 55 percent and the combined calcium oxide and magnesium oxide content must be greater than 90 percent.

mellowing period: The time between the initial and final mixing to promote initial chemical reactions between lime, water, and soil.

24-1.01C Submittals

From 30 to 180 days before use, submit one 10-pound sample of each lime product proposed and from each source.

Submit lime samples in airtight containers under ASTM C 50. Mark the sample date on the container. Include the MSDS and chemical and physical analysis with the submittal.

With the lime samples, submit a Certificate of Compliance from the pre-qualified lime source under Section 6-1.07, "Certificates of Compliance," with a statement certifying the lime furnished is the same as that pre-qualified.

Fifteen days before starting soil stabilization activities, submit for the Engineer's approval a laboratory to perform quality control tests. The laboratory must be qualified under the Department's Independent Assurance Program.

Before you apply lime in slurry form, submit the slurry's lime content for Engineer's approval 25 days before application.

Before performing quality control sampling and testing, submit the time and location the sampling and testing will occur. Submit quality control testing results within 24 hours of receiving the results.

Submit a weighmaster certificate or bill of lading with each load of lime delivered to the jobsite.

24-1.01D Quality Control and Assurance

General

Perform quality control testing in the presence of the Engineer.

Place unique, sequentially numbered lock seals on each load and affix them to trailer blow down valves that are locked open. The bill of lading for each lime delivery must have that specific lock seal number legibly and visibly imprinted.

The Engineer samples each lime delivery truck at the job site and randomly tests them off-site.

Pre-qualification of Lime Sources

Lime sources must be listed on the Department's pre-qualified products list. The list is available at the METS web site.

The pre-qualified list for lime sources describes the application procedures for inclusion on the list.

Preparing Soil

After you prepare an area for lime soil stabilization, test the soil to be stabilized every 500 cubic yards for relative compaction under California Test 231 and moisture content under California Test 226, and verify the surface grades.

Applying Lime

The Engineer determines the final application rate for each lime product proposed from the samples submitted. If the soil being stabilized changes, the Engineer changes the application rate. Based on California Test 373, the Engineer reports the application rates as the percent of lime by dry weight of soil. The Engineer provides the optimum moisture content determined under California Test 373 for each application rate.

Before applying lime, measure the temperature at the ground surface.

If lime in dry form is used, the Engineer verifies the application rate using the drop pan method once per 40,000 square feet stabilized, or twice per day, whichever is greater.

If lime in slurry form is used, report the quantity of slurry placed by measuring the volume of slurry in the holding tank once per 40,000 square feet stabilized, or twice per day, whichever is greater.

Mixing

For each day of initial mixing, test the moisture content. Sample the material immediately after initial mixing.

Randomly test the adequacy of the final mixing with a phenolphthalein indicator solution.

During mixing operations, measure the ground temperature at full mixing depth.

After mixing and before compacting, determine maximum density under California Test 216 from composite samples of the mixed material and at each distinct change in material. Test the moisture content of the mixed material under California Test 226. Test the gradation for compliance with "Materials."

Compaction

Test relative compaction on a wet weight basis.

After initial compaction, determine in-place density under California Test 231 and moisture content under California Test 226 at the same locations. The testing frequency must be 1 test per 250 cubic yards of lime stabilized soil. Test in 0.50-foot depth intervals.

Before requesting to compact material in layers greater than 0.50 foot, construct a test strip in the production area and demonstrate the test strip passes compaction tests using the proposed thickness. The test strip must contain no more material than 1 day's production. The Engineer tests at not more than 0.50-foot depth intervals regardless of the thickness of your layers.

Construct test pads by scraping away material to the depth ordered by the Engineer. If a compaction test fails corrective action must include the layers of material already placed above the test pad elevation.

Finish Grading

Do not proceed with construction activities for subsequent layers of material until the Engineer verifies the final grades of the lime stabilized soil.

Dispute Resolution

You and the Engineer must work together to avoid potential conflicts and to resolve disputes regarding test result discrepancies. Notify the Engineer within 5 days of receiving a test result if you dispute the test result.

If you or the Engineer dispute each other's test results, submit written quality control test results and copies of paperwork including worksheets used to determine the disputed test results to the Engineer. An Independent Third Party (ITP) performs referee testing. Before the ITP participates in a dispute resolution, the ITP must be accredited under the Department's Independent Assurance Program. The ITP must be independent of the project. By mutual agreement, the ITP is chosen from:

1. A Department laboratory
2. A Department laboratory in a district or region not in the district or region the project is located
3. The Transportation Laboratory
4. A laboratory not currently employed by you or your lime producer

If split quality control or acceptance samples are not available, the ITP uses any available material representing the disputed material for evaluation.

24-1.02 MATERIALS

24-1.02A Lime

Lime must comply with ASTM C 977 and the following:

Lime

Quality Characteristic	ASTM	Specification
Available Calcium and Magnesium Oxide(min., %)	C 25[a]	High Calcium Quicklime: CaO > 90 Dolomitic Quicklime: CaO > 55 and CaO + MgO > 90
Loss on ignition (max., %)	C 25	7 (total loss) 5 (carbon dioxide) 2 (free moisture)
Slaking rate	C 110	30 °C rise in 8 minutes

Notes:
[a] You may use ASTM C25 or ASTM C1301 and ASTM C1271.

A 0.5-pound sample of lime dry-sieved in a mechanical sieve shaker for 10 minutes ±30 seconds must comply with:

Sieve Sizes	Percentage Passing
3/8-inch	98-100

Slurry must:

1. Be free of contaminants
2. Contain at least the minimum dry solids
3. Have uniform consistency

If you prepare lime slurry, prepare it at the jobsite.

24-1.02B Water

If available, use potable water. Inform the Engineer if a water source other than potable water is used. If not using potable water, water for mixing soil and lime must:

1. Contain no more than 650 parts per million of chlorides as Cl, and no more than 1,300 parts per million of sulfates as SO_4
2. Not contain an amount of impurities that will cause a reduction in the strength of the stabilize soil

24-1.02C Mixed Material

Take a composite sample from 5 random locations after initial mixing. The moisture content of the composite sample tested under California Test 226 must be a minimum of 3 percent greater than optimum. Determine the moisture versus density relationship of the composite sample material determined under California Test 216, except Part 2, Section E, Paragraph 6 is modified as follows:

> After adjustment of the moisture content, compact each of the remaining test specimens in the mold, then record the water adjustment, tamper reading, and the corresponding adjusted wet density from the chart on Table 1 using the column corresponding to the actual wet weight of the test specimen compacted. Note each of these wet weights on Line I.

The mixed material before compaction excluding rock must comply with:

Sieve Sizes	Percentage Passing
1"	98 - 100
No. 4	60 - 100

24-1.02D Curing Treatment

Curing treatment may be any of the following:

1. Water cure
2. Curing seal
3. Moist material blanket

Curing seal must be SS or CSS grade asphaltic emulsion under Section 94, "Asphaltic Emulsions."

24-1.03 CONSTRUCTION

24-1.03A General

If using different types of lime or lime from more than one source, do not mix them. The Engineer determines separate application rates.

Deliver lime in full loads unless it is the last load needed for a work shift.

Apply lime at ground temperatures above 35 °F. Do not apply lime if you expect the ground temperature to drop below 35 °F before you complete mixing and compacting.

During mixing, maintain the in-place moisture of the soil to be stabilized a minimum 3 percent above the optimum moisture determined under California Test 216 as modified in "Mixed Material." During compaction and

finish grading, add water to the surface to prevent drying until the next layer of mixed material is placed, or until you apply curing treatment.

Scarify the surface of lime stabilized soil at least 2 inches between each layer. Do not scarify the final surface of the lime stabilized soil.

Between the time of applying lime and 3 days after applying curing treatment, only allow equipment or vehicles on the soil being stabilized that are essential to the work.

24-1.03B Preparing Soil

Except for soil clods, remove rocks or solids larger than 1/3 of the layer thickness. Regardless of the layer thickness, remove rocks and solids greater than 4 inches. Notify the Engineer if you encounter rocks or solids greater than 1/3 of the layer thickness.

Before adding lime, place the soil to be stabilized to within 0.08 foot of the specified lines and grades and compact to not less than 90 percent relative compaction.

24-1.03C Applying Lime

Apply lime uniformly over the area to be stabilized using a vane spreader.

The Engineer determines the final application rate. Do not vary from this application rate by more than 5 percent.

Apply lime in dry form. If you request and the Engineer approves, you may apply lime in slurry form.

Lime slurry must be in suspension during application. Apply lime slurry uniformly making successive passes over a measured section or roadway until the specified lime content is reached. Apply the residue from lime slurry over the length of the roadway being processed.

24-1.03D Mixing

Lime and soil to be stabilized must be mixed uniformly at least twice to within 0.10 foot of the specified depth at any point. If the mixing depth exceeds the specified depth by more than 10 percent, add lime in proportion to the exceeded depth. The Department does not pay for this added lime.

Mix lime on the same day it is applied. After the initial mixing, allow a mellowing period for at least 36 hours before final mixing. Moisture content during the mellowing period determined under California Test 226 must be at least 3 percent higher than the optimum moisture content. You may add water and mix during the mellowing period.

Remix until the mixture is uniform with no streaks or pockets of lime.

Except for clods larger than 1 inch, mixed material must have a color reaction with sprayed phenolphthalein alcohol indicator solution.

Complete all the mixing work within 7 days of the initial application of lime.

24-1.03E Compaction

Begin compacting immediately after final mixing, but not less than 36 hours after the beginning of initial mixing.

Compact by using sheepsfoot or segmented wheel rollers immediately followed by steel drum or pneumatic-tired rollers. Do not use vibratory rollers.

If you request and the Engineer approves, you may compact mixed material in layers greater than 0.50 foot.

If the specified thickness is 0.50 foot or less, compact in one layer. If the specified thickness is more than 0.50 foot, compact in 2 or more layers of approximately equal thickness. The maximum compacted thickness of any one layer must not exceed 0.50 foot unless you first demonstrate your equipment and methods provide uniform distribution of lime and achieve the specified compaction.

Use other compaction methods in areas inaccessible to rollers.

Compact the lime stabilized soil to at least 95 percent relative compaction determined under California Test 216 as modified under "Mixed Material." The relative compaction is determined on a wet weight basis.

24-1.03F Finish Grading

Maintain the moisture content of the lime stabilized soil through the entire finish grading operation at a minimum of 3 percent above optimum moisture content.

The finished surface of the lime stabilized soil must not vary more than 0.08 foot above or below the grade established by the Engineer unless the lime stabilized soil is to be covered by material paid for by the cubic yard, in which case the finished surface may not vary above the grade established by the Engineer.

If lime stabilized soil is above the allowable tolerance, trim, remove, and dispose of the excess material. Do not leave loose material on the finished surface. If finish rolling cannot be completed within 2 hours of trimming, defer trimming.

If lime stabilized soil is below the allowable tolerance, you may use trimmed material to fill low areas only if final grading and final compaction occurs within 48 hours of beginning initial compaction. Before placing trimmed material, scarify the surface of the area to be filled at least 2 inches deep.

Finish rolling of trimmed surfaces must be performed with at least 1 complete coverage with steel drum or pneumatic-tired rollers.

24-1.03G Curing

General

Choose the method of curing.

Apply the chosen cure method within 48 hours of completing the sheepsfoot or segmented wheel compaction. Apply the chosen cure method within the same day of any trimming and finish grading.

Water Cure

Water may be used to cure the finished surface before you place a moist material blanket, or apply curing seal. Keep the surface above the optimum moisture content of the lime stabilized soil. Use this method for no more than 3 days, after which you must place a curing seal or moist material blanket.

Curing Seal

Curing seal equipment must have a gage indicating the volume of curing seal in the storage tank.

If curing seal is used, apply it:

1. To the finished surface of lime stabilized soil under Section 94-1.06, "Applying," of the Standard Specifications
2. At a rate from 0.10 to 0.20 gallon per square yard. The Engineer determines the exact rate
3. When the lime stabilized soil is at optimum moisture
4. When the ambient temperature is above 40 °F and rising

Repair damaged curing seal the same day the damage occurs.

Moist Material Blanket

Moist material blanket consists of moist structural material. Moist material blanket may be a temporary or permanent layer of material of sufficient thickness to prevent drying of the lime stabilized soil. You may use moist material blanket if the lime stabilized soil can bear the weight of construction equipment. Maintain the moist material blanket above the optimum moisture content, as appropriate, until the next structural layer is placed.

24-1.04 MEASUREMENT AND PAYMENT

Lime stabilized soil is measured by the square yard determined from horizontal measurements of the planned surface of the lime stabilized soil.

Curing seal is measured under Section 94, "Asphaltic Emulsions." The amount of curing seal used is determined from the gauge specified for the curing equipment.

The contract item prices for the work involved with lime stabilized soil are paid:

1. Per square yard for lime stabilized soil
2. Per ton for lime
3. Per ton for asphaltic emulsion (curing seal)

Payment for the contract items involved with lime stabilized soil includes full compensation for furnishing all labor, materials, tools, equipment, and incidentals, and for doing all the work involved in constructing the lime stabilized soil, complete in place, as shown on the plans, as specified in these specifications and the special provisions, and as directed by the Engineer.

The Department does not adjust payment for lime.

Quantities of lime wasted or disposed of in a manner not specified, or remaining on hand after completion of the work, will not be paid for. If you use a partial load of lime, weigh the truck and the remaining lime on a scale under Section 9-1.01, "Measurement of Quantities," and submit a weighmaster certificate to the Engineer.

Full compensation for preparing soil to be stabilized is included in the contract price paid per square yard for lime stabilized soil, and no separate payment is made therefor, except removing and disposing of rocks and solids larger 1/3 of the layer thickness and larger than 4 inches from native soil or embankment other than imported borrow is paid for as extra work as provided in Section 4-1.03D, "Extra Work." Removing and disposing of rocks and solids larger than 1/3 of the lift thickness and larger than 4 inches from imported borrow is at your expense.

Full compensation for mixing, compacting, and maintaining the moisture content of the lime stabilized soil is included in the contract price paid per square yard for lime stabilized soil, and no separate payment is made therefor.

Full compensation for applying lime is included in the contract price paid per ton for lime, and no additional compensation is allowed therefor.

If the dispute resolution ITP determines the Engineer's test results are correct, the Engineer deducts the ITP's testing costs from payments. If the ITP determines your test results are correct, the State pays the ITP testing costs.

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SECTION 25 AGGREGATE SUBBASES
(Issued 02-16-07)

In Section 25-1.02A replace the 1st paragraph with:

Aggregate must be clean and free from organic matter and other deleterious substances. Aggregate must consist of any combination of:

1. Broken stone
2. Crushed gravel
3. Natural rough surfaced gravel
4. Sand
5. Up to 100 percent of any combination of processed:

    5.1. Asphalt concrete
    5.2. Portland cement concrete
    5.3. Lean concrete base
    5.4. Cement treated base

Replace Section 25-1.02B with:

25-1.02B Class 4 Aggregate Subbase

Aggregate must be clean and free from organic matter and other deleterious substances. Aggregate must consist of any combination of:

1. Broken stone
2. Crushed gravel
3. Natural rough surfaced gravel
4. Sand
5. Up to 100 percent of any combination of processed:

    5.1. Asphalt concrete
    5.2. Portland cement concrete
    5.3. Lean concrete base
    5.4. Cement treated base

^^

SECTION 26 AGGREGATE BASES
(Issued 02-16-07)

In Section 26-1.02A replace the 1st paragraph with:

Aggregate must be clean and free from organic matter and other deleterious substances. Aggregate must consist of any combination of:

1. Broken stone
2. Crushed gravel
3. Natural rough surfaced gravel
4. Sand
5. Up to 100 percent of any combination of processed:

    5.1. Asphalt concrete
    5.2. Portland cement concrete
    5.3. Lean concrete base
    5.4. Cement treated base

In Section 26-1.02B replace the 1st paragraph with:

Aggregate must be clean and free from organic matter and other deleterious substances. Aggregate must consist of any combination of:

1. Broken stone
2. Crushed gravel
3. Natural rough surfaced gravel
4. Sand
5. Up to 100 percent of any combination of processed:

    5.1. Asphalt concrete
    5.2. Portland cement concrete
    5.3. Lean concrete base
    5.4. Cement treated base

^^

SECTION 27 CEMENT TREATED BASES
(Issued 07-31-07)

In Section 27-1.02 replace the 1st paragraph with:

Cement shall be Type II portland cement conforming to the provisions in Section 90-2.01A, "Cement."

In Section 27-1.02 replace the 3rd paragraph with:

Aggregate for use in Class A cement treated base shall be of such quality that when mixed with cement in an amount not to exceed 5 percent by weight of the dry aggregate and compacted at optimum moisture content, the compressive strength of a sample of the compacted mixture shall not be less than 750 pounds per square inch at 7 days, when tested by California Test 312.

In Section 27-1.02 replace the 4th paragraph with:

Aggregate for use in Class B cement treated base shall have a Resistance (R-value) of not less than 60 before mixing with cement and a Resistance (R-value) of not less than 80 after mixing with cement in an amount not to exceed 2.5 percent by weight of the dry aggregate.

In Section 27-1.07 replace the 9th paragraph with:

When surfacing material is hot mix asphalt, the low areas shall be filled with hot mix asphalt conforming to the requirements for the lowest layer of hot mix asphalt to be placed as surfacing. This filling shall be done as a separate operation prior to placing the lowest layer of surfacing, and full compensation for this filling will be considered as included in the contract price paid for cement treated base and no additional compensation will be allowed therefor.

^^

SECTION 28 LEAN CONCRETE BASE
(Issued 05-15-09)

In Section 28-1.02 replace the 1st paragraph with:

Cement shall be Type II portland cement conforming to the provisions in Section 90-2.01A, "Cement."

In Section 28-1.02 replace the 6th paragraph with:

Aggregate shall be of such quality that, when mixed with cement in an amount not to exceed 300 pounds per cubic yard, and tested in conformance with the requirements in California Test 548, the compressive strength of a sample will be not less than 700 pounds per square inch at 7 days.

Replace Section 28-1.05 with:

Placing of lean concrete base shall conform to the provisions for placing concrete pavement in Section 40-3.04, "Placing Concrete," except that the third paragraph in Section 40-3.04A, "General," shall not apply.

Unless otherwise required by the plans or the special provisions, lean concrete base shall be constructed in not less than 12-foot widths separated by construction joints. Lean concrete base constructed monolithically in widths greater than 26 feet shall be constructed with a longitudinal contraction joint offset not more than 3 feet from the centerline of the width being constructed.

Longitudinal contraction joints in lean concrete base shall be constructed in conformance with the provisions in Section 40-3.08E, "Sawing Method."

When concrete pavement is to be placed over lean concrete base, longitudinal construction joints and longitudinal contraction joints in the lean concrete base shall not be within one foot of planned longitudinal contraction joints nor longitudinal construction joints in the concrete pavement.

Lean concrete base shall not be mixed nor placed while the atmospheric temperature is below 35 °F, and shall not be placed on frozen ground.

In Section 28-1.06 replace the 1st and 2nd paragraphs with:

Lean concrete base shall be spread, compacted, and shaped in conformance with the provisions in Section 40-3.04D, "Stationary Side Form Construction," and Section 40-3.04E, "Slip-Form Construction."

In advance of curing operations, lean concrete base to be surfaced with hot mix asphalt shall be textured with a drag strip of burlap, a broom or a spring steel tine device which will produce scoring in the finished surface. The scoring shall be parallel with the centerline or transverse thereto. The operation shall be performed at a time and in a manner to produce the coarsest texture practical for the method used.

In Section 28-1.08 replace the 2nd paragraph with:

Hardened lean concrete base with a surface lower than 0.05 foot below the grade established by the Engineer shall be removed and replaced with lean concrete base which complies with these specifications, or if permitted by the Engineer, the low areas shall be filled with pavement material as follows:

1. When pavement material is hot mix asphalt, the low areas shall be filled with hot mix asphalt conforming to the requirements for the lowest layer of hot mix asphalt to be placed as pavement. This shall be done as a separate operation prior to placing the lowest layer of pavement, and full compensation for this filling

will be considered as included in the contract price paid per cubic yard for lean concrete base and no additional compensation will be allowed therefor.

2. When pavement material is portland cement concrete, the low areas shall be filled with pavement concrete at the time and in the same operation that the pavement is placed. Full compensation for this filling will be considered as included in the contract price paid per cubic yard for lean concrete base and no additional compensation will be allowed therefor.

^^

SECTION 29 TREATED PERMEABLE BASES
(Issued 05-15-09)

In Section 29-1.02B replace the 2nd paragraph with:

Cement shall be Type II portland cement conforming to the provisions in Section 90-2.01A, "Cement."

In Section 29-1.04A replace the 1st paragraph with:

Aggregates and asphalt for asphalt treated permeable base shall be stored, proportioned and mixed in the same manner provided for storing, proportioning and mixing aggregates and asphalt for hot mix asphalt in Section 39-1.08, "Production," except as follows:

1. The aggregate need not be separated into sizes.
2. The temperature of the aggregate before adding the asphalt binder shall be not less than 275° F nor more than 325° F.
3. Asphalt treated permeable base stored in excess of 2 hours shall not be used in the work.
4. The aggregate shall be combined with 2.5 percent paving asphalt by weight of the dry aggregate. After testing samples of the Contractor's proposed aggregate supply, the Engineer may order an increase or decrease in the asphalt content. If an increase or decrease is ordered, and the increase or decrease exceeds the specified amount by more than 0.1 percent by weight of the dry aggregate, the compensation payable to the Contractor for the asphalt treated permeable base will be increased or decreased on the basis of the total increase or decrease in asphalt.
5. The asphalt content of the asphalt mixture will be determined, at the option of the Engineer, by extraction tests in conformance with the requirements in California Test 310 or 362, or will be determined in conformance with the requirements in California Test 379. The bitumen ratio pounds of asphalt per 100 pounds of dry aggregate shall not vary by more than 0.5 pound of asphalt above or 0.5 pound of asphalt below the amount designated by the Engineer. Compliance with this requirement will be determined either by taking samples from trucks at the plant or from the mat behind the paver before rolling. If the sample is taken from the mat behind the paver, the bitumen ratio shall be not less than the amount designated by the Engineer, less 0.7 pound of asphalt per 100 pounds of dry aggregate.

In Section 29-1.04B replace the 2nd paragraph with:

Cement treated permeable base shall contain not less than 287 pounds of cement per cubic yard.

In Section 29-1.05 replace the 1st paragraph with:

Asphalt treated permeable base shall be spread and compacted as specified for hot mix asphalt under the "Method" construction process in Section 39, "Hot Mix Asphalt," and these specifications.

In Section 29-1.05 in the 8th paragraph, replace the 2nd sentence with:

The filter fabric shall conform to the provisions in Section 88-1.02, "Filtration," and shall be placed in conformance with the provisions for placing filter fabric for edge drains in Section 68-3.03, "Installation."

In Section 29-1.06 replace the 1st and 2nd paragraphs with:

Cement treated base shall be placed, spread, compacted, and shaped in conformance with the provisions in Section 40-3.04D, "Stationary Side Form Construction," and Section 40-3.04E, "Slip-Form Construction," except that vibrators shall not be used and the third paragraph in Section 40-3.04A, "General," shall not apply.

In Section 29-1.06 in the 9th paragraph, replace the 2nd sentence with:

The filter fabric shall conform to the provisions in Section 88-1.02, "Filtration," and shall be placed in conformance with the provisions for placing filter fabric for edge drains in Section 68-3.03, "Installation."

In Section 29-1.07 replace the 2nd paragraph with:

Hardened treated permeable base with a surface lower than 0.05 foot below the grade established by the Engineer shall be removed and replaced with treated permeable base which complies with these specifications, or if permitted by the Engineer, the low areas shall be filled with pavement material as follows:

1. When pavement material is hot mix asphalt, the low areas shall be filled with hot mix asphalt conforming to the requirements for the lowest layer of hot mix asphalt to be placed as pavement. This shall be done as a separate operation prior to placing the lowest layer of pavement.
2. When pavement material is portland cement concrete, the low areas shall be filled with pavement concrete at the time and in the same operation in which the pavement is placed.
3. Full compensation for filling low areas will be considered as included in the contract price paid per cubic yard for treated permeable base and no additional compensation will be allowed therefor.

^^

SECTION 37 BITUMINOUS SEALS
(Issued 06-05-09)

In Section 37-1.03 replace the 4th through 6th paragraphs with:

On 2-lane two-way roadways, W8-7 "LOOSE GRAVEL" signs and W13-1 (35) speed advisory signs shall be furnished and placed adjacent to both sides of the traveled way where screenings are being spread on a traffic lane. The first W8-7 sign in each direction shall be placed where traffic first encounters loose screenings, regardless of which lane the screenings are being spread on. The W13-1 (35) signs need not be placed in those areas with posted speed limits of less than 40 MPH. The signs shall be placed at maximum 2,000-foot intervals along each side of the traveled way and at public roads or streets entering the seal coat area as directed by the Engineer.

On multilane roadways (freeways, expressways and multilane conventional highways) where screenings are being spread on a traffic lane, W8-7 "LOOSE GRAVEL" signs and W13-1 (35) speed advisory signs shall be furnished and placed adjacent to the outside edge of the traveled way nearest to the lane being worked on. The first W8-7 sign shall be placed where the screenings begin with respect to the direction of travel on that lane. The W13-1 (35) signs need not be placed in those areas with posted speed limits of less than 40 MPH. The signs shall be placed at maximum 2,000-foot intervals along the edge of traveled way and at on-ramps, public roads or streets entering the seal coat area as directed by the Engineer.

The W8-7 and W13-1 signs shall be maintained in place at each location until final brooming of the seal coat surface at that location is completed. The W8-7 and W13-1 signs shall conform to the provisions for construction area signs in Section 12, "Construction Area Traffic Control Devices." The signs may be set on temporary portable supports with the W13-1 below the W8-7 or on barricades with the W13-1 sign alternating with the W8-7 sign.

In Section 37-1.07 replace the 2nd paragraph with:

Rollers shall be oscillating type pneumatic-tired rollers. A minimum of 2 pneumatic-tired rollers conforming to the provisions in Section 39-3.03 "Spreading and Compacting Equipment," shall be furnished.

In Section 37-1.09 replace the 2nd paragraph with:

The above prices and payments shall include full compensation for furnishing all labor, materials, tools, equipment and incidentals, and for doing all the work involved in applying seal coat, complete in place, including furnishing, placing, maintaining, and removing W8-7 and W13-1 signs, when required, and temporary supports or barricades for the signs, as shown on the plans, and as specified in these specifications and the special provisions, and as directed by the Engineer.

In Section 37-2.05 replace the 6th paragraph with:

In addition to conforming to the provisions in Section 5-1.10, "Equipment," the identifying number of mixer-spreader trucks shall be at least 2 inches in height, located on the front and rear of the vehicle.

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SECTION 39 ASPHALT CONCRETE
(Issued 10-19-12)

Replace Section 39 with:

SECTION 39 HOT MIX ASPHALT

39-1 GENERAL

39-1.01 DESCRIPTION

Section 39 includes specifications for producing and placing hot mix asphalt (HMA) by mixing aggregate and asphalt binder at a mixing plant and spreading and compacting the HMA mixture.

The special provisions specify one or more types of HMA, including:

1. Type A
2. Type B
3. Open graded friction course (OGFC). OGFC includes hot mix asphalt (open graded)[HMA-O], rubberized hot mix asphalt (open graded) [RHMA-O] and rubberized hot mix asphalt (open graded high binder) [RHMA-O-HB]
4. Rubberized hot mix asphalt (gap graded) [RHMA-G]

The special provisions specify the HMA construction process, including:

1. Standard
2. Method
3. Quality Control / Quality Assurance (QC / QA)

39-1.02 MATERIALS

39-1.02A Geosynthetic Pavement Interlayer

Geosynthetic pavement interlayer must comply with the specifications in Section 88-1.07, "Pavement Interlayer," for the type of interlayer shown on the plans.

39-1.02B Tack Coat

Tack coat must comply with the specifications for asphaltic emulsion in Section 94, "Asphaltic Emulsion," or asphalt binder in Section 92, "Asphalts." Choose the type and grade.

Notify the Engineer if you dilute asphaltic emulsion with water. The weight ratio of added water to asphaltic emulsion must not exceed 1 to 1.

Measure added water either by weight or volume in compliance with the specifications for weighing, measuring, and metering devices under Section 9-1.01, "Measurement of Quantities," or you may use water meters

from water districts, cities, or counties. If you measure water by volume, apply a conversion factor to determine the correct weight.

With each dilution, submit in writing:

1. The weight ratio of water to bituminous material in the original asphaltic emulsion
2. The weight of asphaltic emulsion before diluting
3. The weight of added water
4. The final dilution weight ratio of water to asphaltic emulsion

39-1.02C Asphalt Binder

Asphalt binder in HMA must comply with Section 92, "Asphalts," or Section 39-1.02D, "Asphalt Rubber Binder." The special provisions specify the grade.

Asphalt binder for geosynthetic pavement interlayer must comply with Section 92, "Asphalts." Choose from Grades PG 64-10, PG 64-16, or PG 70-10.

39-1.02D Asphalt Rubber Binder

General

Use asphalt rubber binder in RHMA-G, RHMA-O, and RHMA-O-HB. Asphalt rubber binder must be a combination of:

1. Asphalt binder
2. Asphalt modifier
3. Crumb rubber modifier (CRM)

The combined asphalt binder and asphalt modifier must be 80.0 ± 2.0 percent by weight of the asphalt rubber binder.

Asphalt Modifier

Asphalt modifier must be a resinous, high flash point, and aromatic hydrocarbon, and comply with:

Asphalt Modifier for Asphalt Rubber Binder

Quality Characteristic	ASTM	Specification
Viscosity, m^2/s (x 10^{-6}) at 100 °C	D 445	X ± 3 [a]
Flash Point, CL.O.C., °C	D 92	207 minimum
Molecular Analysis		
Asphaltenes, percent by mass	D 2007	0.1 maximum
Aromatics, percent by mass	D 2007	55 minimum

Note:

[a] The symbol "X" is the proposed asphalt modifier viscosity. "X" must be between 19 and 36. A change in "X" requires a new asphalt rubber binder design.

Asphalt modifier must be from 2.0 percent to 6.0 percent by weight of the asphalt binder in the asphalt rubber binder.

Crumb Rubber Modifier

CRM consists of a ground or granulated combination of scrap tire CRM and high natural CRM. CRM must be 75.0 ± 2.0 percent scrap tire CRM and 25.0 ± 2.0 percent high natural CRM by total weight of CRM. Scrap tire CRM must be from any combination of automobile tires, truck tires, or tire buffings.

Sample and test scrap tire CRM and high natural CRM separately. CRM must comply with:

Crumb Rubber Modifier for Asphalt Rubber Binder

Quality Characteristic	Test Method	Specification
Scrap tire CRM gradation (% passing No. 8 sieve)	LP-10	100
High natural CRM gradation (% passing No. 10 sieve)	LP-10	100
Wire in CRM (% max.)	LP-10	0.01
Fabric in CRM (% max.)	LP-10	0.05
CRM particle length (inch max.) [a]	--	3/16
CRM specific gravity [a]	CT 208	1.1 – 1.2
Natural rubber content in high natural CRM (%) [a]	ASTM D 297	40.0 – 48.0

Note:
[a] Test at mix design and for Certificate of Compliance.

Only use CRM ground and granulated at ambient temperature. If steel and fiber are cryogenically separated, it must occur before grinding and granulating. Only use cryogenically produced CRM particles that can be ground or granulated and not pass through the grinder or granulator.

CRM must be dry, free-flowing particles that do not stick together. CRM must not cause foaming when combined with the asphalt binder and asphalt modifier. You may add calcium carbonate or talc up to 3 percent by weight of CRM.

Asphalt Rubber Binder Design and Profile

Submit in writing an asphalt rubber binder design and profile that complies with the asphalt rubber binder specifications. In the design, designate the asphalt, asphalt modifier, and CRM and their proportions. The profile is not a performance specification and only serves to indicate expected trends in asphalt rubber binder properties during binder production. The profile must include the same component sources for the asphalt rubber binder used.

Design the asphalt rubber binder from testing you perform for each quality characteristic and for the reaction temperatures expected during production. The 24-hour (1,440-minute) interaction period determines the design profile. At a minimum, mix asphalt rubber binder components, take samples, and perform and record the following tests:

Asphalt Rubber Binder Reaction Design Profile

Test	Minutes of Reaction [a]							Limits
	45	60	90	120	240	360	1440	
Cone penetration @ 77 °F, 0.10-mm (ASTM D 217)	X [b]				X		X	25 - 70
Resilience @ 77 °F, percent rebound (ASTM D 5329)	X				X		X	18 min.
Field softening point, °F (ASTM D 36)	X				X		X	125 - 165
Viscosity, centipoises (LP-11)	X	X	X	X	X	X	X	1,500 - 4,000

Notes:
[a] Six hours (360 minutes) after CRM addition, reduce the oven temperature to 275 °F for a period of 16 hours. After the 16-hour (1320 minutes) cool-down after CRM addition, reheat the binder to the reaction temperature expected during production for sampling and testing at 24 hours (1440 minutes).
[b] "X" denotes required testing

Asphalt Rubber Binder

After interacting for a minimum of 45 minutes, asphalt rubber binder must comply with:

Asphalt Rubber Binder

Quality Characteristic	Test for Quality Control or Acceptance	Test Method	Specification	
			Minimum	Maximum
Cone penetration @ 77 °F, 0.10-mm	Acceptance	ASTM D 217	25	70
Resilience @ 77 °F, percent rebound	Acceptance	ASTM D 5329	18	--
Field softening point, °F	Acceptance	ASTM D 36	125	165
Viscosity @ 375 °F, centipoises	Quality Control	LP-11	1,500	4,000

39-1.02E Aggregate

Aggregate must be clean and free from deleterious substances. Aggregate:

1. Retained on the No. 4 sieve is coarse
2. Passing the No. 4 sieve is fine
3. Added and passing the No. 30 sieve is supplemental fine, including:

    3.1. Hydrated lime
    3.2. Portland cement
    3.3. Fines from dust collectors

The special provisions specify the aggregate gradation for each HMA type.

The specified aggregate gradation is before the addition of asphalt binder and includes supplemental fines. The Engineer tests for aggregate grading under California Test 202, modified by California Test 105 if there is a difference in specific gravity of 0.2 or more between the coarse and fine parts of different aggregate blends.

Choose a sieve size target value (TV) within each target value limit presented in the aggregate gradation tables.

Aggregate Gradation
(Percentage Passing)
HMA Types A and B

3/4–inch HMA Types A and B

Sieve Sizes	Target Value Limits	Allowable Tolerance
1"	100	—
3/4"	90 - 100	TV ±5
1/2"	70 - 90	TV ±6
No. 4	45 - 55	TV ±7
No. 8	32 - 40	TV ±5
No. 30	12 - 21	TV ±4
No. 200	2 - 7	TV ±2

1/2–inch HMA Types A and B

Sieve Sizes	Target Value Limits	Allowable Tolerance
3/4"	100	—
1/2"	95 - 99	TV ±6
3/8"	75 - 95	TV ±6
No. 4	55 - 66	TV ±7
No. 8	38 - 49	TV ±5
No. 30	15 - 27	TV ±4
No. 200	2 - 8	TV ±2

3/8–inch HMA Types A and B

Sieve Sizes	Target Value Limits	Allowable Tolerance
1/2"	100	—
3/8"	95 - 100	TV ±6
No. 4	58 - 72	TV ±7
No. 8	34 - 48	TV ±6
No. 30	18 - 32	TV ±5
No. 200	2 - 9	TV ±2

No. 4 HMA Types A and B

Sieve Sizes	Target Value Limits	Allowable Tolerance
3/8"	100	—
No. 4	95 - 100	TV ±7
No. 8	72 - 77	TV ±7
No. 30	37 - 43	TV ±7
No. 200	2 - 12	TV ±4

Rubberized Hot Mix Asphalt - Gap Graded (RHMA-G)

3/4–inch RHMA-G

Sieve Sizes	Target Value Limits	Allowable Tolerance
1"	100	—
3/4"	95 - 100	TV ±5
1/2"	83 - 87	TV ±6
3/8"	65 - 70	TV ±6
No. 4	28 - 42	TV ±7
No. 8	14 - 22	TV ±5
No. 200	0 - 6	TV ±2

1/2–inch RHMA-G

Sieve Sizes	Target Value Limits	Allowable Tolerance
3/4"	100	—
1/2"	90 - 100	TV ±6
3/8"	83 - 87	TV ±6
No. 4	28 - 42	TV ±7
No. 8	14 - 22	TV ±5
No. 200	0 - 6	TV ±2

Open Graded Friction Course (OGFC)

1–inch OGFC

Sieve Sizes	Target Value Limits	Allowable Tolerance
1 1/2"	100	—
1"	99 - 100	TV ±5
3/4"	85 - 96	TV ±5
1/2"	55 - 71	TV ±6
No. 4	10 - 25	TV ±7
No. 8	6 - 16	TV ±5
No. 200	1 - 6	TV ±2

1/2–inch OGFC

Sieve Sizes	Target Value Limits	Allowable Tolerance
3/4"	100	—
1/2"	95 - 100	TV ±6
3/8"	78 - 89	TV ±6
No. 4	28 - 37	TV ±7
No. 8	7 - 18	TV ±5
No. 30	0 - 10	TV ±4
No. 200	0 - 3	TV ±2

3/8–inch OGFC

Sieve Sizes	Target Value Limits	Allowable Tolerance
1/2"	100	—
3/8"	90 - 100	TV ±6
No. 4	29 - 36	TV ±7
No. 8	7 - 18	TV ±6
No. 30	0 - 10	TV ±5
No. 200	0 - 3	TV ±2

Before the addition of asphalt binder and lime treatment, aggregate must comply with:

Aggregate Quality

Quality Characteristic	Test Method	HMA Type			
		A	B	RHMA-G	OGFC
Percent of crushed particles	CT 205				
Coarse aggregate (% min.)					
One fractured face		90	25	--	90
Two fractured faces		75	--	90	75
Fine aggregate (% min)					
(Passing No. 4 sieve and retained on No. 8 sieve.)					
One fractured face		70	20	70	90
Los Angeles Rattler (% max.)	CT 211				
Loss at 100 Rev.		12	--	12	12
Loss at 500 Rev.		45	50	40	40
Sand equivalent (min.) [a]	CT 217	47	42	47	--
Fine aggregate angularity (% min.) [b]	CT 234	45	45	45	--
Flat and elongated particles (% max. by weight @ 5:1)	CT 235	10	10	10	10

Notes:

[a] Reported value must be the average of 3 tests from a single sample.

[b] The Engineer waives this specification if HMA contains 10 percent or less of nonmanufactured sand by weight of total aggregate. Manufactured sand is fine aggregate produced by crushing rock or gravel.

39-1.02F Reclaimed Asphalt Pavement

You may produce HMA using reclaimed asphalt pavement (RAP). HMA produced using RAP must comply with the specifications for HMA except aggregate quality specifications do not apply to RAP. You may substitute RAP aggregate for a part of the virgin aggregate in HMA in a quantity not exceeding 15.0 percent of the aggregate blend. Do not use RAP in OGFC and RHMA-G.

Assign the substitution rate of RAP aggregate for virgin aggregate with the job mix formula (JMF) submittal. The JMF must include the percent of RAP used. If you change your assigned RAP aggregate substitution rate by more than 5 percent (within the 15.0 percent limit), submit a new JMF.

Process RAP from asphalt concrete. You may process and stockpile RAP throughout the project's life. Prevent material contamination and segregation. Store RAP in stockpiles on smooth surfaces free of debris and organic material. Processed RAP stockpiles must consist only of homogeneous RAP.

39-1.03 HOT MIX ASPHALT MIX DESIGN REQUIREMENTS

39-1.03A General

A mix design consists of performing California Test 367 and laboratory procedures on combinations of aggregate gradations and asphalt binder contents to determine the optimum binder content (OBC) and HMA mixture qualities. If RAP is used, use Laboratory Procedure LP-9. The result of the mix design becomes the proposed JMF.

Use Form CEM-3512 to document aggregate quality and mix design data. Use Form CEM-3511 to present the JMF.

Laboratories testing aggregate qualities and preparing the mix design and JMF must be qualified under the Department's Independent Assurance Program. Take samples under California Test 125.

The Engineer reviews the aggregate qualities, mix design, and JMF and verifies and accepts the JMF.

You may change the JMF during production. Do not use the changed JMF until the Engineer accepts it. Except when adjusting the JMF in compliance with Section 39-1.03E, "Job Mix Formula Verification," perform a new mix design and submit in writing a new JMF submittal for changing any of the following:

1. Target asphalt binder percentage
2. Asphalt binder supplier
3. Asphalt rubber binder supplier
4. Component materials used in asphalt rubber binder or percentage of any component materials
5. Combined aggregate gradation
6. Aggregate sources
7. Substitution rate for RAP aggregate of more than 5 percent

8. Any material in the JMF

For OGFC, submit in writing a complete JMF submittal except asphalt binder content. The Engineer determines the asphalt binder content under California Test 368 within 20 days of your complete JMF submittal and provides you a Form CEM-3513.

39-1.03B Hot Mix Asphalt Mix Design

Perform a mix design that produces HMA in compliance with:

Hot Mix Asphalt Mix Design Requirements

Quality Characteristic	Test Method	HMA Type		
		A	B	RHMA-G
Air voids content (%)	CT 367[a]	4.0	4.0	Special Provisions
Voids in mineral aggregate (% min.)	LP-2			
No. 4 grading		17.0	17.0	--
3/8" grading		15.0	15.0	--
1/2" grading		14.0	14.0	18.0 – 23.0[b]
3/4" grading		13.0	13.0	18.0 – 23.0[b]
Voids filled with asphalt (%)	LP-3			
No. 4 grading		76.0 – 80.0	76.0 – 80.0	Note d
3/8" grading		73.0 – 76.0	73.0 – 76.0	
1/2" grading		65.0 – 75.0	65.0 – 75.0	
3/4" grading		65.0 – 75.0	65.0 – 75.0	
Dust proportion	LP-4			
No. 4 and 3/8" gradings		0.9 – 2.0	0.9 – 2.0	Note d
1/2" and 3/4" gradings		0.6 – 1.3	0.6 – 1.3	
Stabilometer value (min.) [c]	CT 366			
No. 4 and 3/8" gradings		30	30	--
1/2" and 3/4" gradings		37	35	23

Notes:

[a] Calculate the air voids content of each specimen using California Test 309 and Lab Procedure LP-1. Modify California Test 367, Paragraph C5, to use the exact air voids content specified in the selection of OBC.
[b] Voids in mineral aggregate for RHMA-G must be within this range.
[c] Modify California Test 304, Part 2.B.2.c: "After compaction in the compactor, cool to 140 °± 5 °F by allowing the briquettes to cool at room temperature for 0.5-hour, then place the briquettes in the oven at 140 °F for a minimum of 2 hours and not more than 3 hours."
[d] Report this value in the JMF submittal.

For stability and air voids content, prepare 3 briquettes at the OBC and test for compliance. Report the average of 3 tests. Prepare new briquettes and test if the range of stability for the 3 briquettes is more than 8 points. The average air void content may vary from the specified air void content by ±0.5 percent.

You may use the briquettes used for stability testing to determine bulk specific gravity under CT 308. If you use the same briquettes and tests using bulk specific gravity fail, you may prepare 3 new briquettes and determine a new bulk specific gravity.

39-1.03C Job Mix Formula Submittal

Each JMF submittal must consist of:

1. Proposed JMF on Form CEM-3511
2. Mix design documentation on Form CEM-3512 dated within 12 months of submittal
3. JMF verification on Form CEM-3513, if applicable
4. JMF renewal on Form CEM-3514, if applicable
5. Materials Safety Data Sheets (MSDS) for:

    5.1. Asphalt binder
    5.2. Base asphalt binder used in asphalt rubber binder

5.3. CRM and asphalt modifier used in asphalt rubber binder
5.4. Blended asphalt rubber binder mixture
5.5. Supplemental fine aggregate except fines from dust collectors
5.6. Antistrip additives

If the Engineer requests in writing, sample the following materials in the presence of the Engineer and place in labeled containers weighing no more than 50 pounds each:

1. Coarse, fine, and supplemental fine aggregate from stockpiles, cold feed belts, or hot bins. Samples must include at least 120 pounds for each coarse aggregate, 80 pounds for each fine aggregate, and 10 pounds for each type of supplemental fines. The Department combines these aggregate samples to comply with the JMF target values submitted on Form CEM-3511.
2. RAP from stockpiles or RAP system. Samples must be at least 60 pounds.
3. Asphalt binder from the binder supplier. Samples must be in two 1-quart cylindrical shaped cans with open top and friction lids.
4. Asphalt rubber binder with the components blended in the proportions to be used. Samples must be in four 1-quart cylindrical shaped cans with open top and friction lids.

Notify the Engineer in writing at least 2 business days before sampling materials. For aggregate and RAP, split the samples into at least 4 parts. Submit 3 parts to the Engineer and use 1 part for your testing.

39-1.03D Job Mix Formula Review

The Engineer reviews each mix design and proposed JMF within 5 business days from the complete JMF submittal. The review consists of reviewing the mix design procedures and comparing the proposed JMF with the specifications.

The Engineer may verify aggregate qualities during this review period.

39-1.03E Job Mix Formula Verification

If you cannot submit a Department-verified JMF on Form CEM-3513 dated within 12 months before HMA production, the Engineer verifies the JMF.

Based on your testing and production experience, you may submit on Form CEM-3511 an adjusted JMF before the Engineer's verification testing. JMF adjustments may include a change in the:

1. Asphalt binder content target value up to ±0.6 percent from the optimum binder content value submitted on Form CEM-3512 except do not adjust the target value for asphalt rubber binder for RHMA-G below 7.0 percent
2. Aggregate gradation target values within the target value limits specified in the aggregate gradation tables

For HMA Type A, Type B, and RHMA-G, the Engineer verifies the JMF from samples taken from HMA produced by the plant to be used. Notify the Engineer in writing at least 2 business days before sampling materials.

In the Engineer's presence and from the same production run, take samples of:

1. Aggregate
2. Asphalt binder
3. RAP
4. HMA

Sample aggregate from cold feed belts or hot bins. Sample RAP from the RAP system. Sample HMA under California Test 125 except if you request in writing and the Engineer approves, you may sample from any of the following locations:

1. The plant
2. A truck
3. A windrow
4. The paver hopper
5. The mat behind the paver

You may sample from a different project including a non-Department project if you make arrangements for the Engineer to be present during sampling.

For aggregate, RAP, and HMA, split the samples into at least 4 parts and label their containers. Submit 3 split parts to the Engineer and use 1 part for your testing.

The Engineer verifies each proposed JMF within 20 days of receiving all verification samples and the JMF submittal has been accepted. If you request in writing, the Engineer verifies RHMA-G quality requirements within 3 business days of sampling. Verification is testing for compliance with the specifications for:

1. Aggregate quality
2. Aggregate gradation (JMF TV ± tolerance)
3. Asphalt binder content (JMF TV ± tolerance)
4. HMA quality specified in the table Hot Mix Asphalt Mix Design Requirements except:

    4.1. Air voids content (design value ± 2.0 percent)
    4.2. Voids filled with asphalt (report only if an adjustment for asphalt binder content target value is less than or equal to ± 0.3 percent from OBC)
    4.3. Dust proportion (report only if an adjustment for asphalt binder content target value is less than or equal to ± 0.3 percent from OBC)

The Engineer prepares 3 briquettes from a single split sample. To verify the JMF for stability and air voids content, the Engineer tests the 3 briquettes and reports the average of 3 tests. The Engineer prepares new briquettes if the range of stability for the 3 briquettes is more than 8 points.

The Engineer may use the briquettes used for stability testing to determine bulk specific gravity under CT 308. If the Engineer uses the same briquettes and the tests using bulk specific gravity fail, the Engineer prepares 3 new briquettes and determines a new bulk specific gravity.

If the Engineer verifies the JMF, the Engineer provides you a Form CEM-3513.

If the Engineer's tests on plant-produced samples do not verify the JMF, the Engineer notifies you in writing and you must submit a new JMF submittal or submit an adjusted JMF based on your testing. JMF adjustments may include a change in the:

1. Asphalt binder content target value up to ±0.6 percent from the optimum binder content value submitted on Form CEM-3512 except do not adjust the target value for asphalt rubber binder for RHMA-G below 7.0 percent
2. Aggregate gradation target values within the target value limits specified in the aggregate gradation tables

You may adjust the JMF only once due to a failed verification test. An adjusted JMF requires a new Form CEM-3511 and verification of a plant-produced sample.

A verified JMF is valid for 12 months.

For each HMA type and aggregate size specified, the Engineer verifies at the State's expense up to 2 proposed JMF including a JMF adjusted after verification failure. The Engineer deducts $3,000 from payments for each verification exceeding this limit. This deduction does not apply to verifications initiated by the Engineer or JMF renewal.

39-1.03F Job Mix Formula Renewal

You may request a JMF renewal by submitting the following:

1. Proposed JMF on Form CEM-3511
2. A previously verified JMF documented on Form CEM-3513 dated within 12 months
3. Mix design documentation on Form CEM-3512 used for the previously verified JMF

If the Engineer requests in writing, sample the following materials in the presence of the Engineer and place in labeled containers weighing no more than 50 pounds each:

1. Coarse, fine, and supplemental fine aggregate from stockpiles, cold feed belts, or hot bins. Samples must include at least 120 pounds for each coarse aggregate, 80 pounds for each fine aggregate, and 10 pounds for each type of supplemental fines. The Department combines these aggregate samples to comply with the JMF target values submitted on Form CEM-3511.
2. RAP from stockpiles or RAP system. Samples must be at least 60 pounds.

3. Asphalt binder from the binder supplier. Samples must be in two 1-quart cylindrical shaped cans with open top and friction lids.
4. Asphalt rubber binder with the components blended in the proportions to be used. Samples must be in four 1-quart cylindrical shaped cans with open top and friction lids.

Notify the Engineer in writing at least 2 business days before sampling materials. For aggregate and RAP, split samples into at least 4 parts. Submit 3 parts to the Engineer and use 1 part for your testing.

The Engineer may verify aggregate qualities during this review period.

Notify the Engineer in writing at least 2 business days before sampling materials. For aggregate, RAP, and HMA, split the samples into at least 4 parts. Submit 3 parts to the Engineer and use 1 part for your testing.

The Engineer verifies the JMF renewal submittal under Section 39-1.03E, "Job Mix Formula Verification," except:

1. The Engineer retains samples until you provide test results for your part on Form CEM-3514.
2. The Engineer tests samples of materials obtained from the HMA production unit after you submit test results that comply with the specifications for the quality characteristics under Section 39-1.03E, "Job Mix Formula Verification."
3. The Engineer verifies each proposed JMF renewal within 20 days of receiving verification samples.
4. You may not adjust the JMF due to a failed verification.
5. For each HMA type and aggregate gradation specified, the Engineer verifies at the State's expense 1 proposed JMF renewal within a 12-month period.

The most recent aggregate quality test results within the past 12 months may be used for verification of JMF renewal or the Engineer may perform aggregate quality tests for verification of JMF renewal.

If the Engineer verifies the JMF renewal, the Engineer provides you a Form CEM-3513.

39-1.03G Job Mix Formula Modification

For an accepted JMF, you may change binder source one time during production.

Submit your modified JMF request a minimum of 3 business days before production. Each modified JMF submittal must consist of:

1. Proposed modified JMF on Form CEM-3511.
2. Mix design records on Form CEM-3512 for the accepted JMF to be modified.
3. JMF verification on Form CEM-3513 for the accepted JMF to be modified.
4. Quality characteristics test results for the modified JMF as specified in section 39-1.03B. Perform tests at the mix design OBC as shown on Form CEM-3512.
5. If required, California Test 371 test results for the modified JMF.

With an accepted modified JMF submittal, the Engineer verifies each modified JMF within 5 business days of receiving all verification samples. If California Test 371 is required, the Engineer tests for California Test 371 within 10 days of receiving verification samples.

The Engineer verifies the modified JMF after the modified JMF HMA is placed on the project and verification samples are taken within the first 750 tons following sampling requirements in Section 39-1.03E, "Job Mix Formula Verification." The Engineer tests verification samples for compliance with:

1. Stability as shown in the table titled "Hot Mix Asphalt Mix Design Requirements"
2. Air void content at design value ±2.0 percent
3. Voids in mineral aggregate as shown in the table titled "Hot Mix Asphalt Mix Design Requirements"
4. Voids filled with asphalt if an adjustment for asphalt binder content TV is more than ±0.3 percent from the original OBC shown on Form CEM-3512.
5. Dust proportion if an adjustment for asphalt binder content TV is more than ±0.3 percent from OBC shown on Form CEM-3512.

If the modified JMF is verified, the Engineer revises your Form CEM-3513 to include the new binder source. Your revised Form CEM-3513 will have the same expiration date as the original Form CEM-3513 for the accepted JMF that is modified.

If a modified JMF is not verified, stop production and any HMA placed using the modified JMF is rejected.

The Engineer deducts $2,000 from payments for each modified JMF verification. The Engineer deducts an additional $2,000 from payments for each modified JMF verification that requires California Test 371.

39-1.03H Job Mix Formula Acceptance

You may start HMA production if:

1. The Engineer's review of the JMF shows compliance with the specifications.
2. The Department has verified the JMF within 12 months before HMA production.
3. The Engineer accepts the verified JMF.

39-1.04 CONTRACTOR QUALITY CONTROL

39-1.04A General

Establish, maintain, and change a quality control system to ensure materials and work comply with the specifications. Submit quality control test results to the Engineer within 3 business days of a request except when QC / QA is specified.

You must identify the HMA sampling location in your Quality Control Plan. During production, take samples under California Test 125. You may sample HMA from:

1. The plant
2. The truck
3. A windrow
4. The paver hopper
5. The mat behind the paver

39-1.04B Prepaving Conference

Meet with the Engineer at a prepaving conference at a mutually agreed time and place. Discuss methods of performing the production and paving work.

39-1.04C Asphalt Rubber Binder

Take asphalt rubber binder samples from the feed line connecting the asphalt rubber binder tank to the HMA plant. Sample and test asphalt rubber binder under Laboratory Procedure LP-11.

Test asphalt rubber binder for compliance with the viscosity specifications in Section 39-1.02, "Materials." During asphalt rubber binder production and HMA production using asphalt rubber binder, measure viscosity every hour with not less than 1 reading for each asphalt rubber binder batch. Log measurements with corresponding time and asphalt rubber binder temperature. Submit the log daily in writing.

Submit a Certificate of Compliance under Section 6-1.07, "Certificates of Compliance." With the Certificate of Compliance, submit test results in writing for CRM and asphalt modifier with each truckload delivered to the HMA plant. A Certificate of Compliance for asphalt modifier must not represent more than 5,000 pounds. Use an AASHTO-certified laboratory for testing.

Sample and test gradation and wire and fabric content of CRM once per 10,000 pounds of scrap tire CRM and once per 3,400 pounds of high natural CRM. Sample and test scrap tire CRM and high natural CRM separately.

Submit certified weight slips in writing for the CRM and asphalt modifier furnished.

39-1.04D Aggregate

Determine the aggregate moisture content and RAP moisture content in continuous mixing plants at least twice a day during production and adjust the plant controller. Determine the RAP moisture content in batch mixing plants at least twice a day during production and adjust the plant controller.

39-1.04E Reclaimed Asphalt Pavement

Perform RAP quality control testing each day.

Sample RAP once daily and determine the RAP aggregate gradation under Laboratory Procedure LP-9 and submit the results to the Engineer in writing with the combined aggregate gradation.

39-1.04F Density Cores

To determine density for Standard and QC / QA projects, take 4-inch or 6-inch diameter density cores at least once every 5 business days. Take 1 density core for every 250 tons of HMA from random locations the Engineer

designates. Take density cores in the Engineer's presence and backfill and compact holes with material authorized by the Engineer. Before submitting a density core to the Engineer, mark it with the density core's location and place it in a protective container.

If a density core is damaged, replace it with a density core taken within 1 foot longitudinally from the original density core. Relocate any density core located within 1 foot of a rumble strip to 1 foot transversely away from the rumble strip.

39-1.04G Briquettes

Prepare 3 briquettes for each stability and air voids content determination. Report the average of 3 tests. Prepare new briquettes and test if the range of stability for the 3 briquettes is more than 12 points.

You may use the briquettes used for stability testing to determine bulk specific gravity under CT 308. If you use these briquettes and tests using bulk specific gravity fail, you may prepare 3 new briquettes and determine a new bulk specific gravity.

39-1.05 ENGINEER'S ACCEPTANCE

The Engineer's acceptance of HMA is specified in the sections for each HMA construction process.

The Engineer samples materials for testing under California Test 125 and the applicable test method except samples may be taken from:

1. The plant from:
    1.1. A truck
    1.2. An automatic sampling device
2. The mat behind the paver

Sampling must be independent of Contractor quality control, statistically-based, and random.

If you request, the Engineer splits samples and provides you with a part.

The Engineer accepts HMA based on:

1. Accepted JMF
2. Accepted QCP for Standard and QC / QA
3. Compliance with the HMA Acceptance tables
4. Acceptance of a lot for QC / QA
5. Visual inspection

The Engineer prepares 3 briquettes for each stability and air voids content determination. The Engineer reports the average of 3 tests. The Engineer prepares new briquettes and test if the range of stability for the 3 briquettes is more than 8 points.

The Engineer may use the briquettes used for stability testing to determine bulk specific gravity under CT 308. If the Engineer uses the same briquettes and the tests using bulk specific gravity fail, the Engineer prepares 3 new briquettes and determines a new bulk specific gravity.

39-1.06 DISPUTE RESOLUTION

You and the Engineer must work together to avoid potential conflicts and to resolve disputes regarding test result discrepancies. Notify the Engineer in writing within 5 business days of receiving a test result if you dispute the test result.

If you or the Engineer dispute each other's test results, submit written quality control test results and copies of paperwork including worksheets used to determine the disputed test results to the Engineer. An Independent Third Party (ITP) performs referee testing. Before the ITP participates in a dispute resolution, the ITP must be accredited under the Department's Independent Assurance Program. The ITP must be independent of the project. By mutual agreement, the ITP is chosen from:

1. A Department laboratory
2. A Department laboratory in a district or region not in the district or region the project is located
3. The Transportation Laboratory
4. A laboratory not currently employed by you or your HMA producer

If split quality control or acceptance samples are not available, the ITP uses any available material representing the disputed HMA for evaluation.

39-1.07 PRODUCTION START-UP EVALUATION

The Engineer evaluates HMA production and placement at production start-up.

Within the first 750 tons produced on the first day of HMA production, in the Engineer's presence and from the same production run, take samples of:

1. Aggregate
2. Asphalt binder
3. RAP
4. HMA

Sample aggregate from cold feed belts or hot bins. Take RAP samples from the RAP system. Sample HMA under California Test 125 except if you request in writing and the Engineer approves, you may sample HMA from:

1. The plant
2. The truck
3. A windrow
4. The paver hopper
5. The mat behind the paver

For aggregate, RAP, and HMA, split the samples into at least 4 parts and label their containers. Submit 3 split parts to the Engineer and keep 1 part.

For Standard and QC / QA projects, you and the Engineer must test the split samples and report test results in writing within 3 business days of sampling. If you proceed before receipt of the test results, the Engineer may consider the HMA placed to be represented by these test results.

For Standard and QC / QA projects, take 4-inch or 6-inch diameter density cores within the first 750 tons on the first day of HMA production. For each density core, the Engineer reports the bulk specific gravity determined under California Test 308, Method A in addition to the percent of maximum theoretical density. You may test for in-place density at the density core locations and include them in your production tests for percent of maximum theoretical density.

39-1.08 PRODUCTION

39-1.08A General

Produce HMA in a batch mixing plant or a continuous mixing plant. Proportion aggregate by hot or cold feed control.

HMA plants must be Department-qualified. Before production, the HMA plant must have a current qualification under the Department's Materials Plant Quality Program.

During production, you may adjust:

1. Hot or cold feed proportion controls for virgin aggregate and RAP
2. The set point for asphalt binder content

39-1.08B Mixing

Mix HMA ingredients into a homogeneous mixture of coated aggregates.

Asphalt binder must be between 275 °F and 375 °F when mixed with aggregate.

Asphalt rubber binder must be between 375 °F and 425 °F when mixed with aggregate.

When mixed with asphalt binder, aggregate must not be more than 325 °F except aggregate for OGFC with unmodified asphalt binder must be not more than 275 °F. Aggregate temperature specifications do not apply when you use RAP.

HMA with or without RAP must not be more than 325 °F.

39-1.08C Asphalt Rubber Binder

Deliver scrap tire CRM and high natural CRM in separate bags.

Either proportion and mix asphalt binder, asphalt modifier, and CRM simultaneously or premix the asphalt binder and asphalt modifier before adding CRM. If you premix asphalt binder and asphalt modifier, asphalt binder must be from 375 to 425 degrees F when you add the asphalt modifier. Mix them for at least 20 minutes. When you add CRM, the asphalt binder and asphalt modifier must be between 375 °F and 425 °F.

Do not use asphalt rubber binder during the first 45 minutes of the reaction period. During this period, the asphalt rubber binder mixture must be between 375 °F and the lower of 425 °F or 25 °F below the asphalt binder's flash point indicated in the MSDS.

If any asphalt rubber binder is not used within 4 hours after the reaction period, discontinue heating. If the asphalt rubber binder drops below 375 °F, reheat before use. If you add more scrap tire CRM to the reheated asphalt rubber binder, the binder must undergo a 45-minute reaction period. The added scrap tire CRM must not exceed 10 percent of the total asphalt rubber binder weight. Reheated and reacted asphalt rubber binder must comply with the viscosity specifications for asphalt rubber binder in Section 39-1.02, "Materials." Do not reheat asphalt rubber binder more than twice.

39-1.09 SUBGRADE, TACK COAT, AND GEOSYNTHETIC PAVEMENT INTERLAYER

39-1.09A General

Prepare subgrade or apply tack coat to surfaces receiving HMA. If specified, place geosynthetic pavement interlayer over a coat of asphalt binder.

39-1.09B Subgrade

Subgrade to receive HMA must comply with the compaction and elevation tolerance specifications in the sections for the material involved. Subgrade must be free of loose and extraneous material. If HMA is paved on existing base or pavement, remove loose paving particles, dirt, and other extraneous material by any means including flushing and sweeping.

39-1.09C Tack Coat

Apply tack coat:

1. To existing pavement including planed surfaces
2. Between HMA layers
3. To vertical surfaces of:

    3.1. Curbs
    3.2. Gutters
    3.3. Construction joints

Before placing HMA, apply tack coat in 1 application at the minimum residual rate specified for the condition of the underlying surface:

Tack Coat Application Rates for HMA Type A, Type B, and RHMA-G

HMA over:	Minimum Residual Rates (gallons per square yard)		
	CSS1/CSS1h, SS1/SS1h and QS1h/CQS1h Asphaltic Emulsion	CRS1/CRS2, RS1/RS2 and QS1/CQS1 Asphaltic Emulsion	Asphalt Binder and PMRS2/PMCRS2 and PMRS2h/PMCRS2h Asphaltic Emulsion
New HMA (between layers)	0.02	0.03	0.02
PCC and existing HMA (AC) surfaces	0.03	0.04	0.03
Planed PCC and HMA (AC) surfaces	0.05	0.06	0.04

Tack Coat Application Rates for OGFC

OGFC over:	Minimum Residual Rates (gallons per square yard)		
	CSS1/CSS1h, SS1/SS1h and QS1h/CQS1h Asphaltic Emulsion	CRS1/CRS2, RS1/RS2 and QS1/CQS1 Asphaltic Emulsion	Asphalt Binder and PMRS2/PMCRS2 and PMRS2h/PMCRS2h Asphaltic Emulsion
New HMA	0.03	0.04	0.03
PCC and existing HMA (AC) surfaces	0.05	0.06	0.04
Planed PCC and HMA (AC) surfaces	0.06	0.07	0.05

If you dilute asphaltic emulsion, mix until homogeneous before application.

Apply to vertical surfaces with a residual tack coat rate that will thoroughly coat the vertical face without running off.

If you request in writing and the Engineer authorizes, you may:

1. Change tack coat rates
2. Omit tack coat between layers of new HMA during the same work shift if:

    2.1. No dust, dirt, or extraneous material is present
    2.2. The surface is at least 140 °F

Immediately in advance of placing HMA, apply additional tack coat to damaged areas or where loose or extraneous material is removed.

Close areas receiving tack coat to traffic. Do not track tack coat onto pavement surfaces beyond the job site.

Asphalt binder tack coat must be between 285 °F and 350 °F when applied.

39-1.09D Geosynthetic Pavement Interlayer

Place geosynthetic pavement interlayer in compliance with the manufacturer's recommendations.

Before placing the geosynthetic pavement interlayer and asphalt binder:

1. Repair cracks 1/4 inch and wider, spalls, and holes in the pavement. The State pays for this repair work under Section 4-1.03D, "Extra Work."
2. Clean the pavement of loose and extraneous material.

Immediately before placing the interlayer, apply 0.25 gallon ± 0.03 gallon of asphalt binder per square yard of interlayer or until the fabric is saturated. Apply asphalt binder the width of the geosynthetic pavement interlayer plus 3 inches on each side. At interlayer overlaps, apply asphalt binder on the lower interlayer the same overlap distance as the upper interlayer.

Asphalt binder must be from 285 °F to 350 °F and below the minimum melting point of the geosynthetic pavement interlayer when applied.

Align and place the interlayer with no overlapping wrinkles, except a wrinkle that overlaps may remain if it is less than 1/2 inch thick. If the overlapping wrinkle is more than 1/2 inch thick, cut the wrinkle out and overlap the interlayer no more than 2 inches.

The minimum HMA thickness over the interlayer must be 0.12 foot thick including conform tapers. Do not place the interlayer on a wet or frozen surface.

Overlap the interlayer borders between 2 inches and 4 inches. In the direction of paving, overlap the following roll with the preceding roll at any break.

You may use rolling equipment to correct distortions or wrinkles in the interlayer.

If asphalt binder tracked onto the interlayer or brought to the surface by construction equipment causes interlayer displacement, cover it with a small quantity of HMA.

Before placing HMA on the interlayer, do not expose the interlayer to:

1. Traffic except for crossings under traffic control and only after you place a small HMA quantity
2. Sharp turns from construction equipment
3. Damaging elements

Pave HMA on the interlayer during the same work shift.

39-1.10 SPREADING AND COMPACTING EQUIPMENT

Paving equipment for spreading must be:

1. Self-propelled
2. Mechanical
3. Equipped with a screed or strike-off assembly that can distribute HMA the full width of a traffic lane
4. Equipped with a full-width compacting device
5. Equipped with automatic screed controls and sensing devices that control the thickness, longitudinal grade, and transverse screed slope

Install and maintain grade and slope references.

The screed must produce a uniform HMA surface texture without tearing, shoving, or gouging.

The paver must not leave marks such as ridges and indentations unless you can eliminate them by rolling.

Rollers must be equipped with a system that prevents HMA from sticking to the wheels. You may use a parting agent that does not damage the HMA or impede the bonding of layers.

In areas inaccessible to spreading and compacting equipment:

1. Spread the HMA by any means to obtain the specified lines, grades and cross sections.
2. Use a pneumatic tamper, plate compactor, or equivalent to achieve thorough compaction.

39-1.11 TRANSPORTING, SPREADING, AND COMPACTING

Do not pave HMA on a wet pavement or frozen surface.

You may deposit HMA in a windrow and load it in the paver if:

1. Paver is equipped with a hopper that automatically feeds the screed
2. Loading equipment can pick up the windrowed material and deposit it in the paver hopper without damaging base material
3. Activities for deposit, pick-up, loading, and paving are continuous
4. HMA temperature in the windrow does not fall below 260 °F

You may pave HMA in 1 or more layers on areas less than 5 feet wide and outside the traveled way including shoulders. You may use mechanical equipment other than a paver for these areas. The equipment must produce a uniform smoothness and texture.

HMA handled, spread, or windrowed must not stain the finished surface of any improvement including pavement.

Do not use petroleum products such as kerosene or diesel fuel to release HMA from trucks, spreaders, or compactors.

HMA must be free of:

1. Segregation
2. Coarse or fine aggregate pockets
3. Hardened lumps

Longitudinal joints in the top layer must match specified lane edges. Alternate longitudinal joint offsets in lower layers at least 0.5 foot from each side of the specified lane edges. You may request in writing other longitudinal joint placement patterns.

Until the adjoining through lane's top layer has been paved, do not pave the top layer of:

1. Shoulders
2. Tapers
3. Transitions
4. Road connections
5. Driveways
6. Curve widenings
7. Chain control lanes

8. Turnouts
9. Turn pockets

If the number of lanes change, pave each through lane's top layer before paving a tapering lane's top layer. Simultaneous to paving a through lane's top layer, you may pave an adjoining area's top layer including shoulders. Do not operate spreading equipment on any area's top layer until completing final compaction.

If HMA (leveling) is specified, fill and level irregularities and ruts with HMA before spreading HMA over base, existing surfaces, or bridge decks. You may use mechanical equipment other than a paver for these areas. The equipment must produce a uniform smoothness and texture. HMA used to change an existing surface's cross slope or profile is not HMA (leveling).

If placing HMA against the edge of existing pavement, sawcut or grind the pavement straight and vertical along the joint and remove extraneous material without damaging the surface remaining in place. If placing HMA against the edge of a longitudinal or transverse construction joint and the joint is damaged or not placed to a neat line, sawcut or grind the pavement straight and vertical along the joint and remove extraneous material without damaging the surface remaining in place. Repair or remove and replace damaged pavement at your expense.

Rolling must leave the completed surface compacted and smooth without tearing, cracking, or shoving. Complete finish rolling activities before the pavement surface temperature is:

1. Below 150 °F for HMA with unmodified binder
2. Below 140 °F for HMA with modified binder
3. Below 200 °F for RHMA-G

If a vibratory roller is used as a finish roller, turn the vibrator off.

Do not use a pneumatic tired roller to compact RHMA-G.

For Standard and QC/QA, if a 3/4-inch aggregate grading is specified, you may use a 1/2-inch aggregate grading if the specified total paved thickness is at least 0.15 foot and less than 0.20 foot thick.

Spread and compact HMA under Section 39-3.03, "Spreading and Compacting Equipment," and Section 39-3.04, "Transporting, Spreading, and Compacting," for any of the following:

1. Specified paved thickness is less than 0.15 foot.
2. Specified paved thickness is less than 0.20 foot and a 3/4-inch aggregate grading is specified and used.
3. You spread and compact at:

    3.1. Asphalt concrete surfacing replacement areas
    3.2. Leveling courses
    3.3. Areas the Engineer determines conventional compaction and compaction measurement methods are impeded

Do not open new HMA pavement to public traffic until its mid-depth temperature is below 160 °F.

If you request in writing and the Engineer authorizes, you may cool HMA Type A and Type B with water when rolling activities are complete. Apply water under Section 17, "Watering."

Spread sand at a rate between 1 pound and 2 pounds per square yard on new RHMA-G, RHMA-O, and RHMA-O-HB pavement when finish rolling is complete. Sand must be free of clay or organic matter. Sand must comply with Section 90-3.03, "Fine Aggregate Grading." Keep traffic off the pavement until spreading sand is complete.

39-1.12 SMOOTHNESS

39-1.12A General

Determine HMA smoothness with a profilograph and a straightedge.

Smoothness specifications do not apply to OGFC placed on existing pavement not constructed under the same project.

If portland cement concrete is placed on HMA:

1. Cold plane the HMA finished surface to within specified tolerances if it is higher than the grade specified by the Engineer.
2. Remove and replace HMA if the finished surface is lower than 0.05 foot below the grade specified by the Engineer.

39-1.12B Straightedge

The HMA pavement top layer must not vary from the lower edge of a 12-foot long straightedge:

1. More than 0.01 foot when the straight edge is laid parallel with the centerline
2. More than 0.02 foot when the straightedge is laid perpendicular to the centerline and extends from edge to edge of a traffic lane
3. More than 0.02 foot when the straightedge is laid within 24 feet of a pavement conform

39-1.12C Profilograph

Under California Test 526, determine the zero (null) blanking band Profile Index (PI_0) and must-grinds on the top layer of HMA Type A, Type B, and RHMA-G pavement. Take 2 profiles within each traffic lane, 3 feet from and parallel with the edge of each lane.

A must-grind is a deviation of 0.3 inch or more in a length of 25 feet. You must correct must-grinds.

For OGFC, only determine must-grinds when placed over HMA constructed under the same project. The top layer of the underlying HMA must comply with the smoothness specifications before placing OGFC.

Profile pavement in the Engineer's presence. Choose the time of profiling.

On tangents and horizontal curves with a centerline radius of curvature 2,000 feet or more, the PI_0 must be at most 2.5 inches per 0.1-mile section.

On horizontal curves with a centerline radius of curvature between 1,000 feet and 2,000 feet including pavement within the superelevation transitions, the PI_0 must be at most 5 inches per 0.1-mile section.

Before the Engineer accepts HMA pavement for smoothness, submit written final profilograms.

Submit 1 electronic copy of profile information in Microsoft Excel and 1 electronic copy of longitudinal pavement profiles in ".erd" format or other ProVAL compatible format to the Engineer and to:

Smoothness@dot.ca.gov

The following HMA pavement areas do not require a PI_0. You must measure these areas with a 12-foot straightedge and determine must-grinds with a profilograph:

1. New HMA with a total thickness less than 0.25 foot
2. HMA sections of city or county streets and roads, turn lanes and collector lanes that are less than 1,500 feet in length

The following HMA pavement areas do not require a PI_0. You must measure these areas with a 12-foot straightedge:

1. Horizontal curves with a centerline radius of curvature less than 1,000 feet including pavement within the superelevation transitions of those curves
2. Within 12 feet of a transverse joint separating the pavement from:
    2.1. Existing pavement not constructed under the same project
    2.2. A bridge deck or approach slab
3. Exit ramp termini, truck weigh stations, and weigh-in-motion areas
4. If steep grades and superelevation rates greater than 6 percent are present on:
    4.1. Ramps
    4.2. Connectors
5. Turn lanes
6. Areas within 15 feet of manholes or drainage transitions
7. Acceleration and deceleration lanes for at-grade intersections
8. Shoulders and miscellaneous areas
9. HMA pavement within 3 feet from and parallel to the construction joints formed between curbs, gutters, or existing pavement

39-1.12D Smoothness Correction

If the top layer of HMA Type A, Type B, or RHMA-G pavement does not comply with the smoothness specifications, grind the pavement to within tolerances, remove and replace it, or place a layer of HMA. The Engineer must authorize your choice of correction before the work begins.

Remove and replace the areas of OGFC not in compliance with the must-grind and straightedge specifications, except you may grind OGFC for correcting smoothness:

1. At a transverse joint separating the pavement from pavement not constructed under the same project
2. Within 12 feet of a transverse joint separating the pavement from a bridge deck or approach slab

Corrected HMA pavement areas must be uniform rectangles with edges:

1. Parallel to the nearest HMA pavement edge or lane line
2. Perpendicular to the pavement centerline

Measure the corrected HMA pavement surface with a profilograph and a 12-foot straightedge and correct the pavement to within specified tolerances. If a must-grind area or straightedged pavement cannot be corrected to within specified tolerances, remove and replace the pavement.

On ground areas not overlaid with OGFC, apply fog seal coat under Section 37-1, "Seal Coats."

39-1.13 MISCELLANEOUS AREAS AND DIKES

Miscellaneous areas are outside the traveled way and include:

1. Median areas not including inside shoulders
2. Island areas
3. Sidewalks
4. Gutters
5. Gutter flares
6. Ditches
7. Overside drains
8. Aprons at the ends of drainage structures

Spread miscellaneous areas in 1 layer and compact to the specified lines and grades.

For miscellaneous areas and dikes:

1. Do not submit a JMF.
2. Choose the 3/8-inch or 1/2-inch HMA Type A and Type B aggregate gradations.
3. Minimum asphalt binder content must be 6.8 percent for 3/8-inch aggregate and 6.0 percent for 1/2-inch aggregate. If you request in writing and the Engineer authorizes, you may reduce the minimum asphalt binder content.
4. Choose asphalt binder Grade PG 70-10 or the same grade specified for HMA.

39-2 STANDARD

39-2.01 DESCRIPTION

If HMA is specified as Standard, construct it under Section 39-1, "General," this Section 39-2, "Standard," and Section 39-5, "Measurement and Payment."

39-2.02 CONTRACTOR QUALITY CONTROL

39-2.02A Quality Control Plan

Establish, implement, and maintain a Quality Control Plan (QCP) for HMA. The QCP must describe the organization and procedures you will use to:

1. Control the quality characteristics
2. Determine when corrective actions are needed (action limits)
3. Implement corrective actions

When you submit the proposed JMF, submit the written QCP. You and the Engineer must discuss the QCP during the prepaving conference.

The QCP must address the elements affecting HMA quality including:

1. Aggregate
2. Asphalt binder
3. Additives
4. Production
5. Paving

The Engineer reviews each QCP within 5 business days from the submittal. Hold HMA production until the Engineer accepts the QCP in writing. The Engineer's QCP acceptance does not mean your compliance with the QCP will result in acceptable HMA. Section 39-1.05, "Engineer's Acceptance," specifies HMA acceptance.

39-2.02B Quality Control Testing

Perform sampling and testing at the specified frequency for the following quality characteristics:

Minimum Quality Control – Standard

Quality Characteristic	Test Method	Minimum Sampling and Testing Frequency	HMA Type			
			A	B	RHMA-G	OGFC
Aggregate gradation[a]	CT 202	1 per 750 tons and any remaining part at the end of the project	JMF ± Tolerance [b]	JMF ± Tolerance [b]	JMF ± Tolerance [b]	JMF ± Tolerance [b]
Sand equivalent (min.) [c]	CT 217		47	42	47	--
Asphalt binder content (%)	CT 379 or 382		JMF ± 0.45	JMF ± 0.45	JMF ± 0.50	JMF ± 0.50
HMA moisture content (%, max.)	CT 226 or CT 370	1 per 2,500 tons but not less than 1 per paving day	1.0	1.0	1.0	1.0
Field compaction, (%, max. theoretical density) [d,e]	Quality control plan	2 per business day (min.)	91 - 97	91 - 97	91 - 97	--
Stabilometer value (min.) [c, f]	CT 366	One per 4,000 tons or 2 per 5 business days, which-ever is more				
No. 4 and 3/8" gradings			30	30	--	--
1/2" and 3/4" gradings			37	35	23	--
Air voids content (%) [c, g]	CT 367		4 ± 2	4 ± 2	Specification ± 2	--
Aggregate moisture content at continuous mixing plants and RAP moisture content at continuous mixing plants and batch mixing plants [h]	CT 226 or CT 370	2 per day during production	--	--	--	--
Percent of crushed particles coarse aggregate (%, min.)	CT 205	As necessary and designat-ed in the QCP. At least once per project				
One fractured face			90	25	--	90
Two fractured faces			75	--	90	75
Fine aggregate (%, min) (Passing No. 4 sieve and retained on No. 8 sieve.) One fractured face			70	20	70	90
Los Angeles Rattler (%, max.)	CT 211					
Loss at 100 rev.			12	--	12	12
Loss at 500 rev.			45	50	40	40

Flat and elongated particles (%, max. by weight @ 5:1)	CT 235		Report only	Report only	Report only	Report only
Fine aggregate angularity (%, min.)[i]	CT 234		45	45	45	--
Voids filled with asphalt (%)[j] No. 4 grading 3/8" grading 1/2" grading 3/4" grading	LP-3		 76.0 – 80.0 73.0 – 76.0 65.0 – 75.0 65.0 – 75.0	 76.0 – 80.0 73.0 – 76.0 65.0 – 75.0 65.0 – 75.0	Report only	--
Voids in mineral aggregate (% min.)[j] No. 4 grading 3/8" grading 1/2" grading 3/4" grading	LP-2		 17.0 15.0 14.0 13.0	 17.0 15.0 14.0 13.0	 -- -- 18.0 – 23.0 [k] 18.0 – 23.0 [k]	--
Dust proportion[j] No. 4 and 3/8" gradings 1/2" and 3/4" gradings	LP-4		 0.9 – 2.0 0.6 – 1.3	 0.9 – 2.0 0.6 – 1.3	Report only	--
Smoothness	Section 39-1.12	--	12-foot straightedge, must-grind, and PI_0	12-foot straightedge, must-grind, and PI_0	12-foot straightedge, must-grind, and PI_0	12-foot straightedge and must-grind
Asphalt rubber binder viscosity @ 375 °F, centipoises	Section 39-1.02D	Section 39-1.04C	--	--	1,500 – 4,000	1,500 – 4,000
Asphalt modifier	Section 39-1.02D	Section 39-1.04C	--	--	Section 39-1.02D	Section 39-1.02D
Crumb rubber modifier	Section 39-1.02D	Section 39-1.04C	--	--	Section 39-1.02D	Section 39-1.02D

Notes:

[a] Determine combined aggregate gradation containing RAP under Laboratory Procedure LP-9.

[b] The tolerances must comply with the allowable tolerances in Section 39-1.02E, "Aggregate."

[c] Report the average of 3 tests from a single split sample.

[d] Determine field compaction for any of the following conditions:

1. 1/2-inch, 3/8-inch, No. 4 aggregate grading is used and the specified total paved thickness is at least 0.15 foot.
2. 3/4-inch aggregate grading is used and the specified total paved thickness is at least 0.20 foot.

[e] To determine field compaction use:

1. In-place density measurements using the method specified in your QC.
2. California Test 309 to determine maximum theoretical density at the frequency specified in California Test 375, Part 5C.

[f] Modify California Test 304, Part 2.B.2.c: "After compaction in the mechanical compactor, cool to 140 °F ± 5 °F by allowing the briquettes to cool at room temperature for 0.5 hour, then place the briquettes in the oven at 140 °F for a minimum of 2 hours and not more than 3 hours."

[g] Determine the bulk specific gravity of each lab-compacted briquette under California Test 308, Method A, and theoretical maximum specific gravity under California Test 309.

[h] For adjusting the plant controller at the HMA plant.

[i] The Engineer waives this specification if HMA contains 10 percent or less of nonmanufactured sand by weight of total aggregate. Manufactured sand is fine aggregate produced by crushing rock or gravel.

[j] Report only if the adjustment for asphalt binder content target value is less than or equal to ± 0.3 percent from OBC.

[k] Voids in mineral aggregate for RHMA-G must be within this range.

For any single quality characteristic except smoothness, if 2 consecutive quality control test results do not comply with the action limits or specifications:

1. Stop production.
2. Notify the Engineer in writing.
3. Take corrective action.
4. Demonstrate compliance with the specifications before resuming production and placement on the State highway.

39-2.03 ENGINEER'S ACCEPTANCE

39-2.03A Testing

The Engineer samples for acceptance testing and tests for:

HMA Acceptance - Standard

Quality Characteristic	Test Method	HMA Type			
		A	B	RHMA-G	OGFC
Aggregate gradation [a]	CT 202	JMF ± Tolerance [c]	JMF ± Tolerance [c]	JMF ± Tolerance [c]	JMF ± Tolerance [c]
Sieve: 3/4" / 1/2" / 3/8"					
1/2": X [b] / /					
3/8": / X /					
No. 4: / / X					
No. 8: X / X / X					
No. 200: X / X / X					
Sand equivalent (min.) [d]	CT 217	47	42	47	--
Asphalt binder content (%)	CT 379 or 382	JMF ± 0.45	JMF ± 0.45	JMF ± 0.50	JMF ± 0.50
HMA moisture content (%, max.)	CT 226 or CT 370	1.0	1.0	1.0	1.0
Field compaction (% max. theoretical density) [e,f]	CT 375	91 – 97	91 – 97	91 – 97	--
Stabilometer value (min.) [d,g]	CT 366				
No. 4 and 3/8" gradings		30	30	--	--
1/2" and 3/4" gradings		37	35	23	--
Air voids content (%) [d, h]	CT 367	4 ± 2	4 ± 2	Specification ± 2	--
Percent of crushed particles	CT 205				
Coarse aggregate (%, min.)					
One fractured face		90	25	--	90
Two fractured faces		75	--	90	75
Fine aggregate (%, min) (Passing No. 4 sieve and retained on No. 8 sieve.)					
One fractured face		70	20	70	90
Los Angeles Rattler (%, max.)	CT 211				
Loss at 100 rev.		12	--	12	12
Loss at 500 rev.		45	50	40	40
Fine aggregate angularity (%, min.) [i]	CT 234	45	45	45	--
Flat and elongated particles (%, max. by weight @ 5:1)	CT 235	Report only	Report only	Report only	Report only
Voids filled with asphalt (%) [J]	LP-3				
No. 4 grading		76.0 – 80.0	76.0 – 80.0	Report only	
3/8" grading		73.0 – 76.0	73.0 – 76.0		--
1/2" grading		65.0 – 75.0	65.0 – 75.0		
3/4" grading		65.0 – 75.0	65.0 – 75.0		
Voids in mineral aggregate (% min.) [j]	LP-2				
No. 4 grading		17.0	17.0	--	--
3/8" grading		15.0	15.0	--	
1/2" grading		14.0	14.0	18.0 – 23.0 [k]	
3/4" grading		13.0	13.0	18.0 – 23.0 [k]	
Dust proportion [J]	LP-4				
No. 4 and 3/8" gradings		0.9 – 2.0	0.9 – 2.0	Report only	--
1/2" and 3/4" gradings		0.6 – 1.3	0.6 – 1.3		
Smoothness	Section 39-1.12	12-foot straightedge, must-grind, and PI_0	12-foot straightedge, must-grind, and PI_0	12-foot straightedge, must-grind, and PI_0	12-foot straightedge and must-grind
Asphalt binder	Various	Section 92	Section 92	Section 92	Section 92

Asphalt rubber binder	Various	--	--	Section 92-1.02(C) and Section 39-1.02D	Section 92-1.02(C) and Section 39-1.02D
Asphalt modifier	Various	--	--	Section 39-1.02D	Section 39-1.02D
Crumb rubber modifier	Various	--	--	Section 39-1.02D	Section 39-1.02D

[a] The Engineer determines combined aggregate gradations containing RAP under Laboratory Procedure LP-9.
[b] "X" denotes the sieves the Engineer considers for the specified aggregate gradation.
[c] The tolerances must comply with the allowable tolerances in Section 39-1.02E, "Aggregate."
[d] The Engineer reports the average of 3 tests from a single split sample.
[e] The Engineer determines field compaction for any of the following conditions:

1. 1/2-inch, 3/8-inch, or No.4 aggregate grading is used and the specified total paved thickness is at least 0.15 foot.
2. 3/4-inch aggregate grading is used and the specified total paved thickness is at least 0.20 foot.

[f] To determined field compaction, the Engineer uses:

1. California Test 308, Method A, to determine in-place density of each density core.
2. California Test 309 to determine maximum theoretical density at the frequency specified in California Test 375, Part 5C.

[g] Modify California Test 304, Part 2.B.2.c: "After compaction in the mechanical compactor, cool to 140 °F ±5 °F by allowing the briquettes to cool at room temperature for 0.5 hour, then place the briquettes in the oven at 140 °F for a minimum of 2 hours and not more than 3 hours."
[h] The Engineer determines the bulk specific gravity of each lab-compacted briquette under California Test 308, Method A, and theoretical maximum specific gravity under California Test 309.
[i] The Engineer waives this specification if HMA contains 10 percent or less of nonmanufactured sand by weight of total aggregate. Manufactured sand is fine aggregate produced by crushing rock or gravel.
[j] Report only if the adjustment for asphalt binder content target value is less than or equal to ± 0.3 percent from OBC.
[k] Voids in mineral aggregate for RHMA-G must be within this range.

No single test result may represent more than the smaller of 750 tons or 1 day's production.

For any single quality characteristic except smoothness, if 2 consecutive acceptance test results do not comply with the specifications:

1. Stop production.
2. Take corrective action.
3. In the Engineer's presence, take samples and split each sample into 4 parts. Test 1 part for compliance with the specifications and submit 3 parts to the Engineer. The Engineer tests 1 part for compliance with the specifications and reserves and stores 2 parts.
4. Demonstrate compliance with the specifications before resuming production and placement on the State highway.

The Engineer tests the density core you take from each 250 tons of HMA production. The Engineer determines the percent of maximum theoretical density for each density core by determining the density core's density and dividing by the maximum theoretical density.

The Engineer determines the percent of maximum theoretical density from density cores taken from the final layer measured the full depth of the total paved HMA thickness if any of the following applies:

1. 1/2-inch, 3/8-inch, or No. 4 aggregate grading is used and the specified total paved thickness is at least 0.15 foot and any layer is less than 0.15 foot.
2. 3/4-inch aggregate grading is used and the specified total paved thickness is at least 0.20 foot and any layer is less than 0.20 foot.

For percent of maximum theoretical density, the Engineer determines a deduction for each test result outside the specifications in compliance with:

Reduced Payment Factors for Percent of Maximum Theoretical Density

HMA Type A and B and RHMA-G Percent of Maximum Theoretical Density	Reduced Payment Factor	HMA Type A and B and RHMA-G Percent of Maximum Theoretical Density	Reduced Payment Factor
91.0	0.0000	97.0	0.0000
90.9	0.0125	97.1	0.0125
90.8	0.0250	97.2	0.0250
90.7	0.0375	97.3	0.0375
90.6	0.0500	97.4	0.0500
90.5	0.0625	97.5	0.0625
90.4	0.0750	97.6	0.0750
90.3	0.0875	97.7	0.0875
90.2	0.1000	97.8	0.1000
90.1	0.1125	97.9	0.1125
90.0	0.1250	98.0	0.1250
89.9	0.1375	98.1	0.1375
89.8	0.1500	98.2	0.1500
89.7	0.1625	98.3	0.1625
89.6	0.1750	98.4	0.1750
89.5	0.1875	98.5	0.1875
89.4	0.2000	98.6	0.2000
89.3	0.2125	98.7	0.2125
89.2	0.2250	98.8	0.2250
89.1	0.2375	98.9	0.2375
89.0	0.2500	99.0	0.2500
< 89.0	Remove and Replace	> 99.0	Remove and Replace

39-2.04 TRANSPORTING, SPREADING, AND COMPACTING

Determine the number of rollers needed to obtain the specified density and surface finish.

39-3 METHOD

39-3.01 DESCRIPTION

If HMA is specified as Method, construct it under Section 39-1, "General," this Section 39-3, "Method," and Section 39-5, "Measurement and Payment."

39-3.02 ENGINEER'S ACCEPTANCE

39-3.02A Testing

The Engineer samples for acceptance testing and tests for:

HMA Acceptance - Method

Quality Characteristic	Test Method	HMA Type			
		A	B	RHMA-G	OGFC
Aggregate gradation [a]	CT 202	JMF ± Tolerance [b]	JMF ± Tolerance [b]	JMF ± Tolerance [b]	JMF ± Tolerance [b]
Sand equivalent (min.) [c]	CT 217	47	42	47	--
Asphalt binder content (%)	CT 379 or 382	JMF ± 0.45	JMF ± 0.45	JMF ± 0.50	JMF ± 0.50
HMA moisture content (%, max.)	CT 226 or CT 370	1.0	1.0	1.0	1.0
Stabilometer value (min.) [c,d]	CT 366				
No. 4 and 3/8" gradings		30	30	--	--
1/2" and 3/4" gradings		37	35	23	--
Percent of crushed particles	CT 205				
Coarse aggregate (% min.)					
One fractured face		90	25	--	90
Two fractured faces		75	--	90	75
Fine aggregate (% min) (Passing No. 4 sieve and retained on No. 8 sieve.)					
One fractured face		70	20	70	90
Los Angeles Rattler (% max.)	CT 211				
Loss at 100 rev.		12	--	12	12
Loss at 500 rev.		45	50	40	40
Air voids content (%) [c, e]	CT 367	4 ± 2	4 ± 2	Specification ± 2	--
Fine aggregate angularity (% min.) [f]	CT 234	45	45	45	--
Flat and elongated particles (% max. by weight @ 5:1)	CT 235	Report only	Report only	Report only	Report only
Voids filled with asphalt (%) [g]	LP-3			Report only	
No. 4 grading		76.0 – 80.0	76.0 – 80.0		--
3/8" grading		73.0 – 76.0	73.0 – 76.0		
1/2" grading		65.0 – 75.0	65.0 – 75.0		
3/4" grading		65.0 – 75.0	65.0 – 75.0		
Voids in mineral aggregate (% min.) [g]	LP-2				
No. 4 grading		17.0	17.0	--	--
3/8" grading		15.0	15.0	--	
1/2" grading		14.0	14.0	18.0 – 23.0 [h]	
3/4" grading		13.0	13.0	18.0 – 23.0 [h]	
Dust proportion [g]	LP-4				
No. 4 and 3/8" gradings		0.9 – 2.0	0.9 – 2.0	Report only	--
1/2" and 3/4" gradings		0.6 – 1.3	0.6 – 1.3		
Smoothness	Section 39-1.12	12-foot straightedge and must-grind	12-foot straightedge and must-grind	12-foot straightedge and must-grind	12-foot straightedge and must-grind
Asphalt binder	Various	Section 92	Section 92	Section 92	Section 92
Asphalt rubber binder	Various	--	--	Section 92-1.02(C) and Section 39-	Section 92-1.02(C) and Section 39-

				1.02D	1.02D
Asphalt modifier	Various	--	--	Section 39-1.02D	Section 39-1.02D
Crumb rubber modifier	Various	--	--	Section 39-1.02D	Section 39-1.02D

[a] The Engineer determines combined aggregate gradations containing RAP under Laboratory Procedure LP-9.
[b] The tolerances must comply with the allowable tolerances in Section 39-1.02E, "Aggregate."
[c] The Engineer reports the average of 3 tests from a single split sample.
[d] Modify California Test 304, Part 2.B.2.c: "After compaction in the mechanical compactor, cool to 140 °F ±5 °F by allowing the briquettes to cool at room temperature for 0.5 hour, then place the briquettes in the oven at 140 °F for a minimum of 2 hours and not more than 3 hours."
[e] The Engineer determines the bulk specific gravity of each lab-compacted briquette under California Test 308, Method A, and theoretical maximum specific gravity under California Test 309.
[f] The Engineer waives this specification if HMA contains 10 percent or less of nonmanufactured sand by weight of total aggregate. Manufactured sand is fine aggregate produced by crushing rock or gravel.
[g] Report only if the adjustment for asphalt binder content target value is less than or equal to ± 0.3 percent from OBC.
[h] Voids in mineral aggregate for RHMA-G must be within this range.

No single test result may represent more than the smaller of 750 tons or 1 day's production.

For any single quality characteristic except smoothness, if 2 consecutive acceptance test results do not comply with the specifications:

1. Stop production.
2. Take corrective action.
3. In the Engineer's presence, take samples and split each sample into 4 parts. Test 1 part for compliance with the specifications and submit 3 parts to the Engineer. The Engineer tests 1 part for compliance with the specifications and reserves and stores 2 parts.
4. Demonstrate compliance with the specifications before resuming production and placement on the State highway.

39-3.03 SPREADING AND COMPACTING EQUIPMENT

Each paver spreading HMA Type A and Type B must be followed by 3 rollers:

1. One vibratory roller specifically designed to compact HMA. The roller must be capable of at least 2,500 vibrations per minute and must be equipped with amplitude and frequency controls. The roller's gross static weight must be at least 7.5 tons.
2. One oscillating type pneumatic-tired roller at least 4 feet wide. Pneumatic tires must be of equal size, diameter, type, and ply. The tires must be inflated to 60 psi minimum and maintained so that the air pressure does not vary more than 5 psi.
3. One steel-tired, 2-axle tandem roller. The roller's gross static weight must be at least 7.5 tons.

Each roller must have a separate operator. Rollers must be self-propelled and reversible.

Compact RHMA-G under the specifications for compacting HMA Type A and Type B except do not use pneumatic-tired rollers.

Compact OGFC with steel-tired, 2-axle tandem rollers. If placing over 300 tons of OGFC per hour, use at least 3 rollers for each paver. If placing less than 300 tons of OGFC per hour, use at least 2 rollers for each paver. Each roller must weigh between 126 pounds to 172 pounds per linear inch of drum width. Turn the vibrator off.

39-3.04 TRANSPORTING, SPREADING, AND COMPACTING

Pave HMA in maximum 0.25-foot thick compacted layers.

If the surface to be paved is both in sunlight and shade, pavement surface temperatures are taken in the shade.

Spread HMA Type A and Type B only if atmospheric and surface temperatures are:

Minimum Atmospheric and Surface Temperatures

Compacted Layer Thickness, feet	Atmospheric,° F		Surface,° F	
	Unmodified Asphalt Binder	Modified Asphalt Binder[a]	Unmodified Asphalt Binder	Modified Asphalt Binder[a]
< 0.15	55	50	60	55
0.15 – 0.25	45	45	50	50

Note:
[a] Except asphalt rubber binder.

If the asphalt binder for HMA Type A and Type B is:

1. Unmodified asphalt binder, complete:

    1.1. First coverage of breakdown compaction before the surface temperature drops below 250 °F
    1.2. Breakdown and intermediate compaction before the surface temperature drops below 200 °F
    1.3. Finish compaction before the surface temperature drops below 150 °F

2. Modified asphalt binder, complete:

    2.1. First coverage of breakdown compaction before the surface temperature drops below 240 °F
    2.2. Breakdown and intermediate compaction before the surface temperature drops below 180 °F
    2.3. Finish compaction before the surface temperature drops below 140 °F

For RHMA-G:

1. Only spread and compact if the atmospheric temperature is at least 55 °F and the surface temperature is at least 60 °F.
2. Complete the first coverage of breakdown compaction before the surface temperature drops below 285 °F.
3. Complete breakdown and intermediate compaction before the surface temperature drops below 250 °F.
4. Complete finish compaction before the surface temperature drops below 200 °F.
5. If the atmospheric temperature is below 70 °F, cover loads in trucks with tarpaulins. The tarpaulins must completely cover the exposed load until you transfer the mixture to the paver's hopper or to the pavement surface.

For OGFC with unmodified asphalt binder:

1. Only spread and compact if the atmospheric temperature is at least 55 °F and the surface temperature is at least 60 °F.
2. Complete first coverage using 2 rollers before the surface temperature drops below 240 °F.
3. Complete all compaction before the surface temperature drops below 200 °F.
4. If the atmospheric temperature is below 70 °F, cover loads in trucks with tarpaulins. The tarpaulins must completely cover the exposed load until you transfer the mixture to the paver's hopper or to the pavement surface.

For OGFC with modified asphalt binder except asphalt rubber binder:

1. Only spread and compact if the atmospheric temperature is at least 50 °F and the surface temperature is at least 50 °F.
2. Complete first coverage using 2 rollers before the surface temperature drops below 240 °F.
3. Complete all compaction before the surface temperature drops below 180 °F.
4. If the atmospheric temperature is below 70 °F, cover loads in trucks with tarpaulins. The tarpaulins must completely cover the exposed load until you transfer the mixture to the paver's hopper or to the pavement surface.

For RHMA-O and RHMA-O-HB:

1. Only spread and compact if the atmospheric temperature is at least 55 °F and surface temperature is at least 60 °F.
2 Complete the 1st coverage using 2 rollers before the surface temperature drops below 280 °F.
3. Complete compaction before the surface temperature drops below 250 °F.
4. If the atmospheric temperature is below 70 °F, cover loads in trucks with tarpaulins. The tarpaulins must completely cover the exposed load until the mixture is transferred to the paver's hopper or to the pavement surface.

For RHMA-G and OGFC, tarpaulins are not required if the time from discharge to truck until transfer to the paver's hopper or the pavement surface is less than 30 minutes.

HMA compaction coverage is the number of passes needed to cover the paving width. A pass is 1 roller's movement parallel to the paving in either direction. Overlapping passes are part of the coverage being made and are not a subsequent coverage. Do not start a coverage until completing the prior coverage.

Start rolling at the lower edge and progress toward the highest part.

Perform breakdown compaction of each layer of HMA Type A, Type B, and RHMA-G with 3 coverages using a vibratory roller. The speed of the vibratory roller in miles per hour must not exceed the vibrations per minute divided by 1,000. If the HMA layer thickness is less than 0.08 foot, turn the vibrator off. The Engineer may order fewer coverages if the HMA layer thickness is less than 0.15 foot.

Perform intermediate compaction of each layer of HMA Type A and Type B with 3 coverages using a pneumatic-tired roller at a speed not to exceed 5 mph.

Perform finish compaction of HMA Type A, Type B, and RHMA-G with 1 coverage using a steel-tired roller.

Compact OGFC with 2 coverages using steel-tired rollers.

39-4 QUALITY CONTROL / QUALITY ASSURANCE

39-4.01 DESCRIPTION

If HMA is specified as Quality Control / Quality Assurance, construct it under Section 39-1, "General," this Section 39-4, "Quality Control / Quality Assurance," and Section 39-5, "Measurement and Payment."

39-4.02 GENERAL

The QC / QA construction process consists of:

1. Establishing, maintaining, and changing if needed a quality control system providing assurance the HMA complies with the specifications
2. Sampling and testing at specified intervals, or sublots, to demonstrate compliance and to control process
3. The Engineer sampling and testing at specified intervals to verify testing process and HMA quality
4. The Engineer using test results, statistical evaluation of verified quality control tests, and inspection to accept HMA for payment

A lot is a quantity of HMA. The Engineer designates a new lot when:

1. 20 sublots are complete
2. The JMF changes
3. Production stops for more than 30 days

Each lot consists of no more than 20 sublots. A sublot is 750 tons except HMA paved at day's end greater than 250 tons is a sublot. If HMA paved at day's end is less than 250 tons, you may either make this quantity a sublot or include it in the previous sublot's test results for statistical evaluation.

39-4.03 CONTRACTOR QUALITY CONTROL

39-4.03A General

Use a composite quality factor, QF_C, and individual quality factors, QF_{QCi}, to control your process and evaluate your quality control program. For quality characteristics without quality factors, use your quality control plan's action limits to control process.

Control HMA quality including:

1. Materials
2. Proportioning

3. Spreading and compacting
4. Finished roadway surface

Develop, implement, and maintain a quality control program that includes:

1. Inspection
2. Sampling
3. Testing

39-4.03B Quality Control Plan

With the JMF submittal, submit a written Quality Control Plan (QCP). The QCP must comply with the Department's Quality Control Manual for Hot Mix Asphalt Production and Placement. Discuss the QCP with the Engineer during the prepaving conference.

The Engineer reviews each QCP within 5 business days from the submittal. Hold HMA production until the Engineer accepts the QCP in writing. The Engineer's QCP acceptance does not mean your compliance with the QCP will result in acceptable HMA. Section 39-1.05, "Engineer's Acceptance," specifies HMA acceptance.

The QCP must include the name and qualifications of a Quality Control Manager. The Quality Control Manager administers the QCP and during paving must be at the job site within 3 hours of receiving notice. The Quality Control Manager must not be any of the following on the project:

1. Foreman
2. Production or paving crewmember
3. Inspector
4. Tester

The QCP must include action limits and details of corrective action you will take if a test result for any quality characteristic falls outside an action limit.

As work progresses, you must submit a written QCP supplement to change quality control procedures, personnel, tester qualification status, or laboratory accreditation status.

39-4.03C Quality Control Inspection, Sampling, And Testing

Sample, test, inspect, and manage HMA quality control.

Provide a roadway inspector while HMA paving activities are in progress. Provide a plant inspector during HMA production.

Inspectors must comply with the Department's Quality Control Manual for Hot Mix Asphalt Production and Placement.

Provide a testing laboratory and personnel for quality control testing. Provide the Engineer unrestricted access to the quality control activities. Before providing services for the project, the Engineer reviews, accredits, and qualifies the testing laboratory and personnel under the Department's Independent Assurance Program.

The minimum random sampling and testing for quality control is:

Minimum Quality Control – QC / QA

Quality Characteristic	Test Method	Min-imum Sampl-ing and Testing Frequen-cy	HMA Type			Location of Sampling	Max. Report-ing Time Allow-ance
			A	B	RHMA-G		
Aggregate gradation [a]	CT 202	1 per 750 tons	JMF ± Tolerance [b]	JMF ± Tolerance [b]	JMF ± Tolerance [b]	CT 125	24 hours
Asphalt binder content (%)	CT 379 or 382		JMF ±0.45	JMF ±0.45	JMF ±0.5	Loose Mix Behind Paver See CT 125	
Field compaction (% max. theoretical density) [c,d]	QC Plan		92 - 96	92 - 96	91 - 96	QC Plan	
Aggregate moisture content at continuous mixing plants and RAP moisture content at continuous mixing plants and batch mixing plants [e]	CT 226 or CT 370	2 per day during produc-tion	--	--	--	Stock-piles or cold feed belts	--
Sand equivalent (min.) [f]	CT 217	1 per 750 tons	47	42	47	CT 125	24 hours
HMA moisture content (%,max.)	CT 226 or CT 370	1 per 2,500 tons but not less than 1 per paving day	1.0	1.0	1.0	Loose Mix Behind Paver See CT 125	24 hours
Stabilometer Value (min.) [f, g] No. 4 and 3/8" gradings 1/2" and 3/4" gradings	CT 366	1 per 4,000 tons or 2 per 5 bus-iness days, which-ever is more	30 37	30 35	-- 23		48 hours
Air voids content (%) [f, h]	CT 367		4 ± 2	4 ± 2	Specifica-tion ± 2		

Percent of crushed particles coarse aggregate (% min.) One fractured face Two fractured faces Fine aggregate (% min) (Passing No. 4 sieve and retained on No. 8 sieve.) One fractured face	CT 205	As necessary and designated in QCP. At least once per project.	 90 75 70	 25 -- 20	 -- 90 70	CT 125	48 hours
Los Angeles Rattler (% max.) Loss at 100 rev. Loss at 500 rev.	CT 211		 12 45	 -- 50	 12 40	CT 125	
Fine aggregate angularity (% min.) [i]	CT 234		45	45	45	CT 125	
Flat and elongated particle (% max. by weight @ 5:1)	CT 235		Report only	Report only	Report only	CT 125	
Voids filled with asphalt (%) [j] No. 4 grading 3/8" grading 1/2" grading 3/4" grading	LP-3		 76.0 – 80.0 73.0 – 76.0 65.0 – 75.0 65.0 – 75.0	 76.0 – 80.0 73.0 – 76.0 65.0 – 75.0 65.0 – 75.0	Report only	LP-3	
Voids in mineral aggregate (% min.) [j] No. 4 grading 3/8" grading 1/2" grading 3/4" grading	LP-2		 17.0 15.0 14.0 13.0	 17.0 15.0 14.0 13.0	 -- -- 18.0 – 23.0 [k] 18.0 – 23.0 [k]	LP-2	
Dust proportion [J] No. 4 and 3/8" gradings 1/2" and 3/4" gradings	LP-4		 0.9 – 2.0 0.6 – 1.3	 0.9 – 2.0 0.6 – 1.3	Report only	LP-4	
Smoothness	Section 39-1.12	--	12-foot straight-edge, must-grind, and PI_0	12-foot straight-edge, must-grind, and PI_0	12-foot straight-edge, must-grind, and PI_0	--	
Asphalt rubber binder viscosity @ 375 °F, centipoises	Section 39-1.02D	--	--	--	1,500 – 4,000	Section 39-1.02D	24 hours
Crumb rubber modifier	Section 39-1.02D	--	--	--	Section 39-1.02D	Section 39-1.02D	48 hours

Notes:

[a] Determine combined aggregate gradation containing RAP under Laboratory Procedure LP-9.

[b] The tolerances must comply with the allowable tolerances in Section 39-1.02E, "Aggregate."

[c] Determine field compaction for any of the following conditions:

1. 1/2-inch, 3/8-inch, No. 4 aggregate grading is used and the specified total paved thickness is at least 0.15 foot.
2. 3/4-inch aggregate grading is used and the specified total paved thickness is at least 0.20 foot.

[d] To determine field compaction use:

1. In-place density measurements using the method specified in your QC.
2. California Test 309 to determine maximum theoretical density at the frequency specified in California Test 375, Part 5C.

[e] For adjusting the plant controller at the HMA plant.

[f] Report the average of 3 tests from a single split sample.

[g] Modify California Test 304, Part 2.B.2.c: "After compaction in the mechanical compactor, cool to 140 °F ± 5 °F by allowing the briquettes to cool at room temperature for 0.5 hour, then place the briquettes in the oven at 140 °F for a minimum of 2 hours and not more than 3 hours."

[h] Determine the bulk specific gravity of each lab-compacted briquette under California Test 308, Method A, and theoretical maximum specific gravity under California Test 309.

[i] The Engineer waives this specification if HMA contains 10 percent or less of nonmanufactured sand by weight of total aggregate. Manufactured sand is fine aggregate produced by crushing rock or gravel.

[j] Report only if the adjustment for asphalt binder content target value is less than or equal to ± 0.3 percent from OBC.

[k] Voids in mineral aggregate for RHMA-G must be within this range.

Within the specified reporting time, submit written test results including:

1. Sampling location, quantity, and time
2. Testing results
3. Supporting data and calculations

If test results for any quality characteristic are beyond the action limits in the QCP, take corrective actions. Document the corrective actions taken in the inspection records under Section 39-4.03E, "Records of Inspection and Testing."

Stop production, notify the Engineer in writing, take corrective action, and demonstrate compliance with the specifications before resuming production and placement on the State highway if:

1. A lot's composite quality factor, QF_C, or an individual quality factor, QF_{QCi} for i = 3, 4, or 5, is below 0.90 determined under Section 39-4.03F, "Statistical Evaluation," using quality control data
2. An individual quality factor, QF_{QCi} for i = 1 or 2, is below 0.75 using quality control data
3. Quality characteristics for which a quality factor, QF_{QCi}, is not determined has 2 consecutive quality control tests not in compliance with the specifications

39-4.03D Charts And Records

Record sampling and testing results for quality control on forms provided in the "Quality Control Manual for Hot Mix Asphalt," or on forms you submit with the QCP. The QCP must also include form posting locations and submittal times.

Submit quality control test results using the Department's statistical evaluation program, HMAPay, available at

www.dot.ca.gov/hq/construc/hma/index.htm

39-4.03E Records Of Inspection And Testing

During HMA production, submit in writing a daily:

1. HMA Construction Daily Record of Inspection. Also make this record available at the HMA plant and job site each day.
2. HMA Inspection and Testing Summary. Include in the summary:

    2.1. QC worksheet with updated test results from the HMAPay program
    2.2. Test forms with the testers' signatures and Quality Control Manager's initials.
    2.3. Inspection forms with the inspectors' signatures and Quality Control Manager's initials.
    2.4. A list and explanation of deviations from the specifications or regular practices.

2.5. A signed statement by the Quality Control Manager that says:

"It is hereby certified that the information contained in this record is accurate, and that information, tests, or calculations documented herein comply with the specifications of the contract and the standards set forth in the testing procedures. Exceptions to this certification are documented as part of this record."

Retain for inspection the records generated as part of quality control including inspection, sampling, and testing for at least 3 years after final acceptance.

39-4.03F Statistical Evaluation

General

Determine a lot's composite quality factor, QF_C, and the individual quality factors, QF_{QCi}. Perform statistical evaluation calculations to determine these quality factors based on quality control test results for:

1. Aggregate gradation
2. Asphalt binder content
3. Percent of maximum theoretical density

The Engineer grants a waiver and you must use 1.0 as the individual quality factor for percent of maximum theoretical density, QF_{QC5}, for HMA paved in:

1. Areas where the total paved thickness is less than 0.15 foot
2. Areas where the total paved thickness is less than 0.20 foot and a 3/4-inch grading is specified and used
3. Dig outs
4. Leveling courses
5. Areas where, in the opinion of the Engineer, compaction or compaction measurement by conventional methods is impeded

Statistical Evaluation Calculations

Use the Variability-Unknown / Standard Deviation Method to determine the percentage of a lot not in compliance with the specifications.

Determine the percentage of work not in compliance with the specification limits for each quality characteristic as follows:

1. Calculate the arithmetic mean ($\bar{X}$) of the test values

$$\bar{X} = \frac{\Sigma x}{n}$$

where:

x = individual test values
n = number of test values

2. Calculate the standard deviation

$$s = \sqrt{\frac{n(\Sigma x^2)-(\Sigma x)^2}{n(n-1)}}$$

where:

$\sum(x^2)$ = sum of the squares of individual test values
$(\sum x)^2$ = sum of the individual test values squared
n = number of test values

3. Calculate the upper quality index (Qu)

$$Q_u = \frac{USL - \overline{X}}{s}$$

where:

USL = target value plus the production tolerance or upper specification limit
s = standard deviation
$\overline{X}$ = arithmetic mean

4. Calculate the lower quality index (QL);

$$Q_L = \frac{\overline{X} - LSL}{s}$$

where:

LSL = target value minus production tolerance or lower specification limit
s = standard deviation
$\overline{X}$ = arithmetic mean

5. From the table, Upper Quality Index Q_U or Lower Quality Index Q_L, of this Section 39-4.03F, "Statistical Evaluation", determine P_U ;

where:

P_U = the estimated percentage of work outside the USL.
$P_U = 0$, when USL is not specified.

6. From the table, Upper Quality Index Q_U or Lower Quality Index Q_L, of this Section 39-4.03F, "Statistical Evaluation," determine P_L;

where:

P_L = the estimated percentage of work outside the LSL.
$P_L = 0$, when LSL is not specified.

7. Calculate the total estimated percentage of work outside the USL and LSL, percent defective

Percent defective = $P_U + P_L$

P_U and P_L are determined from:

P_U or P_L	**Upper Quality Index Q_U or Lower Quality Index Q_L** Sample Size (n)												
	5	6	7	8	9	10-11	12-14	15-17	18-22	23-29	30-42	43-66	>66
0	1.72	1.88	1.99	2.07	2.13	2.20	2.28	2.34	2.39	2.44	2.48	2.51	2.56
1	1.64	1.75	1.82	1.88	1.91	1.96	2.01	2.04	2.07	2.09	2.12	2.14	2.16
2	1.58	1.66	1.72	1.75	1.78	1.81	1.84	1.87	1.89	1.91	1.93	1.94	1.95
3	1.52	1.59	1.63	1.66	1.68	1.71	1.73	1.75	1.76	1.78	1.79	1.80	1.81
4	1.47	1.52	1.56	1.58	1.60	1.62	1.64	1.65	1.66	1.67	1.68	1.69	1.70
5	1.42	1.47	1.49	1.51	1.52	1.54	1.55	1.56	1.57	1.58	1.59	1.59	1.60
6	1.38	1.41	1.43	1.45	1.46	1.47	1.48	1.49	1.50	1.50	1.51	1.51	1.52
7	1.33	1.36	1.38	1.39	1.40	1.41	1.41	1.42	1.43	1.43	1.44	1.44	1.44
8	1.29	1.31	1.33	1.33	1.34	1.35	1.35	1.36	1.36	1.37	1.37	1.37	1.38
9	1.25	1.27	1.28	1.28	1.29	1.29	1.30	1.30	1.30	1.31	1.31	1.31	1.31
10	1.21	1.23	1.23	1.24	1.24	1.24	1.25	1.25	1.25	1.25	1.25	1.26	1.26
11	1.18	1.18	1.19	1.19	1.19	1.19	1.20	1.20	1.20	1.20	1.20	1.20	1.20
12	1.14	1.14	1.15	1.15	1.15	1.15	1.15	1.15	1.15	1.15	1.15	1.15	1.15
13	1.10	1.10	1.10	1.10	1.10	1.10	1.11	1.11	1.11	1.11	1.11	1.11	1.11
14	1.07	1.07	1.07	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06
15	1.03	1.03	1.03	1.03	1.02	1.02	1.02	1.02	1.02	1.02	1.02	1.02	1.02
16	1.00	0.99	0.99	0.99	0.99	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98
17	0.97	0.96	0.95	0.95	0.95	0.95	0.94	0.94	0.94	0.94	0.94	0.94	0.94
18	0.93	0.92	0.92	0.92	0.91	0.91	0.91	0.91	0.90	0.90	0.90	0.90	0.90
19	0.90	0.89	0.88	0.88	0.88	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87
20	0.87	0.86	0.85	0.85	0.84	0.84	0.84	0.83	0.83	0.83	0.83	0.83	0.83
21	0.84	0.82	0.82	0.81	0.81	0.81	0.80	0.80	0.80	0.80	0.80	0.80	0.79
22	0.81	0.79	0.79	0.78	0.78	0.77	0.77	0.77	0.76	0.76	0.76	0.76	0.76
23	0.77	0.76	0.75	0.75	0.74	0.74	0.74	0.73	0.73	0.73	0.73	0.73	0.73
24	0.74	0.73	0.72	0.72	0.71	0.71	0.70	0.70	0.70	0.70	0.70	0.70	0.70
25	0.71	0.70	0.69	0.69	0.68	0.68	0.67	0.67	0.67	0.67	0.67	0.67	0.66
26	0.68	0.67	0.67	0.65	0.65	0.65	0.64	0.64	0.64	0.64	0.64	0.64	0.63
27	0.65	0.64	0.63	0.62	0.62	0.62	0.61	0.61	0.61	0.61	0.61	0.61	0.60
28	0.62	0.61	0.60	0.59	0.59	0.59	0.58	0.58	0.58	0.58	0.58	0.58	0.57
29	0.59	0.58	0.57	0.57	0.56	0.56	0.55	0.55	0.55	0.55	0.55	0.55	0.54
30	0.56	0.55	0.54	0.54	0.53	0.53	0.52	0.52	0.52	0.52	0.52	0.52	0.52
31	0.53	0.52	0.51	0.51	0.50	0.50	0.50	0.49	0.49	0.49	0.49	0.49	0.49
32	0.50	0.49	0.48	0.48	0.48	0.47	0.47	0.47	0.46	0.46	0.46	0.46	0.46
33	0.47	0.48	0.45	0.45	0.45	0.44	0.44	0.44	0.44	0.43	0.43	0.43	0.43
34	0.45	0.43	0.43	0.42	0.42	0.42	0.41	0.41	0.41	0.41	0.41	0.41	0.40
35	0.42	0.40	0.40	0.39	0.39	0.39	0.38	0.38	0.38	0.38	0.38	0.38	0.38
36	0.39	0.38	0.37	0.37	0.36	0.36	0.36	0.36	0.36	0.36	0.36	0.36	0.36
37	0.36	0.35	0.34	0.34	0.34	0.33	0.33	0.33	0.33	0.33	0.33	0.33	0.32
38	0.33	0.32	0.32	0.31	0.31	0.31	0.30	0.30	0.30	0.30	0.30	0.30	0.30
39	0.30	0.30	0.29	0.28	0.28	0.28	0.28	0.28	0.28	0.28	0.28	0.28	0.28
40	0.28	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25
41	0.25	0.23	0.23	0.23	0.23	0.23	0.23	0.23	0.23	0.23	0.23	0.23	0.23
42	0.23	0.20	0.20	0.20	0.20	0.20	0.20	0.20	0.20	0.20	0.20	0.20	0.20
43	0.18	0.18	0.18	0.18	0.18	0.18	0.18	0.18	0.18	0.18	0.18	0.18	0.18
44	0.16	0.15	0.15	0.15	0.15	0.15	0.15	0.15	0.15	0.15	0.15	0.15	0.15
45	0.13	0.13	0.13	0.13	0.13	0.13	0.13	0.13	0.13	0.13	0.13	0.13	0.13
46	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10
47	0.08	0.08	0.08	0.08	0.08	0.08	0.08	0.08	0.08	0.08	0.08	0.08	0.08
48	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05
49	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03
50	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

1. If the value of Q_U or Q_L does not correspond to a value in the table, use the next lower value.
2. If Q_U or Q_L are negative values, P_U or P_L is equal to 100 minus the table value for P_U or P_L.

Quality Factor Determination

Determine individual quality factors, QF_{QCi}, using percent defective = $P_U + P_L$ and:

Quality Factors

Quality Factor	Maximum Allowable Percent Defective ($P_U + P_L$) Sample Size (n)												
	5	6	7	8	9	10-11	12-14	15-17	18-22	23-29	30-42	43-66	>66
1.05				0	0	0	0	0	0	0	0	0	0
1.04			0	1	3	5	4	4	4	3	3	3	3
1.03		0	2	4	6	8	7	7	6	5	5	4	4
1.02		1	3	6	9	11	10	9	8	7	7	6	6
1.01	0	2	5	8	11	13	12	11	10	9	8	8	7
1.00	22	20	18	17	16	15	14	13	12	11	10	9	8
0.99	24	22	20	19	18	17	16	15	14	13	11	10	9
0.98	26	24	22	21	20	19	18	16	15	14	13	12	10
0.97	28	26	24	23	22	21	19	18	17	16	14	13	12
0.96	30	28	26	25	24	22	21	19	18	17	16	14	13
0.95	32	29	28	26	25	24	22	21	20	18	17	16	14
0.94	33	31	29	28	27	25	24	22	21	20	18	17	15
0.93	35	33	31	29	28	27	25	24	22	21	20	18	16
0.92	37	34	32	31	30	28	27	25	24	22	21	19	18
0.91	38	36	34	32	31	30	28	26	25	24	22	21	19
0.90	39	37	35	34	33	31	29	28	26	25	23	22	20
0.89	41	38	37	35	34	32	31	29	28	26	25	23	21
0.88	42	40	38	36	35	34	32	30	29	27	26	24	22
0.87	43	41	39	38	37	35	33	32	30	29	27	25	23
0.86	45	42	41	39	38	36	34	33	31	30	28	26	24
0.85	46	44	42	40	39	38	36	34	33	31	29	28	25
0.84	47	45	43	42	40	39	37	35	34	32	30	29	27
0.83	49	46	44	43	42	40	38	36	35	33	31	30	28
0.82	50	47	46	44	43	41	39	38	36	34	33	31	29
0.81	51	49	47	45	44	42	41	39	37	36	34	32	30
0.80	52	50	48	46	45	44	42	40	38	37	35	33	31
0.79	54	51	49	48	46	45	43	41	39	38	36	34	32
0.78	55	52	50	49	48	46	44	42	41	39	37	35	33
0.77	56	54	52	50	49	47	45	43	42	40	38	36	34
0.76	57	55	53	51	50	48	46	44	43	41	39	37	35
0.75	58	56	54	52	51	49	47	46	44	42	40	38	36
	60	57	55	53	52	51	48	47	45	43	41	40	37
	61	58	56	55	53	52	50	48	46	44	43	41	38
Reject	62	59	57	56	54	53	51	49	47	45	44	42	39
	63	61	58	57	55	54	52	50	48	47	45	43	40
	64	62	60	58	57	55	53	51	49	48	46	44	41
Reject Values Greater Than Those Shown Above													

Notes:

1. To obtain a quality factor when the estimated percent outside specification limits from table, "Upper Quality Index Q_U or Lower Quality Index Q_L," does not correspond to a value in the table, use the next larger value.

Compute the composite of single quality factors, QF_C, for a lot using:

$$QF_C = \sum_{i=1}^{5} w_i \, QF_{QC_i}$$

where:

QF_C = the composite quality factor for the lot rounded to 2 decimal places.
QF_{QCi} = the quality factor for the individual quality characteristic.
w = the weighting factor listed in the table HMA Acceptance – QC / QA.

i = the quality characteristic index number in the table HMA Acceptance – QC / QA.

39-4.04 ENGINEER'S QUALITY ASSURANCE

39-4.04A General

The Engineer assures quality by:

1. Reviewing mix designs and proposed JMF
2. Inspecting procedures
3. Conducting oversight of quality control inspection and records
4. Verification sampling and testing during production and paving

39-4.04B Verification Sampling And Testing

General

The Engineer samples:

1. Aggregate to verify gradation
2. HMA to verify asphalt binder content

Verification

For aggregate gradation and asphalt binder content, the minimum ratio of verification testing frequency to quality control testing frequency is 1:5. The Engineer performs at least 3 verification tests per lot.

Using the t-test, the Engineer compares quality control tests results for aggregate gradation and asphalt binder content with corresponding verification test results. The Engineer uses the average and standard deviation of up to 20 sequential sublots for the comparison. The Engineer uses production start-up evaluation tests to represent the first sublot. When there are less than 20 sequential sublots, the Engineer uses the maximum number of sequential sublots available. The 21st sublot becomes the 1st sublot (n = 1) in the next lot.

The t-value for a group of test data is computed as follows:

$$t = \frac{\left|\overline{X}_c - \overline{X}_v\right|}{S_p\sqrt{\frac{1}{n_c} + \frac{1}{n_v}}} \qquad \text{and} \qquad S_p^2 = \frac{S_c^2(n_c - 1) + S_v^2(n_v - 1)}{n_c + n_v - 2}$$

where:

n_c = Number of quality control tests (2 minimum, 20 maximum).
n_v = Number of verification tests (minimum of 1 required).
$\overline{X}_c$ = Mean of quality control tests.
$\overline{X}_v$ = Mean of verification tests.
S_p = Pooled standard deviation (When $n_v = 1$, $S_p = S_c$).
S_c = Standard deviation of quality control tests.
S_v = Standard deviation of verification tests (when $n_v > 1$).

The comparison of quality control test results and the verification test results is at a level of significance of $\alpha = 0.025$. The Engineer computes t and compares it to the critical t-value, t_{crit}, from:

Critical T-Value

Degrees of freedom (n_c+n_v-2)	t_{crit} (for $\alpha = 0.025$)	Degrees of freedom (n_c+n_v-2)	t_{crit} (for $\alpha = 0.025$)
1	24.452	18	2.445
2	6.205	19	2.433
3	4.177	20	2.423
4	3.495	21	2.414
5	3.163	22	2.405
6	2.969	23	2.398
7	2.841	24	2.391
8	2.752	25	2.385
9	2.685	26	2.379
10	2.634	27	2.373
11	2.593	28	2.368
12	2.560	29	2.364
13	2.533	30	2.360
14	2.510	40	2.329
15	2.490	60	2.299
16	2.473	120	2.270
17	2.458	∞	2.241

If the t-value computed is less than or equal to t_{crit}, quality control test results are verified.

If the t-value computed is greater than t_{crit} and both $\overline{X}_v$ and $\overline{X}_c$ comply with acceptance specifications, the quality control tests are verified. You may continue to produce and place HMA with the following allowable differences:

1. $\left|\overline{X}_v - \overline{X}_c\right| \leq 1.0$ percent for any grading
2. $\left|\overline{X}_v - \overline{X}_c\right| \leq 0.1$ percent for asphalt binder content

If the t-value computed is greater than t_{crit} and the $\left|\overline{X}_v - \overline{X}_c\right|$ for grading or asphalt binder content are greater than the allowable differences, quality control test results are not verified and:

1. The Engineer notifies you in writing.
2. You and the Engineer must investigate why the difference exist.
3. If the reason for the difference cannot be found and corrected, the Engineer's test results are used for acceptance and pay.

39-4.05 ENGINEER'S ACCEPTANCE

39-4.05A Testing

The Engineer samples for acceptance testing and tests for:

HMA Acceptance – QC / QA

Index (i)	Quality Characteristic				Weight-ing Factor (w)	Test Method	HMA Type		
							A	B	RHMA-G
		Aggregate gradation [a]				CT 202	JMF ± Tolerance [c]		
	Sieve	3/4"	1/2"	3/8"					
1	1/2"	X [b]	--	--	0.05				
1	3/8"	--	X	--	0.05				
1	No. 4	--	--	X	0.05				
2	No. 8	X	X	X	0.10				
3	No. 200	X	X	X	0.15				
4	Asphalt binder content (%)				0.30	CT 379 or 382	JMF ± 0.45	JMF ± 0.45	JMF ± 0.5
5	Field compaction (% max. theoretical density) [d,e]				0.40	CT 375	92 – 96	92 – 96	91 – 96
	Sand equivalent (min.) [f]					CT 217	47	42	47
	Stabilometer value (min.) [f,, g]					CT 366			
	No. 4 and 3/8" gradings						30	30	--
	1/2" and 3/4" gradings						37	35	23
	Air voids content (%)[f, h]					CT 367	4 ± 2	4 ± 2	Specifica-tion ± 2
	Percent of crushed particles coarse aggregate (% min.)					CT 205			
	One fractured face						90	25	--
	Two fractured faces						75	--	90
	Fine aggregate (% min) (Passing No. 4 sieve and retained on No. 8 sieve.)								
	One fractured face						70	20	70
	HMA moisture content (%, max.)					CT 226 or CT 370	1.0	1.0	1.0
	Los Angeles Rattler (% max.)					CT 211			
	Loss at 100 rev.						12	--	12
	Loss at 500 rev.						45	50	40
	Fine aggregate angularity (% min.) [i]					CT 234	45	45	45
	Flat and elongated particle (% max. by weight @ 5:1)					CT 235	Report only	Report only	Report only
	Voids in mineral aggregate (% min.) [J]								(Note k)
	No. 4 grading						17.0	17.0	--
	3/8" grading					LP-2	15.0	15.0	--
	1/2" grading						14.0	14.0	18.0 - 23.0
	3/4" grading						13.0	13.0	18.0 - 23.0
	Voids filled with asphalt (%) [J]								
	No. 4 grading					LP-3	76.0 - 80.0	76.0 - 80.0	Report only
	3/8" grading						73.0 - 76.0	73.0 - 76.0	
	1/2" grading						65.0 - 75.0	65.0 - 75.0	
	3/4" grading						65.0 - 75.0	65.0 - 75.0	
	Dust proportion [J]					LP-4			
	No. 4 and 3/8" gradings						0.9 - 2.0	0.9 – 2.0	Report only
	1/2" and 3/4" gradings						0.6 - 1.3	0.6 – 1.3	

	Smoothness		Section 39-1.12	12-foot straight-edge, must-grind, and PI_0	12-foot straight-edge, must-grind, and PI_0	12-foot straight-edge, must-grind, and PI_0
	Asphalt binder		Various	Section 92	Section 92	Section 92
	Asphalt rubber binder		Various	--	--	Section 92-1.02(C) and Section 39-1.02D
	Asphalt modifier		Various	--	--	Section 39-1.02D
	Crumb rubber modifier		Various	--	--	Section 39-1.02D

Notes:
[a] The Engineer determines combined aggregate gradations containing RAP under Laboratory Procedure LP-9.
[b] "X" denotes the sieves the Engineer considers for the specified aggregate gradation.
[c] The tolerances must comply with the allowable tolerances in Section 39-1.02E, "Aggregate."
[d] The Engineer determines field compaction for any of the following conditions:
1. 1/2-inch, 3/8-inch, or No.4 aggregate grading is used and the specified total paved thickness is at least 0.15 foot.
2. 3/4-inch aggregate grading is used and the specified total paved thickness is at least 0.20 foot.

[e] To determined field compaction, the Engineer uses:
1. California Test 308, Method A, to determine in-place density of each density core.
2. California Test 309 to determine maximum theoretical density at the frequency specified in California Test 375, Part 5C.

[f] The Engineer reports the average of 3 tests from a single split sample.
[g] Modify California Test 304, Part 2.B.2.c: "After compaction in the mechanical compactor, cool to 140 °F ± 5 °F by allowing the briquettes to cool at room temperature for 0.5 hour, then place the briquettes in the oven at 140 °F for a minimum of 2 hours and not more than 3 hours."
[h] The Engineer determines the bulk specific gravity of each lab-compacted briquette under California Test 308, Method A, and theoretical maximum specific gravity under California Test 309.
[i] The Engineer waives this specification if HMA contains 10 percent or less of nonmanufactured sand by weight of total aggregate. Manufactured sand is fine aggregate produced by crushing rock or gravel.
[j] Report only if the adjustment for asphalt binder content target value is less than or equal to ± 0.3 percent from OBC.
[k] Voids in mineral aggregate for RHMA-G must be within this range.

The Engineer determines the percent of maximum theoretical density from the average density of 3 density cores you take from every 750 tons of production or part thereof divided by the maximum theoretical density.

The Engineer determines the percent of maximum theoretical density from density cores taken from the final layer measured the full depth of the total paved HMA thickness if any of the following applies:

1. If 1/2-inch, 3/8-inch, or No. 4 aggregate grading is used and the specified total paved thickness is at least 0.15 foot and any layer is less than 0.15 foot.
2. If 3/4-inch aggregate grading is used and the specified total paved thickness is at least 0.20 foot and any layer is less than 0.20 foot.

The Engineer calculates QF_{QCi} for i = 1, 2, 3, and 4 using quality control data and QF_{QCi} for i = 5 using quality assurance data.

The Engineer stops production and terminates a lot if:

1. The lot's composite quality factor, QF_C, or an individual quality factor, QF_{QCi} for i = 3, 4, or 5, is below 0.90 determined under Section 39-4.03F, "Statistical Evaluation"
2. An individual quality factor, QF_{QCi} for i = 1 or 2, is below 0.75

3. Quality characteristics for which a quality factor, QF_{QCi}, is not determined has 2 consecutive acceptance or quality control tests not in compliance with the specifications

For any single quality characteristic for which a quality factor, QF_{QCi}, is not determined, except smoothness, if 2 consecutive acceptance test results do not comply with specifications:

1. Stop production.
2. Take corrective action.
3. In the Engineer's presence, take samples and split each sample into 4 parts. Test 1 part for compliance with the specifications and submit 3 parts to the Engineer. The Engineer tests 1 part for compliance with the specifications and reserves and stores 2 parts.
4. Demonstrate compliance with the specifications before resuming production and placement on the State highway.

39-4.05B Statistical Evaluation, Determination Of Quality Factors And Acceptance

Statistical Evaluation and Determination of Quality Factors

To determine the individual quality factor, $QF_{QCi,}$ for any quality factor i = 1 through 5 or a lot's composite quality factor, QF_C, for acceptance and payment adjustment, the Engineer uses the evaluation specifications under Section 39-4.03F, "Statistical Evaluation," and:

1. Verified quality control test results for aggregate gradation
2. Verified quality control test results for asphalt binder content
3. The Engineer's test results for percent of maximum theoretical density

Lot Acceptance Based on Quality Factors

The Engineer accepts a lot based on the quality factors determined for aggregate gradation and asphalt binder content, QF_{QCi} for i = 1 through 4, using the total number of verified quality control test result values and the total percent defective ($P_U + P_L$).

The Engineer accepts a lot based on the quality factor determined for maximum theoretical density, QF_{QC5}, using the total number of test result values from density cores and the total percent defective ($P_U + P_L$).

The Engineer calculates the quality factor for the lot, QF_C, which is a composite of weighted individual quality factors, QF_{QCi}, determined for each quality characteristic in the HMA Acceptance – QC / QA table in Section 39-4.05A, "Testing."

The Engineer accepts a lot based on quality factors if:

1. The current composite quality factor, QF_C, is 0.90 or greater
2. Each individual quality factor, QF_{QCi} for i = 3, 4, and 5, is 0.90 or greater
3. Each individual quality factor, QF_{QCi} for i = 1 and 2, is 0.75 or greater

No single quality characteristic test may represent more than the smaller of 750 tons or 1 day's production.

Payment Adjustment

If a lot is accepted, the Engineer adjusts payment with the following formula:

$$PA = \sum_{i=1}^{n} HMACP * wi * \left[QFQCi * (HMATT - WHMATTi) + WHMATTi\right] - \left(HMACP * HMATT\right)$$

where:

PA =	Payment adjustment rounded to 2 decimal places.
$HMACP$ =	HMA contract price.
$HMATT$ =	HMA total tons represented in the lot.
$WHMATT_i$ =	Total tons of waived quality characteristic HMA.
QF_{QCi} =	Running quality factor for the individual quality characteristic. QF_{QCi} for i = 1 through 4 must be from verified Contractor's QC results. QF_{QC5} must be determined from the Engineer's results on density cores taken for percent of maximum theoretical density determination.

w = Weighting factor listed in the HMA acceptance table.
i = Quality characteristic index number in the HMA acceptance table.

If the payment adjustment is a negative value, the Engineer deducts this amount from payment. If the payment adjustment is a positive value, the Engineer adds this amount to payment.

The 21st sublot becomes the 1st sublot (n = 1) in the next lot. When the 21st sequential sublot becomes the 1st sublot, the previous 20 sequential sublots become a lot for which the Engineer determines a quality factor. The Engineer uses this quality factor to pay for the HMA in the lot. If the next lot consists of less than 8 sublots, these sublots must be added to the previous lot for quality factor determination using 21 to 27 sublots.

39-4.05C Dispute Resolution

For a lot, if you or the Engineer dispute any quality factor, QF_{QCi}, or verification test result, every sublot in that lot must be retested.

Referee tests must be performed under the specifications for acceptance testing.

Any quality factor, QF_{QCi}, must be determined using the referee tests.

For any quality factor, QF_{QCi}, for i = 1 through 5, dispute resolution:

1. If the difference between the quality factors for QF_{QCi} using the referee test result and the disputed test result is less than or equal to 0.01, the original test result is correct.
2. If the difference between the quality factor for QF_{QCi} using the referee test result and the disputed test result is more than 0.01, the quality factor determined from the referee tests supersedes the previously determined quality factor.

39-5 MEASUREMENT AND PAYMENT

39-5.01 MEASUREMENT

The contract item for HMA is measured by weight. The weight of each HMA mixture designated in the Engineer's Estimate must be the combined mixture weight.

If tack coat, asphalt binder, and asphaltic emulsion are paid with separate contract items, their contract items are measured under Section 92, "Asphalts," or Section 94, "Asphaltic Emulsions," as the case may be.

If recorded batch weights are printed automatically, the contract item for HMA is measured by using the printed batch weights, provided:

1. Total aggregate and supplemental fine aggregate weight per batch is printed. If supplemental fine aggregate is weighed cumulatively with the aggregate, the total aggregate batch weight must include the supplemental fine aggregate weight.
2. Total asphalt binder weight per batch is printed.
3. Each truckload's zero tolerance weight is printed before weighing the first batch and after weighing the last batch.
4. Time, date, mix number, load number and truck identification is correlated with a load slip.
5. A copy of the recorded batch weights is certified by a licensed weighmaster and submitted to the Engineer.

The contract item for placing HMA dike is measured by the linear foot along the completed length. The contract item for placing HMA in miscellaneous areas is measured as the in-place compacted area in square yards. In addition to the quantities measured on a linear foot or square yard basis, the HMA for dike and miscellaneous areas are measured by weight.

The contract item for geosynthetic pavement interlayer is measured by the square yard for the actual pavement area covered.

39-5.02 PAYMENT

The contract prices paid per ton for hot mix asphalt as designated in the Engineer's Estimate include full compensation for furnishing all labor, materials, tools, equipment, and incidentals for doing all the work involved in constructing hot mix asphalt, complete in place, as shown on the plans, as specified in these specifications and the special provisions, and as directed by the Engineer.

If HMA is specified to comply with Section 39-4, "Quality Control / Quality Assurance," the Engineer adjusts payment under that section.

Full compensation for the Quality Control Plan and prepaving conference is included in the contract prices paid per ton for hot mix asphalt as designated in the Engineer's Estimate and no additional compensation will be allowed therefor.

Full compensation for performing and submitting mix designs and for Contractor sampling, testing, inspection, testing facilities, and preparation and submittal of results is included in the contract prices paid per ton for HMA as designated in the Engineer's Estimate and no additional compensation will be allowed therefor.

Full compensation for reclaimed asphalt pavement is included in the contract prices paid per ton for HMA as designated in the Engineer's Estimate and no additional compensation will be allowed therefor.

The contract price paid per ton for hot mix asphalt (leveling) includes full compensation for furnishing all labor, materials, tools, equipment, and incidentals for doing all the work involved in hot mix asphalt (leveling), complete in place, as shown on the plans, as specified in these specifications and the special provisions, and as directed by the Engineer.

The State pays for HMA dike at the contract price per linear foot for place HMA dike and by the ton for HMA. The contract prices paid per linear foot for place hot mix asphalt dike as designated in the Engineer's Estimate include full compensation for furnishing all labor, tools, equipment, and incidentals, and for doing all the work involved in placing HMA dike, complete in place, including excavation, backfill, and preparation of the area to receive the dike, as shown on the plans, as specified in these specifications and the special provisions, and as directed by the Engineer.

The State pays for HMA specified to be a miscellaneous area at the contract price per square yard for place hot mix asphalt (miscellaneous area) and per ton for hot mix asphalt. The contract price paid per square yard for place hot mix asphalt (miscellaneous area) includes full compensation for furnishing all labor, tools, equipment, and incidentals, and for doing all the work involved in placing HMA (miscellaneous area) complete in place, including excavation, backfill, and preparation of the area to receive HMA (miscellaneous area), as shown on the plans, as specified in these specifications and the special provisions, and as directed by the Engineer.

If the Quality Control / Quality Assurance construction process is specified, HMA placed in dikes and miscellaneous areas is paid for at the contract price per ton for hot mix asphalt under Section 39-4, "Quality Control / Quality Assurance." Section 39-4.05B, "Statistical Evaluation, Determination of Quality Factors and Acceptance," does not apply to HMA placed in dikes and miscellaneous areas.

If there are no contract items for place hot mix asphalt dike and place hot mix asphalt (miscellaneous area) and the work is specified, full compensation for constructing HMA dikes and HMA (miscellaneous areas) including excavation, backfill, and preparation of the area to receive HMA dike or HMA (miscellaneous area) is included in the contract price paid per ton for the hot mix asphalt designated in the Engineer's Estimate and no separate payment will be made therefor.

The contract price paid per square yard for geosynthetic pavement interlayer of the type shown on the verified Bid Item List includes full compensation for furnishing all labor, materials, tools, equipment, and incidentals, and for doing all the work involved in placing geosynthetic pavement interlayer, complete in place, as shown on the plans, as specified in these specifications and the special provisions, and as directed by the Engineer.

The contract price paid per ton for paving asphalt (binder, geosynthetic pavement interlayer) includes full compensation for furnishing all labor, materials, tools, equipment, and incidentals, and for doing all the work involved in applying paving asphalt (binder, geosynthetic pavement interlayer), complete in place, including spreading sand to cover exposed binder material, as shown on the plans, as specified in these specifications and the special provisions, and as directed by the Engineer.

Full compensation for small quantities of HMA placed on geosynthetic pavement interlayer to prevent displacement during construction is included in the contract price paid per ton for the HMA being paved over the interlayer and no separate payment will be made therefor.

The contract price paid per ton for tack coat includes full compensation for furnishing all labor, materials, tools, equipment, and incidentals, and for doing all the work involved in applying tack coat, complete in place, as shown on the plans, as specified in these specifications and the special provisions, and as directed by the Engineer.

The Engineer does not adjust payment for increases or decreases in the quantities for tack coat, regardless of the reason for the increase or decrease. Section 4-1.03B, "Increased or Decreased Quantities," does not apply to the items for tack coat.

Full compensation for performing smoothness testing, submitting written and electronic copies of tests, and performing corrective work including applying fog seal coat is included in the contract price paid per ton for the HMA designated in the Engineer's Estimate and no separate payment will be made therefor.

Full compensation for spreading sand on RHMA-G, RHMA-O, and RHMA-O-HB surfaces and for sweeping and removing excess sand is included in the contract price paid per ton for rubberized hot mix asphalt as designated in the Engineer's Estimate and no separate payment will be made therefor.

If the dispute resolution ITP determines the Engineer's test results are correct, the Engineer deducts the ITP's testing costs from payments. If the ITP determines your test results are correct, the State pays the ITP's testing costs. If, in the Engineer's opinion, work completion is delayed because of incorrect Engineer test results, the Department makes payment and time adjustments under Section 8-1.09, "Delays."

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SECTION 40 PORTLAND CEMENT CONCRETE PAVEMENT
(Issued 01-20-12)

Replace Section 40 with:
SECTION 40 CONCRETE PAVEMENT

40-1 GENERAL

40-1.01 SUMMARY

Section 40 includes specifications for constructing concrete pavement on a prepared subgrade.

40-1.02 SUBMITTALS

40-1.02A Certificates of Compliance

Submit Certificates of Compliance under Section 6-1.07, "Certificates of Compliance." Include a test result report for any specified test with certification that test was performed within 12 months before the tested material's use.

Submit Certificates of Compliance for:

1. Tie bars
2. Threaded tie bar splice couplers
3. Dowel bars
4. Tie bar baskets
5. Dowel bar baskets
6. Chemical adhesive (drill and bond)
7. Silicone joint sealant
8. Asphalt rubber joint sealant
9. Preformed compression seal
10. Backer rods. Include the manufacturer's statement of compatibility with the sealant to be used.
11. Joint filler material
12. Curing compound. For each delivery to the job site, submit a copy of the Certificate of Compliance to the Engineer and the Transportation Laboratory. Each Certificate of Compliance must not represent more than 10,000 gallons and must include a test result report for:

    12.1. Moisture loss at 24 hours under California Test 534
    12.2. Reflectance under ASTM E 1347
    12.3. Viscosity under ASTM D 2196
    12.4. Nonvolatile content under ASTM D 2369
    12.5. Pigment content under ASTM D 3723
13. Epoxy powder coating

40-1.02B Curing Compound Samples

Submit split curing compound samples to the Transportation Laboratory.

40-1.02C Drilled Corings

Submit each core taken for Engineer's acceptance in a plastic bag. Mark each core with a location description.

40-1.02D Independent Third Party Air Content Testing Laboratory

Before testing, submit for the Engineer's approval the name of a laboratory that will test drilled core specimens for air content in cases of dispute.

40-1.02E Dowel Bars

Before placing dowel bars, submit a procedure for identifying transverse contraction joint locations relative to the dowel bars' longitudinal center and a procedure for consolidating concrete around the dowel bars.

40-1.02F Concrete Field Qualification

Submit field qualification data and test reports including:

1. Mixing date
2. Mixing equipment and procedures used
3. Batch volume in cubic yards
4. Type and source of ingredients used
5. Penetration of the concrete
6. Air content of the plastic concrete
7. Age and strength at time of concrete beam testing

Field qualification test reports must be certified with a signature by an official in responsible charge of the laboratory performing the tests.

40-1.02G Frequency Measuring Device (Tachometer)

Submit calibration documentation and operational guidelines for frequency measuring devices for concrete consolidation vibrators.

40-1.02H Manufacturer's Recommendations and Instructions

If used and at least 15 days before delivery to the job site, submit manufacturer's recommendations and instructions for storage and installation of:

1. Threaded tie bar splice couplers
2. Chemical adhesive (drill and bond)
3. Silicone liquid sealant
4. Asphalt rubber liquid sealant
5. Preformed compression seals
6. Joint filler material

40-1.02I Mix Proportions

At least 15 days before starting testing for mix proportions , submit a copy of the AASHTO accreditation for your laboratory determining the mix proportions. At least 30 days before starting field qualification, submit the proposed concrete mix proportions, the corresponding mix identifications, and laboratory test reports including the modulus of rupture for each trial mixture at 10, 21, 28, and 42 days.

40-1.02J Preformed Compression Seal

Submit the manufacturer's data sheet used to develop the recommended preformed compression seal based on the joint dimensions.

40-1.02K Concrete Pavement Early Age Crack Mitigation System

At least 24 hours before each paving shift, submit:

1. Early age stress and strength predictions
2. Scheduled sawing and curing activities
3. Contingency plan if volunteer cracking occurs

At least 24 hours before paving, meet with the Engineer to review the submittals for the early age crack mitigation system.

During paving, update the system with current weather data obtained from a portable weather station. Before paving concrete pavement with these updates, submit new stress and strength predictions and curing and sawing activity schedules.

40-1.02L Profilograms

Submit profilograms within 5 business days of initial profiling and within 2 business days of profiling corrected sections.

Submit 1 electronic copy of profile information in ".erd" format or other ProVAL compatible format to the Engineer and to:

Smoothness@dot.ca.gov

Submit the original of final profilograms before the Engineer accepts the contract.
Submitted profilograms become the Department's property.

40-1.02M Protecting Concrete Pavement During Cold Weather

Submit a plan for protecting concrete pavement during the initial 72 hours after paving when the forecasted minimum ambient temperature is below 40 degrees F.

40-1.02N Quality Control Charts

Submit updated quality control charts each paving day.

40-1.02O Quality Control Plan

At least 30 days before the start of field qualification, submit a concrete pavement quality control plan (QCP).

40-1.03 QUALITY CONTROL AND ASSURANCE

40-1.03A Contractor Quality Control Plan

Establish, implement, and maintain a QCP for concrete pavement. The QCP must describe the organization and procedures you use to:

1. Control the production process
2. Determine if changes to the production process are needed
3. Implement changes

The QCP must address the elements affecting concrete pavement quality including:

1. Mix proportions
2. Aggregate gradation
3. Materials quality
4. Stockpile management
5. Line and grade control
6. Proportioning
7. Mixing and transportation
8. Placing and consolidation
9. Contraction and construction joints
10. Dowel bar placement, alignment, and anchorage
11. Tie bar placement
12. Modulus of rupture
13. Finishing and curing
14. Surface smoothness
15. Joint sealant and compression seal installation

The QCP must include details of corrective action to be taken if any process is out of control. As a minimum, a process is out of control if any of the following occurs:

1. For fine and coarse aggregate gradation, 2 consecutive running averages of 4 tests are outside the specification limits
2. For individual penetration or air content measurements:

    2.1. One point falls outside the suspension limit line

2.2. Two points in a row fall outside the action limit line

Stop production and take corrective action for out of control processes or the Engineer rejects subsequent material.

40-1.03B Quality Control Testing

Select random locations and perform sampling and testing in compliance with:

Quality Control Testing

Test	Frequency	Test Method
Cleanness value	2 per day	CT 227
Sand equivalent	2 per day	CT 217
Aggregate gradation	2 per day	CT 202
Air content (freeze thaw) [a]	1 per hour	CT 504
Air content (non-freeze thaw)	1 per 4 hours	CT 504
Density	1 per 4 hours	CT 518
Penetration	1 per 4 hours	CT 533
Calibration of moisture meter [b, c]	1 per day	CT 223 or CT 226

Notes:
[a] If air entrainment is specified, make at least 1 air content measurement per hour. If air entrainment is not specified, make at least 1 air content measurement per 4 hours.
[b] Make at least 1 measurement of moisture content per week to check the calibration of an electronically actuated moisture meter.
[c] Random location sampling and testing is not applicable.

If air entrainment is specified, the testing laboratory and tester must be qualified under the Department's Independent Assurance Manual. The manual is available from the Transportation Laboratory.

40-1.03C Control Charts

Maintain control charts to identify potential problems and assignable causes. Post a copy of each control chart at a location determined by the Engineer.

Individual measurement control charts must use the target values in the mix proportions as indicators of central tendency.

Develop linear control charts for:

1. Cleanness value
2. Sand equivalent
3. Fine and coarse aggregate gradation
4. Air content
5. Penetration

Control charts must include:

1. Contract number
2. Mix proportions
3. Test number
4. Each test parameter
5. Action and suspension limits
6. Specification limits
7. Quality control test results

For fine and coarse aggregate gradation control charts, record the running average of the previous 4 consecutive gradation tests for each sieve and superimpose the specification limits.

For penetration and air content control charts, record the individual measurements and superimpose the following action and suspension limits:

Penetration and Air Content Action and Suspension Limits

Control Parameter	Individual Measurements	
	Action Limit	Suspension Limit
Penetration, CT 533	1 inch	1-1/2 inch
Air content, CT 504	±1.0 percent	±1.5 percent

40-1.03D Contractor's Laboratory

Use a laboratory that complies with ASTM C 1077 to determine the mix proportions for concrete pavement. The laboratory must have a current AASHTO accreditation for:

1. AASHTO T 97 or ASTM C 78
2. ASTM C 192/C 192M

40-1.03E Joint Sealant and Compression Seal Installation Training

Before installing joint sealant or compression seals, arrange for a representative from the joint sealant or compression seal manufacturer to provide training on the cleaning and preparation of the joint and installing the sealant or seal. Until your personnel and the Department's personnel have been trained, do not install joint sealant or compression seals.

40-1.03F Frequency Measuring Device (Tachometer)

Before each day's concrete pavement placement and at intervals not to exceed 4 hours of production, test and record vibration frequency for concrete consolidation vibrators.

40-1.03G Early Age Concrete Pavement Crack Mitigation System

Develop and implement a system for predicting concrete pavement stresses and strength during the initial 72 hours after paving. The system must include:

1. Subscribing to a weather service to obtain forecasts for wind speed, ambient temperatures, humidity, and cloud cover
2. Portable weather station with anemometer, temperature and humidity sensors, located at the paving site
3. Early age concrete pavement stress and strength prediction computer program
4. Analyzing, monitoring, updating, and reporting the system's predictions

40-1.03H Curing Compound

Sample curing compound from shipping containers at the manufacturer's source of supply. Split the samples.

40-1.03I Concrete Pavement Smoothness

Within 10 days after paving, measure the Profile Index (PI_0) of the concrete pavement surface using a zero (null) blanking band under California Test 526.

For the following concrete pavement areas, the Engineer does not require a profilograph and you must test and correct high points determined by a 12-foot straightedge placed parallel with and perpendicular to the centerline:

1. Horizontal curves with a centerline radius of curvature less than 1,000 feet including concrete pavement within the superelevation transitions of those curves.
2. Exit ramp termini, truck weigh stations, and weigh-in-motion areas
3. Where steep grades and superelevation rates greater than 6 percent are present on:

    3.1. Ramps
    3.2. Connectors

4. Turn lanes and areas around manholes or drainage transitions
5. Acceleration and deceleration lanes for at-grade intersections
6. Shoulders and miscellaneous gore areas

Use a California Profilograph to determine the concrete pavement profile. If the profilograph uses a mechanical recorder, use an electronic scanner to reduce the profilogram.

The profilograph operator must be qualified under the Department's Independent Assurance Manual. The manual is available from the Department's Materials Engineering and Testing Services Web site.

40-1.03J Profilograph Test Procedure

Notify the Engineer at least 2 business days before performing profilograph testing. Each day before performing profilograph testing, notify the Engineer of the start location. Perform profilograph testing in the Engineer's presence.

Before starting profilograph testing, remove foreign objects from the concrete pavement surface.

Before starting profilograph testing, calibrate the profilograph in the Engineer's presence. If the Engineer chooses not to be present during profilograph testing, you may perform the testing with the Engineer's written approval. Note the Engineer's absence on the profilogram.

Determine PI_0 values for the final concrete pavement surface of each 0.1-mile section of a traffic lane. Take 2 profiles within each traffic lane, 3 feet from and parallel with the edge of each lane. Each section's PI_0 is the average of the PI_0 values for the measurements within that traffic lane. A section that is less than 0.01 mile and is the result of an interruption to continuous concrete pavement surface must comply with the PI_0 specifications for a full section. Adjust the PI_0 for a partial section to reflect a full section.

Use stationing to locate vertical deviations greater than 0.3 inches. The profilogram stationing must be the same as the project stationing. Note 0.1-mile segments on the profilogram.

Label the profilogram with:

1. Contract number
2. County and route number
3. Stationing
4. Operator's name
5. Test date
6. Test number
7. Traffic direction
8. Traffic lane (numbered from left to right in direction of travel)
9. Test wheel path (left or right in direction of travel)
10. Test direction
11. Paving direction

40-1.03K Smoothness Corrective Action

Correct concrete pavement not complying with the Engineer's acceptance specifications for smoothness by grinding under Section 42-2, "Grinding."

Do not grind before:

1. Ten days after concrete pavement placement
2. The concrete has developed a modulus of rupture of at least 550 psi

Grind the entire lane width. When completed, the lane width must be uniform in texture and appearance. Square the corrected area's start and end normal to the paved surface's centerline.

Retest sections where corrections were made.

40-1.03L Acceptance Criteria

General

Concrete pavement is accepted based on the Department's testing for the concrete pavement quality characteristics shown in the following table:

Concrete Pavement Acceptance Testing

Quality Characteristic	Quantity	Test
28-day modulus of rupture	1,000 cubic yards	CT 523
Thickness	1,200 square yards for primary area measurements	CT 531
Dowel bar placement	700 square yards	Measurement
Tie bar placement	4,000 square yards	Measurement
Coefficient of friction	One day's paving	CT 342
Air content (freeze-thaw) [a]	One day's paving	CT 504

Note:
[a] Air content tests must be performed under California Test 504 if air entrainment is specified.

Pavement smoothness may be accepted based on the Department's testing. A single test represents no more than 0.1 mile.

Acceptance of modulus of rupture, thickness, dowel bar and tie bar placement, coefficient of friction, smoothness, and air content, does not constitute final concrete pavement acceptance.

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Modulus of Rupture

The Engineer accepts concrete pavement for modulus of rupture on a lot basis. The minimum modulus of rupture for each lot is 570 psi at 28 days.

For each lot of concrete for concrete pavement:

1. Quantity must not exceed 1,000 cubic yards.
2. Department determines the modulus of rupture of test beams aged 10 days and 28 days.
3. Department calculates the modulus of rupture by averaging the individual test results of 2 beams aged for 28 days.

The Department provides molds and machines for modulus of rupture acceptance testing. Provide material and labor the Engineer may require.

Concrete Pavement Smoothness

If the Department tests for smoothness, the tests are performed under Section 40-1.03I, "Concrete Pavement Smoothness."

The Engineer accepts concrete pavement for smoothness in compliance with the following:

1. For tangents and horizontal curves having a centerline radius of curvature 2,000 feet or more, the PI_0 must be at most 2-1/2 inches per 0.1-mile section.
2. For horizontal curves having a centerline radius of curvature from 1,000 to 2,000 feet including concrete pavement within the superelevation transitions of those curves, the PI_0 must be at most 5 inches per 0.1-mile section.
3. If using a profilograph to measure smoothness, the surface must not have individual high points greater than 0.3 inch.
4. If using a straightedge to measure smoothness, the surface must be within 0.02 foot of the straightedge's lower edge.

Profile index specifications apply to existing pavement within 50 feet of the transverse joint separating new concrete pavement and the existing pavement.

If the Department's profilograph test results do not match yours, the Engineer may order you to recalibrate your profilograph equipment and perform a retest. If your test results are inaccurate due to operator error, the Engineer may disqualify your profilograph operator. If the Engineer determines your test results are inaccurate, the Engineer does not make adjustments to payment or contract time for recalibrating, retesting, and delays.

Concrete Pavement Thickness

The Engineer accepts concrete pavement for thickness based on coring in the primary area, which is the area placed in 1 day for each thickness. Concrete pavement thickness must not be deficient by more than 0.05 foot.

After corrective grinding has been completed, core concrete pavement in the primary area under Section 40-3.16, "Obtaining Drilled Cores," at locations determined by the Engineer and in the Engineer's presence. The core specimen diameter must be 4 inches. To identify the limits of concrete pavement deficient in thickness by more than 0.05 foot, you may divide primary areas into secondary areas. Specifications that may affect concrete pavement thickness such as allowable tolerances for subgrade construction do not change the thickness specified for concrete pavement.

In each primary area, the Engineer measures concrete pavement thickness every 1,200 square yards and any remaining area. The Engineer measures cores under California Test 531 to the nearest 0.01 foot. Core at least 1 foot from existing, contiguous, and parallel concrete pavement not constructed as part of this contract.

You may request the Engineer make additional thickness measurements and use them to determine the average thickness variation. The Engineer determines the locations with random sampling methods.

If each thickness measurement in a primary area is less than 0.05 foot deficient, the Engineer calculates the average thickness deficiency in that primary area. The Engineer uses 0.02 foot for a thickness difference more than 0.02 foot over the specified thickness.

For each thickness measurement in a primary area deficient by more than 0.05 foot, the Engineer determines a secondary area where the thickness deficiency is more than 0.05 foot. The Engineer determines this secondary area by measuring the thickness of each concrete pavement slab adjacent to the measurement found to be more than 0.05 foot deficient. The Engineer continues to measure the thickness until an area that is bound by slabs with thickness deficient by 0.05 foot or less is determined.

Slabs without bar reinforcement are defined as the areas bound by longitudinal and transverse joints and concrete pavement edges. Slabs with bar reinforcement are defined as the areas bound by longitudinal joints and concrete pavement edges and 15-foot lengths. Secondary area thickness measurements in a slab determine that entire slab's thickness.

The Engineer measures the remaining primary area thickness after removing the secondary areas from consideration for determining the average thickness deficiency.

The Engineer determines the slabs to remove and replace.

Required Use of Air-Entraining Admixtures

If air-entraining admixtures are specified, the Engineer may choose to accept concrete pavement for air content based on your air content quality control tests. The Engineer decides to use your air content quality control tests based on a *t*-test that determines the difference in the means of your test and the Engineer's verification tests. The Engineer calculates the t-value of the test data as follows:

$$t = \frac{\left|\overline{X}_c - \overline{X}_v\right|}{S_p\sqrt{\frac{1}{n_c} + \frac{1}{n_v}}} \qquad \text{and} \qquad S_p^2 = \frac{S_c^2(n_c - 1) + S_v^2(n_v - 1)}{n_c + n_v - 2}$$

where:

n_c = Number of your quality control tests (minimum of 6 required)
n_v = Number of verification tests (minimum of 2 required)
$\overline{X}_c$ = Mean of your quality control tests
$\overline{X}_v$ = Mean of the verification tests
S_p = Pooled standard deviation
(When $n_v = 1$, $S_p = S_c$)
S_c = Standard deviation of your quality control tests
S_v = Standard deviation of the verification tests (when $n_v > 1$)

The Engineer compares your quality control test results with the Department's verification test results at a level of significance of $\alpha = 0.01$. The Engineer compares the *t*-value to t_{crit}, determined from:

t_{crit}

degrees of freedom (n_c+n_v-2)	t_{crit} (for $\alpha = 0.01$)
1	63.657
2	9.925
3	5.841
4	4.604
5	4.032
6	3.707
7	3.499
8	3.355
9	3.250
10	3.169

If the *t*-value calculated is less than or equal to t_{crit}, your quality control test results are verified. If the *t*-value calculated is greater than t_{crit}, quality control test results are not verified.

If your quality control test results are not verified, core at least 3 specimens from concrete pavement under Section 40-3.16, "Obtaining Drilled Cores." The Engineer selects the core locations. Your approved third party independent testing laboratory must test these specimens for air content under ASTM C 457. The Engineer compares these test results with your quality control test results using the *t*-test method. If your quality control test results are verified based on this comparison, the Engineer uses the quality control test results for acceptance of concrete pavement for air content. If your quality control test results are not verified based on this comparison, the Engineer uses the air content of core specimens determined under ASTM C 457 for acceptance.

Dowel Bar and Tie Bar Placement

Dowel bar alignment must comply with section 40-3.06. Tie bar alignment must comply with Section 40-3.05. Except for CRCP, core specimens for:

1. Dowel bar placement
2. Tie bar placement
3. Concrete consolidation

Obtain cores under Section 40-3.16, "Obtaining Drilled Cores." The Engineer determines the core locations. Each core must have a nominal diameter of 4 inches. Core each day's paving within 2 business days in compliance with:

1. One test for every 700 square yards of doweled concrete pavement or remaining fraction of that area. Each dowel bar test consists of 2 cores, 1 on each dowel bar end to expose both ends and allow measurement.
2. One test for every 4,000 square yards of concrete pavement with tie bars or remaining fraction of that area. Each tie bar test consists of 2 cores, 1 on each tie bar end to expose both ends and allow measurement.

If the tests indicate dowel or tie bars are not placed within the specified tolerances or if there are air voids around the dowel or tie bars, core additional specimens to determine the limits of unacceptable work.

The Engineer determines the slabs to remove and replace.

If the Engineer approves your request, slabs may remain in place with an adjustment in payment for:

1. Dowel bars with centers from ±2 inches to ±3 inches from the saw cut of a transverse contraction joint or with deficient concrete consolidation around the dowel bars
2. Tie bars placed outside their specified placement and position or with deficient concrete consolidation around the tie bars

Bar Reinforcing Steel

The Engineer accepts concrete pavement for bar reinforcing steel based on inspection before concrete placement.

Curing Compound

Curing compound sampled from shipping containers from the manufacturer's supply source or from the job site must match the test results for viscosity, nonvolatile content, and pigment content within the specified tolerances listed in the precision and bias statements for the test methods.

40-2 MATERIALS

40-2.01 CONCRETE

40-2.01A General

Concrete must comply with Section 90, "Portland Cement Concrete."

40-2.01B Aggregate

The specifications for reduction in Operating Range and Contract Compliance for cleanness value and sand equivalent specified under Section 90-2.02A, "Coarse Aggregate," and Section 90-2.02B, "Fine Aggregate," do not apply to concrete pavement.

Combined aggregate gradings must comply with Section 90-3, "Aggregate Gradings," and the difference between the percent passing the 3/8-inch sieve and the percent passing the No. 8 sieve must not be less than 16 percent of the total aggregate.

40-2.01C Cementitious Material

Concrete for concrete pavement must contain from 505 pounds to 675 pounds cementitious material per cubic yard. Determine the minimum cementitious materials content. Use your value for minimum cementitious material content for *MC* in equation 1 and equation 2 of section 90-1.02B(3).

40-2.01D Mix Proportions

Your laboratory determining mix proportions must determine the minimum cementitious materials content or the maximum water to cementitious materials ratio and:

1. You must make trial mixtures no more than 24 months before field qualification.
2. Modulus of rupture used to determine the minimum cementitious materials content or maximum water to cementitious materials ratio must be 570 psi at 28 days age and 650 psi at 42 days age.
3. Your laboratory must determine an increase in the cementitious materials content or a decrease in the water to cementitious materials ratio from the trial mixtures to ensure concrete pavement complies with the specifications.

If changing an aggregate supply source or the mix proportions, produce a trial batch and field-qualify the new concrete. The Engineer does not adjust contract time for performing sampling, testing, and qualifying new mix proportions or changing an aggregate supply source.

40-2.01E Field Qualification

Proposed mix proportions must be field qualified before you place concrete pavement. Use an American Concrete Institute (ACI) certified "Concrete Laboratory Technician, Grade I" to perform field qualification tests and calculations.

The Engineer accepts field qualification if five beams made and tested under California Test 523 comply with the following:

1. At a minimum, beams are tested at 10, 21, and 28 days of age
2. At your choice of age not later than 28 days, no single beam's modulus of rupture is less than 550 psi and the average modulus of rupture is at least 570 psi

40-2.02 TIE BARS

Tie bars must be deformed bars.

If the project is not shown to be in high desert or any mountain climate region, tie bars must be one of the following:

1. Epoxy-coated bar reinforcement. Bars must comply with Section 52-1.02B, "Epoxy-coated Reinforcement" except bars must comply with either ASTM A 706/A 706M; ASTM A 996/A 996M; or ASTM A 615/A 615M, Grade 40 or 60.
2. Stainless-steel bars. Bars must be descaled, pickled, polished, and solid stainless-steel bars under ASTM A 955/A 955M, Grade 60, UNS Designation S31603 or S31803.
3. Low carbon, chromium-steel bars complying with ASTM A 1035/A 1035M.

If the project is shown to be in high desert or any mountain climate region, tie bars must be one of the following:

1. Epoxy-coated bar reinforcement. Bars must comply with "Epoxy-coated Prefabricated Reinforcement" in the special provisions except bars must comply with either ASTM A 706/A 706M; ASTM A 996/A 996M; or ASTM A 615/A 615M, Grade 40 or 60.
2. Stainless-steel bars. Bars must be descaled, pickled, polished, and solid stainless-steel bars under ASTM A 955/A 955M, Grade 60, UNS Designation S31603 or S31803.

Fabricate, sample, and handle epoxy-coated deformed tie bars at the job site under ASTM D 3963/D 3963M and Section 52-1.02B, "Epoxy-coated Reinforcement."

Do not bend tie bars.

40-2.03 DOWEL BARS

40-2.03A General

Dowel bars must be plain bars. Fabricate, sample, and handle epoxy-coated dowel bars under ASTM D 3963/D 3963M and section 52-1.02B, "Epoxy-coated Reinforcement," except each sample must be 18 inches long.

If the project is not shown to be in high desert or any mountain climate region, dowel bars must be one of the following:

1. Epoxy-coated bars. Bars must comply with ASTM A 615/A 615M, Grade 40 or 60. Epoxy coating must comply with either (1) Section 52-1.02B, "Epoxy-coated Reinforcement" or (2) "Epoxy-coated Prefabricated Reinforcement" in the special provisions.
2. Stainless-steel bars. Bars must be descaled, pickled, polished, and solid stainless-steel bars under ASTM A 955/A 955M, Grade 60, UNS Designation S31603 or S31803.
3. Low carbon, chromium-steel bars under ASTM A 1035/A 1035M.

If the project is shown to be in high desert or any mountain climate region, dowel bars must be one of the following:

1. Epoxy-coated bars. Bars must comply with ASTM A 615/A 615M, Grade 40 or 60. Epoxy coating must comply with "Epoxy-coated Prefabricated Reinforcement" in the special provisions.
2. Stainless-steel bars. Bars must be descaled, pickled, polished, and solid stainless-steel bars under ASTM A 955/A 955M, Grade 60, UNS Designation S31603 or S31803.

40-2.03B Dowel Bar Lubricant

Dowel bar lubricant must be either (1) petroleum paraffin based or (2) curing compound no. 3. Paraffin-based lubricant must be either Dayton Superior DSC BB-Coat, Valvoline Tectyl 506, or an approved equal. Petroleum paraffin based lubricant must be factory-applied.

40-2.04 CURING COMPOUND

Curing compound must be curing compound (1) or (2) with white pigment under Section 90-7.01B, "Curing Compound Method."

Reflectance must be at least 60 percent when tested under ASTM E 1347.

40-2.05 CHEMICAL ADHESIVE (DRILL AND BOND)

Chemical adhesive for drilling and bonding dowels and tie bars must be prequalified. A list of prequalified chemical adhesives is available on the Department's Materials Engineering and Testing Services website. The

prequalified list indicates the appropriate chemical adhesive system for the concrete temperature and installation conditions.

Each chemical adhesive system must clearly and permanently show the following:

1. Manufacturer's name
2. Model number of the system
3. Manufacture date
4. Batch number
5. Expiration date
6. Current International Conference of Building Officials Evaluation Report number
7. Directions for use
8. Warnings or precautions required by state and federal laws and regulations

40-2.06 DOWEL AND TIE BAR BASKETS

For dowel and tie bar baskets, wire must comply with ASTM A 82/A 82M and be welded under ASTM A 185/A 185M, Section 7.4. The minimum wire-size no. is W10. Use either U-frame or A-frame shaped assemblies.

If the project is not shown to be in high desert or any mountain climate region. Baskets may be epoxy-coated, and the epoxy coating must comply with either (1) Section 52-1.02B, "Epoxy-coated Reinforcement" or (2) "Epoxy-coated Prefabricated Reinforcement" in the special provisions.

If the project is shown to be in high desert or any mountain climate region, wire for dowel bar and tie bar baskets must be one of the following:

1. Epoxy-coated wire under "Epoxy-coated Prefabricated Reinforcement" in the special provisions
2. Stainless-steel wire. Wire must be descaled, pickled, and polished solid stainless-steel. Wire must comply with (1) the chemical requirements in ASTM A 276/A 276M, UNS Designation S31603 or S31803 and (2) the tension requirements in ASTM A 1022/ A 1022M.

Handle epoxy-coated tie bar and dowel bar baskets under ASTM D 3963/D 3963M and either (1) Section 52-1.02B, "Epoxy-coated Reinforcement" or (2) "Epoxy-coated Prefabricated Reinforcement" in the special provisions.

Fasteners must be driven fasteners under ASTM F 1667. Fasteners on lean concrete base or HMA must have a minimum shank diameter of 3/16 inch and a minimum shank length of 2-1/2 inches. For asphalt treated permeable base or cement treated permeable base, the shank diameter must be at least 3/16 inch and the shank length must be at least 5 inches.

Fasteners, clips, and washers must have a minimum 0.2-mil thick zinc coating applied either by electroplating or galvanizing.

40-2.07 BACKER RODS

Backer rods must be Type 1 under ASTM D 5249. Backer rod diameter must be at least 25 percent greater than the sawcut joint width. Backer rod material must be expanded, crosslinked, closed-cell polyethylene foam. No bond or adverse reaction may occur between the backer rod and sealant.

40-2.08 JOINT FILLER MATERIAL

Joint filler for isolation joints must be preformed expansion joint filler for concrete (bituminous type) under ASTM D 994.

40-2.09 HYDRAULIC CEMENT GROUT (NON-SHRINK)

Hydraulic cement grout (non-shrink) must comply with ASTM C 1107/ C 1107M. Use clean, uniform, rounded aggregate filler to extend the grout. Aggregate filler must not exceed 60 percent of the grout mass or the maximum recommended by the manufacturer, whichever is less. Aggregate filler moisture content must not exceed 0.5 percent. Aggregate filler must comply with:

Aggregate Filler Grading

Sieve Size	Percentage Passing
1/2-inch	100
3/8-inch	85 - 100
No. 4	10 - 30
No. 8	0 - 10
No. 16	0 - 5

40-2.10 BAR REINFORCEMENT

Bar reinforcement must be deformed bars.

If the project is not shown to be in high desert or any mountain climate region, bar reinforcement must comply with section 52.

If the project is shown to be in high desert or any mountain climate regions, bar reinforcement must be one of the following:

1. Epoxy-coated bar reinforcement under section 52-2.03B except bars must comply with either ASTM A 706/A 706M; ASTM A 996/A 996M; or ASTM A 615/A 615M, Grade 40 or 60. Bars must be handled under ASTM D 3963/D 3963M and section 52-2.02C.
2. Low carbon, chromium steel bar complying with ASTM A 1035/A 1035M

40-2.11 JOINT SEALANT

40-2.11A General

Do not use hot-pour sealant that will melt the backer rod.

40-2.11B Silicone Joint Sealant

Silicone joint sealant must be prequalified. A list of prequalified silicone joint sealant available on the Department's Materials Engineering and Testing Services Web site at:

http://www.dot.ca.gov/hq/esc/approved_products_list/

40-2.11C Asphalt Rubber Joint Sealant

Asphalt rubber joint sealant must:

1. Be a mixture of paving asphalt and ground rubber containing not less than 22 percent ground rubber by weight. One hundred percent of ground rubber must pass a No. 8 sieve. Ground rubber must be vulcanized or a combination of vulcanized and devulcanized materials.
2. Comply with ASTM D 6690, Type II except:

    2.1. The cone penetration requirement must not exceed 120 at 77 F, 5 ounces, 5 seconds.
    2.2. The resilience requirement must be a minimum 50 percent recovery when tested at 77 F.

3. Have a Ring and Ball softening point of 135 °F minimum when tested under AASHTO T 53.
4. Be capable of being melted and applied to cracks and joints at temperatures below 400 °F.
5. Not be applied when the concrete pavement surface temperature is below 50 °F.

40-2.11D Preformed Compression Joint Seals

Preformed compression joint seals must comply with ASTM D 2628. Lubricant adhesive used with the seals must comply with ASTM D 2835. Preformed compression joint seals must have 5 or 6 cells, except seals for Type A2 and Type B joints may have 4 cells. Install preformed compression joint seals in compliance with the manufacturer's recommendations. Show evidence that the seals are compressed from 30 to 50 percent for the joint width at the time of installation.

40-2.12 WATER

Water for core drilling may be obtained from a potable water source, or submit proof that it does not contain:

1. More than 1,000 parts per million of chlorides as Cl
2. More than 1,300 parts per million of sulfates as $S0_4$

3. Impurities that cause pavement discoloration or surface etching

40-3 CONSTRUCTION

40-3.01 WATER SUPPLY

Before placing concrete pavement, develop enough water supply for the work.

40-3.02 SUBGRADE PREPARATION

Immediately before placing concrete, the subgrade to receive concrete pavement must be:

1. In compliance with the specified compaction and elevation tolerances
2. Free of loose and extraneous material
3. Uniformly moist, but free of standing or flowing water
4. Excavated for thickened parts of concrete pavement end anchors with no disturbed compaction outside the end anchor dimensions

If cement treated permeable base is specified, cover the base surface with asphaltic emulsion before placing concrete pavement. Apply the asphaltic emulsion uniformly at a rate of 0.1 gallons per square yard. Asphaltic emulsion must comply with anionic slow-setting type, SS1h grade in Section 94, "Asphaltic Emulsions." Repair damaged asphaltic emulsion before placing concrete pavement.

40-3.03 PROPORTIONING

Proportion aggregate and bulk cementitious materials under Section 90-5, "Proportioning."

40-3.04 PLACING CONCRETE

40-3.04A General

Place concrete pavement with stationary side forms or slip-form paving equipment.

Place consecutive concrete loads within 30 minutes of each other. Construct a transverse construction joint when concrete placement is interrupted by more than 30 minutes. The transverse construction joint must coincide with the next contraction joint location, or you must remove fresh concrete pavement to the preceding transverse joint location.

Place concrete pavement in full slab widths separated by construction joints or monolithically in multiples of full lane widths with a longitudinal contraction joint at each traffic lane line.

Do not retemper concrete.

If the concrete pavement surface width is constructed as specified, you may construct concrete pavement sides on a batter not flatter than 6:1 (vertical:horizontal).

40-3.04B Concrete Pavement Widening

If concrete pavement is placed adjacent to existing pavement not constructed as part of the contract, grind the existing concrete pavement lane or shoulder adjacent to the new concrete pavement. Perform the grinding before new concrete pavement is placed. The new concrete pavement must match the elevation of the existing concrete pavement after grinding. Grind existing concrete pavement under Section 42-2, "Grinding," except profile index must comply with the pavement smoothness specifications in Section 40-1.03, "Quality Control and Assurance."

Use paving equipment with padded crawler tracks or rubber-tired wheels on the existing concrete pavement with enough offset to avoid breaking or cracking the existing concrete pavement's edge.

40-3.04C Concrete Pavement Transition Panel

For concrete pavement placed in a transition panel, texture the surface with a drag strip of burlap, a broom, or a spring steel tine device that produces scoring in the finished surface. The scoring must be either parallel with or transverse to the centerline. For the method you choose, texture at the time that produces the coarsest texture.

40-3.04D Stationary Side Form Construction

Stationary side forms must be straight and without defects including warps, bends, and indentations. Side forms must be metal except at end closures and transverse construction joints where other materials may be used.

You may build up side forms by attaching a section to the top or bottom. If attached to the top of metal forms, the attached section must be metal.

The side form's base width must be at least 80 percent of the specified concrete pavement thickness.

Side forms including interlocking connections with adjoining forms must be rigid enough to prevent springing from subgrading and paving equipment and concrete pressure.

Construct subgrade to final grade before placing side forms. Side forms must bear fully on the foundation throughout their length and base width. Place side forms to the specified grade and alignment of the finished concrete pavement's edge. Support side forms during concrete placing, compacting, and finishing.

After subgrade work is complete and immediately before placing concrete, true side forms and set to line and grade for a distance that avoids delays due to form adjustment.

Clean and oil side forms before each use.

Side forms must remain in place for at least 1 day after placing concrete and until the concrete pavement edge no longer requires protection from the forms.

Spread, screed, shape, and consolidate concrete with 1 or more machines. The machine must uniformly distribute and consolidate the concrete. The machines must operate to place the concrete pavement to the specified cross section with minimal hand work.

Consolidate the concrete without segregation. If vibrators are used:

1. The vibration rate must be at least 3,500 cycles per minute for surface vibrators and 5,000 cycles per minute for internal vibrators
2. Amplitude of vibration must cause perceptible concrete surface movement at least 1 foot from the vibrating element
3. Use a calibrated tachometer for measuring frequency of vibration
4. Vibrators must not rest on side forms or new concrete pavement
5. Power to vibrators must automatically cease when forward or backward motion of the paving machine is stopped

Use high-frequency internal vibrators within 15 minutes of depositing concrete on the subgrade to uniformly consolidate the concrete across the paving width including adjacent to forms. Do not use vibrators to shift the mass of concrete.

40-3.04E Slip-Form Construction

If slip-form construction is used, spread, screed, shape, and consolidate concrete to the specified cross section with slip-form machines and minimal hand work. Slip-form paving machines must be equipped with traveling side forms and must not segregate the concrete.

Do not deviate from the specified concrete pavement alignment by more than 0.1 foot.

Slip-form paving machines must use high frequency internal vibrators to consolidate concrete. You may mount vibrators with their axes parallel or normal to the concrete pavement alignment. If mounted with axes parallel to the concrete pavement alignment, space vibrators no more than 2.5 feet measured center to center. If mounted with axes normal to the concrete pavement alignment, space the vibrators with a maximum 0.5-foot lateral clearance between individual vibrators.

Each vibrator must have a vibration rate from 5,000 cycles per minute to 8,000 cycles per minute. The amplitude of vibration must cause perceptible concrete surface movement at least 1 foot from the vibrating element. Use a calibrated tachometer to measure frequency of vibration.

40-3.05 TIE BAR PLACEMENT

Place tie bars in compliance with the tolerances shown in the following table:

Tie Bar Tolerance

Dimension	Tolerance
Horizontal and vertical skew	10 degrees maximum
Longitudinal translation	±2 inch maximum
Horizontal offset (embedment)	±2 inch maximum
Vertical depth	1. Not less than 1/2 inch below the saw cut depth of joints 2. When measured at any point along the bar, not less than 2 inches clear of the pavement's surface and bottom

Install tie bars at longitudinal joints by 1 of the following methods:

1. Drill concrete and bond tie bars with chemical adhesive in compliance with the manufacturer's instructions. Clean and dry drilled holes before placing chemical adhesive and tie bars. After inserting tie bars into chemical adhesive, support the bars to prevent movement during curing. If the Engineer rejects a tie bar installation, cut the tie bar flush with the joint face and coat the exposed end of the tie bar with chemical adhesive under Section 40-2, "Materials." Offset new holes 3 inches horizontally from the rejected hole's center.
2. Insert tie bars into plastic slip-formed concrete before finishing. Inserted tie bars must have full contact between the bar and the concrete. If tie bars are inserted through the plastic concrete surface, eliminate evidence of the insertion by reworking the concrete over the tie bars.
3. Use threaded tie bar splice couplers fabricated from deformed bar reinforcement free of external welding or machining.
4. Use tie bar baskets. Anchor baskets at least 200 feet in advance of concrete pavement placement activity. If you request a waiver, describe the construction limitations or restricted access preventing the advanced anchoring. After the baskets are anchored and before paving, demonstrate the tie bars do not move from their specified depth and alignment during paving. Use fasteners to anchor tie bar baskets.

If tie bars are not placed correctly, stop paving activities until you demonstrate to the Engineer correction of the cause.

40-3.06 DOWEL BAR PLACEMENT

Center dowel bars within 2 inches in the longitudinal direction on transverse contraction joints or construction joints.

If using curing compound as lubricant, apply the curing compound to dowels in 2 separate applications. Lubricate each dowel bar entirely with bond breaker before placement. The last application must be applied not more than 8 hours before placing the dowel bars. Apply each curing compound application at a rate of 1 gallon per 150 square feet.

If dowel bars are placed by mechanical insertion, eliminate evidence of the insertion by reworking the concrete over the dowel bars. If drilling and bonding dowel bars at construction joints, use a grout retention ring.

If using dowel bar baskets, anchor them with fasteners.

Use at least 10 fasteners for basket sections greater than 12 feet and less than or equal to 16 feet. Baskets must be anchored at least 200 feet in advance of the concrete placement activity unless the Engineer approves your waiver request. If requesting a waiver, describe the construction limitations or restricted access preventing the advanced anchoring. After the baskets are anchored and before the concrete is placed, cut and remove temporary spacer wires and demonstrate the dowel bars do not move from their specified depth and alignment during concrete placement.

Place dowel bars in compliance with:

Dowel Bar Tolerances

Dimension	Tolerance
Horizontal offset	±1 inch
Longitudinal translation	±2 inches
Horizontal skew	3/8 inch, max
Vertical skew	3/8 inch, max
Vertical depth	The minimum distance below the concrete pavement surface must be: DB = d/3 + 1/2 inch where: DB = vertical distance in inches, measured from concrete pavement surface to any point along the top of dowel bar d = concrete pavement thickness in inches The maximum distance below the depth shown must be 5/8 inch..

If dowel bars are not placed correctly, stop paving activities until you demonstrate to the Engineer correction of the cause.

Remove and replace the concrete pavement 3 feet on either side of a joint with a rejected dowel bar.

40-3.07 BAR REINFORCEMENT

Place bar reinforcement under Section 52, "Reinforcement." Bar reinforcement must be more than 1/2 inch below the saw cut depth at concrete pavement joints.

40-3.08 JOINTS

40-3.08A General

Concrete pavement joints consist of:

1. Longitudinal and transverse construction joints
2. Longitudinal and transverse contraction joints
3. Isolation joints

Construction joints must be normal to the concrete pavement surface.

Until contract acceptance and except for joint filler material, keep joints free of foreign material including soil, gravel, concrete, or asphalt mix.

Volunteer cracks are cracks not coincident with constructed joints.

Repair concrete pavement damaged during joint construction under Section 40-3.17B, "Repair of Spalls, Raveling, and Tearing."

Do not bend tie bars or reinforcement in existing concrete pavement joints.

40-3.08B Construction Joints

Construction joints form where fresh concrete is placed against hardened concrete, existing pavements, or structures.

Before placing concrete at construction joints, apply a curing compound under Section 90-7.01B, "Curing Compound Method," to the vertical surface of existing or hardened concrete and allow it to dry.

Use a metal or wooden bulkhead to form transverse construction joints. If dowel bars are specified, the bulkhead must allow dowel bar installation.

40-3.08C Contraction Joints

In multilane monolithic concrete pavement, use the sawing method to construct longitudinal contraction joints. Construct transverse contraction joints by the sawing method.

Construct transverse contraction joints within 1 foot of their specified spacing. If a slab length of less than 5 feet would be formed, adjust the transverse contraction joint spacing.

Construct transverse contraction joints across the full concrete pavement width regardless of the number or types of longitudinal joints crossed. In areas of converging and diverging pavements, space transverse contraction joints so their alignment is continuous across the full width where converging and diverging pavements are contiguous. Longitudinal contraction joints must be parallel with the concrete pavement centerline. Transverse and longitudinal contraction joints must not deviate by more than 0.1 foot from either side of a 12-foot straight line, except for longitudinal joints parallel to a curving centerline.

40-3.08D Isolation Joints

Construct isolation joints by saw cutting a minimum 1/8-inch width to full concrete pavement depth at the existing concrete pavement's edge and removing the concrete to expose a flat vertical surface. Before placing concrete, secure joint filler material that prevents new concrete from adhering to the existing concrete face.

Dispose of concrete saw cutting residue under Section 7-1.13, "Disposal of Materials Outside the Highway Right of Way."

40-3.08E Sawing Method

The sawing method is cutting a groove in the concrete pavement with a power driven concrete saw. Grooves for longitudinal and transverse contraction joints must be the minimum width possible for the type of saw used. If necessary, the top of the joint must be sawn wider to provide space for joint sealant. Immediately wash slurry from the joint with water under 100 psi maximum pressure.

Saw longitudinal and transverse contraction joints before volunteer cracking occurs and after the concrete is hard enough to saw without spalling, raveling, or tearing.

To keep foreign material out of grooves before joint sealant or compression seal installation, you may use joint filler in sawed contraction joints. Joint filler must not react adversely with the concrete or cause concrete pavement damage. After sawing and washing a joint, install joint filler material that keeps moisture in the adjacent concrete during the 72 hours after paving. If you install joint filler material, the specifications for spraying the sawed joint with additional curing compound under Section 40-3.13, "Curing," do not apply. If using absorptive filler material, moisten the filler immediately before or after installation.

40-3.09 JOINT SEALANT AND COMPRESSION SEAL INSTALLATION

40-3.09A General

At least 7 days after concrete pavement placement and not more than 4 hours before installing joint sealant or compression seal materials, use dry sand blasting and other methods to clean the joint walls of objectionable material such as soil, asphalt, curing compound, paint, and rust. The maximum sand blasting nozzle diameter must be 1/4 inch. The minimum pressure must be 90 psi. Sand blast each side of the joint at least once, in at least 2 separate passes. Hold the nozzle at an angle to the joint from 1 to 2 inches from the concrete pavement. Using a vacuum, collect sand, dust, and loose material at least 2 inches on each side of the joint. Remove surface moisture and dampness at the joints with compressed air that may be moderately hot.

Before you install joint sealant or compression seal, the joint wall must be free of moisture, residue, or film.

If grinding or grooving over or adjacent to sealed joints, remove joint sealant or compression seal materials and dispose of them under Section 7-1.13, "Disposal of Material Outside the Highway Right of Way." After grinding or grooving, replace the joint sealant or compression seal materials.

40-3.09B Liquid Sealant

Do not install liquid sealant in construction joints.

Install backer rods when the concrete pavement temperature is above the air dew point and when the air temperature is at least 40 °F.

Install liquid sealant immediately after installing the backer rod. Install sealant using a mechanical device with a nozzle shaped to introduce the sealant from inside the joint. Extrude sealant evenly and with continuous contact with the joint walls. Recess the sealant surface after placement. Remove excess sealant from the concrete pavement surface.

Do not allow traffic over sealed joints until the sealant is set.

40-3.09C Preformed Compression Seal

Install preformed compression seal in construction or isolation joints when specified in the special provisions.

Install longitudinal seals before transverse seals. Longitudinal seals must be continuous except splicing is allowed at intersections with transverse seals. Transverse seals must be continuous for the entire transverse length of concrete pavement except splices are allowed for widenings and staged construction. With a sharp instrument, cut across the longitudinal seal at the intersection with transverse construction joints. If the longitudinal seal does not relax enough to properly install the transverse seal, trim the longitudinal seal to form a tight seal between the 2 joints.

If splicing is authorized, splicing must comply with the manufacturer's written instructions.

Use a machine specifically designed for preformed compression seal installation. The machine must install the seal:

1. To the specified depth
2. To make continuous contact with the joint walls
3. Without cutting, nicking, or twisting the seal
4. With less than 4 percent stretch

Lay a length of preformed compression seal material cut to the exact length of the pavement joint to be sealed. The Engineer measures this length. After you install the length of preformed compression joint sealant, the Engineer measures the excess amount of material at the joint end. The Engineer divides the excess amount length by the original measured length to determine the percentage of stretch.

40-3.10 SHOULDER RUMBLE STRIP

If specified, construct shoulder rumble strips by rolling or grinding indentations in new concrete pavement.

Select the method and equipment for constructing ground-in indentations.

Do not construct shoulder rumble strips on structures or approach slabs.

Construct rumble strips within 2 inches of the specified alignment. Roller or grinding equipment must be equipped with a sighting device enabling the operator to maintain the rumble strip alignment.

Indentations must not vary from the specified dimensions by more than 1/16 inch in depth or more than 10 percent in length and width.

The Engineer orders grinding or removal and replacement of noncompliant rumble strips to bring them within specified tolerances. Ground surface areas must be neat and uniform in appearance.

The grinding equipment must be equipped with a vacuum attachment to remove residue.

Dispose of removed material under Section 7-1.13, "Disposal of Material Outside the Highway Right of Way."

40-3.11 PRELIMINARY FINISHING

40-3.11A General

Preliminary finishing must produce a smooth and true-to-grade finish. After preliminary finishing, mark each day's concrete pavement with a stamp. The stamp must be approved by the Engineer before paving starts. The stamp must be approximately 1' x 2' in size. The stamp must form a uniform mark from 1/8 to 1/4 inch deep. Locate the mark 20 feet ± 5 feet from the transverse construction joint formed at each day's start of paving and 1 foot ± 0.25 foot from the concrete pavement's outside edge. The stamp mark must show the month, day, and year of placement and the station of the transverse construction joint. Orient the stamp mark so it can be read from the concrete pavement's outside edge.

Do not apply more water to the concrete pavement surface than can evaporate before float finishing and texturing are completed.

40-3.11B Stationary Side Form Finishing

If stationary side form construction is used, give the concrete a preliminary finish by the machine float method or the hand method.

If using the machine float method:

1. Use self-propelled machine floats.
2. Determine the number of machine floats required to perform the work at a rate equal to the concrete delivery rate. When the time from concrete placement to machine float finishing exceeds 30 minutes, stop concrete delivery . When machine floats are in proper position, you may resume concrete delivery and paving.
3. Machine floats must run on side forms or adjacent concrete pavement lanes. If running on adjacent concrete pavement, protect the adjacent concrete pavement surface under Section 40-3.15, "Protecting Concrete Pavement."

4. Floats must be hardwood, steel, or steel-shod wood. Floats must be equipped with devices that adjust the underside to a true flat surface.

If using the hand method, finish concrete smooth and true to grade with manually operated floats or powered finishing machines.

40-3.11C Slip-Form Finishing

If slip-form construction is used, the slip-form paver must give the concrete pavement a preliminary finish. You may supplement the slip-form paver with machine floats.

Before the concrete hardens, correct concrete pavement edge slump in excess of 0.02 foot exclusive of edge rounding.

40-3.12 FINAL FINISHING

After completing preliminary finishing, round the edges of the initial paving widths to a 0.04-foot radius. Round transverse and longitudinal construction joints to a 0.02-foot radius.

Before curing, texture the pavement. Perform initial texturing with a burlap drag or broom device that produces striations parallel to the centerline. Perform final texturing with a steel-tined device that produces grooves parallel with the centerline.

Construct longitudinal grooves with a self-propelled machine designed specifically for grooving and texturing concrete pavement. The machine must have tracks to maintain constant speed, provide traction, and maintain accurate tracking along the pavement surface. The machine must have a single row of rectangular spring steel tines. The tines must be from 3/32 to 1/8 inch wide, on 3/4-inch centers, and must have enough length, thickness, and resilience to form grooves approximately 3/16 inch wide. The machine must have horizontal and vertical controls. The machine must apply constant down pressure on the pavement surface during texturing. The machines must not cause ravels.

Construct grooves over the entire pavement width in a single pass except do not construct grooves 3 inches from the concrete pavement edges and longitudinal joints. Final texture must be uniform and smooth. Use a guide to properly align the grooves. Grooves must be parallel and aligned to the pavement edge across the pavement width. Grooves must be from 1/8 to 3/16 inch deep after concrete has hardened.

For irregular areas and areas inaccessible to the grooving machine, you may hand-construct grooves in compliance with the hand method under Section 40-3.11B, "Stationary Side Form Finishing." Hand-constructed grooves must comply with the specifications for machine-constructed grooves.

Initial and final texturing must produce a coefficient of friction of at least 0.30 when tested under California Test 342. Notify the Engineer when the concrete pavement is scheduled to be opened to traffic to allow at least 25 days for the Department to schedule for test for coefficient of friction. Notify the Engineer when the pavement is ready for testing which is the latter of:

1. Seven days after concrete placement
2. When the concrete pavement has attained a modulus of rupture of 550 psi

The Department tests for coefficient of friction within 7 days of receiving notification that the pavement is ready for testing.

Do not open the concrete pavement to traffic unless the coefficient of friction is at least 0.30.

Correct concrete pavement not complying with the Engineer's acceptance criteria for coefficient of friction by grooving or grinding under Section 42, "Groove and Grind Pavement."

Do not grind before:

1. Ten days after concrete pavement placement
2. Concrete has developed a modulus of rupture of at least 550 psi

Before opening to traffic, allow at least 25 days for the Department to retest sections for coefficient of friction after corrections are made.

40-3.13 CURING

Cure the concrete pavement's exposed area with waterproof membrane or curing compound (1) or (2) under Section 90-7.01, "Methods of Curing." When side forms are removed within 72 hours of the start of curing, also cure the concrete pavement edges.

If curing compound is used, apply it with mechanical sprayers. Reapply curing compound to sawcuts and disturbed areas.

40-3.14 EARLY USE OF CONCRETE PAVEMENT

If requesting early use of concrete pavement:

1. Furnish molds and machines for modulus of rupture testing
2. Sample concrete
3. Fabricate beam specimens
4. Test for modulus of rupture under California Test 523

When you request early use, concrete pavement must have a modulus of rupture of at least 350 psi. Protect concrete pavement under Section 40-3.15, "Protecting Concrete Pavement."

40-3.15 PROTECTING CONCRETE PAVEMENT

Protect concrete pavement under Section 90-8, "Protecting Concrete."

Maintain the concrete pavement temperature at not less than 40 °F for the initial 72 hours.

Protect the concrete pavement surface from activities that cause damage and reduce texture and coefficient of friction. Do not allow soil, gravel, petroleum products, concrete, or asphalt mixes on the concrete pavement surface.

Construct crossings for traffic convenience. If the Engineer approves your request, you may use rapid strength concrete for crossings. Do not open crossings until the Department determines by California Test 523 the concrete pavement's modulus of rupture is at least 550 psi.

Do not open concrete pavement to traffic or use equipment on the concrete pavement for 10 days after paving nor before the concrete has attained a modulus of rupture of 550 psi except:

1. If the equipment is for sawing contraction joints
2. If the Engineer approves your request, one side of paving equipment's tracks may be on the concrete pavement after a modulus of rupture of 350 psi has been attained, provided:

    2.1. Unit pressure exerted on the concrete pavement by the paver does not exceed 20 psi
    2.2. You change the paving equipment tracks to prevent damage or the paving equipment tracks travel on protective material such as planks
    2.3. No part of the track is closer than 1 foot from the concrete pavement's edge

If concrete pavement damage including visible cracking occurs, stop operating paving equipment on the concrete pavement and repair the damage.

40-3.16 OBTAINING DRILLED CORES

Drill concrete pavement cores under ASTM C 42/ C 42M. Core drilling equipment must use diamond impregnated bits.

Clean, dry, and fill core holes with hydraulic cement grout (non-shrink) or pavement concrete. Coat the core hole walls with epoxy under the specifications for epoxy adhesive for bonding new concrete to old concrete in Section 95, "Epoxy." The backfill must match the adjacent concrete pavement surface elevation and texture.

Do not allow residue from core drilling to fall on traffic, flow across shoulders or lanes occupied by traffic, or flow into drainage facilities including gutters.

40-3.17 REPAIR, REMOVAL, AND REPLACEMENT

40-3.17A General

Working cracks are full-depth cracks essentially parallel to a planned contraction joint beneath which a contraction crack has not formed. If the Engineer orders, take 4-inch nominal diameter cores on designated cracks under Section 40-3.16, "Obtaining Drilled Cores."

40-3.17B Repair of Spalls, Raveling, and Tearing

Before concrete pavement is open to traffic, repair spalls, raveling, and tearing in sawed joints. Make repairs in compliance with the following:

1. Saw a rectangular area with a diamond-impregnated blade at least 2 inches deep.

2. Remove unsound and damaged concrete between the saw cut and the joint and to the saw cut's depth. Do not use a pneumatic hammer heavier than 15 pounds. Do not damage concrete pavement to remain in place.
3. Dispose of removed concrete pavement under Section 7-1.13, "Disposal of Materials Outside the Highway Right of Way."
4. Clean the repair area's exposed surfaces with high pressure abrasive water blasting. Further clean and dry the exposed surfaces with compressed air free of moisture and oil.
5. Apply epoxy as specified for epoxy resin adhesive for bonding new concrete to old concrete under Section 95, "Epoxy." Apply the epoxy with a stiff bristle brush.
6. Apply a portland cement concrete or mortar patch immediately following the epoxy application. Install an insert to prevent bonding of the sides of planned joints.

Repair spalls if they are:

1. Deeper than 0.05 foot
2. Wider than 0.04 foot
3. Longer than 0.3 foot

40-3.17C Route and Seal Working Cracks

Treat working cracks within 0.5 foot of either side of a planned contraction joint in compliance with the following:

1. Route and seal the crack with epoxy resin in compliance with the following:

    1.1. Use a powered rotary router mounted on wheels, with a vertical shaft and a routing spindle that casters as it moves along the crack
    1.2. Form a reservoir 3/4 inch deep by 3/8 inch wide in the crack
    1.3. Use equipment that does not cause raveling or spalling
    1.4. Place liquid sealant

2. Treat the contraction joint adjacent to the working crack in compliance with the following:

    2.1. Use epoxy resin under ASTM C 881/C 881M, Type IV, Grade 2 for Type B joints and secondary saw cuts for Type A1 and Type A2 joints
    2.2. Pressure inject epoxy resin under ASTM C 881/C881M, Type IV, Grade 1 for narrow saw cuts including initial saw cuts for Type A1 and Type A2 joints

If a working crack intersects a contraction joint, route and seal the working crack and seal the contraction joint as specified for installing liquid sealant under Section 40-3.09, "Joint Seal and Joint Sealant Installation."

40-3.17D Removal and Replacement of Slabs

As specified, remove and replace slabs or partial slabs for:

1. Insufficient thickness
2. Dowel bar misalignment
3. Working cracks more than 0.5 foot from a planned contraction joint

40-4 MEASUREMENT AND PAYMENT

40-4.01 MEASUREMENT

Concrete pavement is measured by the cubic yard. The Engineer calculates the pay quantity volume based on the dimensions shown on the plans and as ordered

The contract items for sealing joints as designated in the Verified Bid Item List are measured by the linear foot. Sealing joints are measured from field measurements for each type of sealed joint.

The contract item for shoulder rumble strips is measured by the station along each shoulder on which the rumble strips are constructed without deductions for gaps between indentations.

40-4.02 PAYMENT

The contract price paid per cubic yard for concrete pavement as designated in the Verified Bid Item List includes full compensation for furnishing all labor, materials, tools, equipment, and incidentals, and for doing all the work involved in constructing the concrete pavement, complete in place including bar reinforcement, tie bars, dowel bars, anchors, fasteners, tack coat, and providing the facility for and attending the prepaving conference, as shown on the plans and as specified in these specifications and the special provisions, and as directed by the Engineer.

The Engineer adjusts payment for each primary area deficient in average thickness in compliance with the following:

Pay Adjustments for Deficient Thickness

Average Thickness Deficiency (foot)	Deficiency Adjustment ($/sq yd)
0.01	0.90
0.02	2.30
0.03	4.10
0.04	6.40
0.05	9.11

If the average thickness deficiency is less than 0.01 foot, the Engineer does not adjust payment for thickness deficiency. If the average thickness deficiency is more than 0.01 foot, the Engineer rounds to the nearest 0.01 foot and uses the adjustment table.

Full compensation for core drilling and backfilling the cores ordered by the Engineer for measuring concrete pavement thickness and determining full-depth cracks is included in the contract price paid per cubic yard for concrete pavement as designated in the Engineer's Estimate and no additional compensation will be allowed therefor. The Department does not pay for additional concrete pavement thickness measurements requested by the Contractor.

The Department does not pay for the portion of concrete that penetrates treated permeable base.

Full compensation for the quality control plan is included in the contract price paid per cubic yard for concrete pavement as designated in the Verified Bid Item List and no separate payment will be made therefor.

Full compensation for furnishing and applying asphaltic emulsion on cement treated permeable base is included in the contract price paid per cubic yard for concrete pavement as designated in the Engineer's Estimate and no separate payment will be made therefor.

Full compensation for repairing joints is included in the contract price paid per cubic yard for concrete pavement as designated in the Verified Bid Item List and no separate payment will be made therefor.

Full compensation for furnishing, calibrating, and operating profilograph equipment for Profile Index, for submitting profilograms, and for performing corrective work is included in the contract price paid per cubic yard for concrete pavement as designated in the Verified Bid Item List and no separate payment will be made therefor.

Full compensation for grooving and grinding for final finishing is included in the contract price paid per cubic yard for concrete pavement as designated in the Verified Bid Item List and no separate payment will be made therefor.

Full compensation for removing and replacing joint material for grooving and grinding is included in the contract price per cubic yard for concrete pavement as designated in the Verified Bid Item List and no separate payment will be made therefor.

Full compensation for removing and replacing slabs is included in the contract price paid per cubic yard for concrete pavement as designated in the Verified Bid Item List and no separate payment will be made therefor.

Full compensation for drilling holes and bonding tie bars with chemical adhesive is included in the contract price paid per cubic yard for concrete pavement as designated in the Verified Bid Item List and no additional compensation will be allowed therefor.

Full compensation for repairing damage caused by operating paving equipment on new concrete pavement is included in the contract price paid per cubic yard for concrete pavement as designated in the Verified Bid Item List and no separate payment will be made therefor.

The material and work necessary for the construction of crossings for public convenience, and their subsequent removal and disposal, will be paid for at the contract prices for the items of work involved and if there are no contract items for the work involved, payment for concrete pavement crossings will be made by extra work as specified in Section 4-1.03D, "Extra Work."

The Department will reduce payments to the Contractor by $56.12 per square yard for concrete pavement slabs allowed to remain in place represented by cores indicating dowel bars placed with their centers from ±2 inches to ±3 inches from the saw cut of a transverse contraction joint

The Engineer will calculate the reduced payment using the slab dimensions adjacent to and inclusive of the joints with misplaced dowel bars. This reduced payment is in addition to other specified payment reductions.

The Department will reduce payments to the Contractor by $59.56 per square yard for concrete pavement allowed to remain in place represented by cores indicating either of the following:

1. Tie bars placed outside their specified placement and position tolerances
2. Bar reinforcement placed outside their specified placement and position tolerances

The Engineer will calculate the reduced payment using the slab dimensions adjacent to and inclusive of the joints with misplaced tie bars. This reduced payment is in addition to other specified payment reductions.

Full compensation for core drilling for checking dowel or tie bar alignment and backfilling the cores is included in the contract price paid per cubic yard for concrete pavement as designated in the Engineer's Estimate and no additional compensation will be allowed therefor.

If the initial cores show that dowel bars or tie bars are out of tolerance for alignment and the Engineer orders additional dowel or tie bar coring, full compensation for drilling the additional cores is included in the contract price paid per cubic yard for concrete pavement as designated in the Verified Bid Item List and no additional compensation will be allowed therefor.

If the initial cores show that dowel bars or tie bars are within alignment tolerances and the Engineer orders more dowel or tie bar coring, the additional cores will be paid for as extra work as specified in Section 4-1.03D, "Extra Work."

The Department will not pay for additional coring to check dowel or tie bar alignment you request.

Full compensation for performing profilograph tests, furnishing the profilograms and electronic files to the Engineer, and for performing corrective work is included in the contract price paid per cubic yard for the type of concrete pavement as designated in the Verified Bid Item List and no additional compensation will be allowed therefor.

The contract prices paid per linear foot for seal pavement joint and seal isolation joint include full compensation for furnishing all labor, materials, tools, equipment, and incidentals, and for doing all the work involved in sealing pavement joints and sealing isolation joints, complete in place, as shown on the plans, and as specified in these specifications and the special provisions, and as directed by the Engineer.

The contract price paid per station for shoulder rumble strip includes full compensation for furnishing all labor, materials, tools, equipment and incidentals, and for doing all the work involved in constructing the rumble strip complete in place, as shown on the plans, as specified in these Standard Specifications and as directed by the Engineer.

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SECTION 41 PAVEMENT SUBSEALING AND JACKING
(Issued 01-05-07)

In Section 41-1.02 replace the 2nd and 3rd paragraphs with:

Cement for grout shall be Type II portland cement conforming to the provisions in Section 90-2.01A, "Cement."

Fly ash shall conform to the requirements in AASHTO Designation: M 295 for either Class C or for Class F. The brand of fly ash used in the work shall conform to the provisions for approval of admixture brands in Section 90-4.03, "Admixture Approval."

In Section 41-1.02 replace the 5th paragraph with:

Chemical admixtures and calcium chloride may be used. Chemical admixtures in the grout mix shall conform to the provisions in Section 90-4, "Admixtures." Calcium chloride shall conform to ASTM Designation: D 98.

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SECTION 42 GROOVE AND GRIND PAVEMENT
(Issued 05-15-09)

In Section 42-2.02 replace the 3rd paragraph with:

Existing portland cement concrete pavement not constructed as part of the project shall be ground as follows:

Grinding shall be performed so that the pavement surface on both sides of all transverse joints and cracks has essentially the same depth of texture and does not vary from a true plane enough to permit a 0.006-foot thick shim 0.25-foot wide to pass under a 3-foot straightedge adjacent to either side of the joint or crack when the straightedge is laid on the pavement parallel to centerline with its midpoint at the joint or crack. After grinding has been completed, the pavement shall conform to the straightedge and profile requirements specified in Section 40-1.03, "Quality Control and Assurance."

Abnormally depressed areas due to subsidence or other localized causes will be excluded from testing with the profilograph and 12-foot straightedge specified in Section 40-1.03. The accumulated total of the excluded areas shall not exceed 5 percent of the total area to be ground. Profilograph testing shall end 25 feet prior to excluded areas and shall resume 25 feet following the excluded areas.

In Section 42-2.03 replace the 2nd paragraph with:

Replacement concrete paving shall conform to the provisions in Section 40, "Concrete Pavement." Replacement pavement may be spread and shaped by any suitable powered finishing machines, supplemented by handwork as necessary. Consolidation of the concrete shall be by means of high-frequency internal vibrators within 15 minutes after the concrete is deposited on the subgrade. Vibrating shall be done with care and in such manner to assure adequate consolidation adjacent to forms and uniformly across the full paving width. Use of vibrators for extensive shifting of the mass of concrete will not be permitted. Methods of spreading, shaping and compacting that result in segregation, voids or rock pockets shall be discontinued, and the Contractor shall adopt methods which will produce dense homogeneous pavement conforming to the required cross section. Finishing may be performed by hand method, as specified in Section 40-3.11B, "Stationary Side Form Finishing."

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SECTION 49 PILING
(Issued 07-20-12)

In Section 49-1.03 replace the 4th paragraph with:

Modification to the specified installation methods and specified pile tip elevation will not be considered at locations where settlement, tension demands, or lateral load demands control design pile tip elevations or when the plans state that specified pile tip elevation shall not be revised.

In Section 49-1.03 in the 7th paragraph, replace the 2nd sentence with:

The loading apparatus described as "Tensile Load Applied by Hydraulic Jack(s) Acting Upward at One End of Test Beam(s)" shall not be used.

In Section 49-1.03 replace the 9th paragraph with:

The Contractor shall furnish piling of sufficient length to obtain the specified tip elevation shown on the plans or specified in the special provisions.

In Section 49-1.04 replace the 6th paragraph with:

The Contractor may use additional cementitious material in the concrete for the load test and anchor piles.

In Section 49-4.01 replace the 2nd paragraph with:

The drilling of holes shall conform to the provisions in these specifications. Concrete filling for cast-in-place concrete piles shall be prequalified in conformance with the provisions in Section 90-9, "Compressive Strength," and shall have a minimum 28-day compressive strength of 3,600 psi. At the option of the Contractor, the combined aggregate grading for the concrete shall be either the one-inch maximum grading, the 1/2-inch maximum grading, or the 3/8-inch maximum grading. Concrete shall conform to the provisions in Section 90, "Portland Cement Concrete," and Section 51, "Concrete Structures." Reinforcement shall conform to the provisions in Section 52, "Reinforcement."

In Section 49-6.01 replace the 1st paragraph with:

The length of timber, steel, and precast prestressed concrete piles, and of cast-in-place concrete piles consisting of driven shells filled with concrete, shall be measured along the longest side, from the tip elevation shown on the plans to the plane of pile cut-off.

In Section 49-6.02 add:

When pile tips are revised by the Engineer for timber, steel, and precast prestressed concrete piles, and for cast-in-place concrete piles consisting of driven shells filled with concrete, the additional length required, including all materials, equipment, and labor for furnishing, splicing, and installing the piling, will be paid for as extra work as provided in Section 4-1.03D, "Extra Work."

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SECTION 50 PRESTRESSING CONCRETE
(Issued 04-20-12)

In Section 50-1.02 replace the 2nd paragraph with:

The working drawings of the prestressing system shall show complete details and substantiating calculations of the method and materials the Contractor proposes to use in the prestressing operations, including any additions or rearrangement of reinforcing steel from that shown on the plans. The details shall outline the method and sequence of stressing and shall include complete specifications and details of the prestressing steel and anchoring devices, jacking stresses, elongation calculations, type of ducts and all other data pertaining to the prestressing, including the proposed arrangement of the prestressing steel in the members. The drawings shall also show (1) the exact location of anchorage system components, ducts, and other related elements and (2) the duct location data, including elevations at least every 1/8th point of the span for each span.

In Section 50-1.05 replace the 1st paragraph with:

Prestressing steel shall be high-tensile wire conforming to the requirements in ASTM Designation: A 421, including Supplement I; high-tensile seven-wire strand conforming to the requirements in ASTM Designation: A 416; or uncoated deformed (Type II) high-strength steel bars conforming to the requirements in ASTM Designation: A 722, including all supplementary requirements. The maximum weight requirement of ASTM Designation: A 722 will not apply.

In Section 50-1.05 in the 3rd paragraph, delete item A.

In Section 50-1.05 in the 3rd paragraph, replace item E with:

E. In addition to the requirements in Section 50-1.10, "Samples for Testing," four 4-foot-long samples of coated strand and one 5-foot-long sample of uncoated strand of each size and reel shall be furnished to the Engineer for testing. These samples, as selected by the Engineer, shall be representative of the material to be used in the work.

In Section 50-1.05 between the 3rd and 4th paragraphs, add:

The Contractor shall furnish to the Transportation Laboratory a representative 8-ounce sample from each batch of epoxy patching material to be used. Each sample shall be packaged in an airtight container identified with the manufacturer's name and batch number.

In Section 50-1.07 replace the 2nd paragraph with:

Ducts shall be fabricated with either welded or interlocked seams. Galvanizing of the welded seam will not be required. Ducts shall have sufficient strength to maintain their correct alignment during placing of concrete. Joints between sections of duct shall be positive metallic connections which do not result in angle changes at the joints. Waterproof tape shall be used at the connections. Ducts shall be bent without crimping or flattening. Transition couplings connecting the ducts to anchoring devices shall be either ferrous metal or polyolefin. Ferrous metal transition couplings need not be galvanized.

Ducts shall have an inside cross-sectional area of at least:

1. 2.5 times the net area of the prestressing steel for multistrand tendons that will be placed by the pull-through method.
2. 2.0 times the net area of the prestressing steel for multistrand tendons that will not be placed by the pull-through method.

Ducts shall have an outside diameter not exceeding 50 percent of the girder web width.

In Section 50-1.07 replace the 7th paragraph with:

All ducts having a vertical duct profile change of 6 inches or more shall be vented. Vents shall be placed within 6 feet of every high point in the duct profile. Vents shall be 1/2 inch minimum diameter standard pipe or suitable plastic pipe. Connections to ducts shall be made with metallic or plastic structural fasteners. Plastic components, if selected, shall not react with the concrete or enhance corrosion of the prestressing steel and shall be free of water soluble chlorides. The vents shall be mortar tight, taped as necessary, and shall provide means for injection of grout through the vents and for sealing the vents. Ends of vents shall be removed one inch below the roadway surface after grouting has been completed.

In Section 50-1.08 replace the 2nd paragraph with:

The maximum temporary tensile stress (jacking stress) in prestressing steel of post-tensioned members shall not exceed 75 percent of the specified minimum ultimate tensile strength of the prestressing steel.

In Section 50-1.08 delete the 4th, 5th, and 6th paragraphs.

In Section 50-1.08 replace the 11th paragraph with:

Prestressing forces shall not be applied to cast-in-place concrete until at least 10 days after the last concrete has been placed in the member to be prestressed and until the concrete compressive strength has reached the strength shown on the plans or specified in the specifications.

In Section 50-1.08 replace the 15th paragraph with:

When prestressing steel in pretensioned members is tensioned at a temperature appreciably lower than the estimated temperature of the concrete and the prestressing steel at the time of initial set of the concrete, the calculated elongation of the prestressing steel shall be increased to compensate for the loss in stress.

The maximum temporary tensile stress in the prestressing steel of pretensioned members shall not exceed 80 percent of the specified minimum ultimate tensile strength of the prestressing steel.

Pretensioned prestressing steel shall be anchored at stresses that will result in the ultimate retention of working forces at not less than those shown on the plans.

In Section 50-1.09 replace the 2nd and 3rd paragraphs with:

Grout shall consist of cement and water and may contain an admixture if approved by the Engineer.

Cement shall conform to the provisions in Section 90-2.01A, "Cement."

In Section 50-1.10 between the 3rd and 4th paragraphs, add:

Each sample shall be identified by location and Contract number with weatherproof markings. A completed Sample Identification Card shall also be attached to each sample. The card is available from the Transportation Laboratory.

In Section 50-1.10 in the 5th paragraph, replace item A with:

A. For wire or bars, one 7-foot-long sample and for strand, one 4-foot-long sample, of each size shall be furnished for each heat or reel.

In Section 50-1.11 replace the 1st paragraph with:

No separate payment will be made for pretensioning precast concrete members. Payment for pretensioning precast concrete members shall be considered as included in the contract price paid for furnish precast members as provided for in Section 51, "Concrete Structures."

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SECTION 51 CONCRETE STRUCTURES
(Issued 08-05-11)

In Section 51-1.05 in the 11th paragraph, replace the 1st sentence with:

Form panels for exposed surfaces shall be furnished and placed in uniform widths of not less than 3 feet and in uniform lengths of not less than 6 feet, except at the end of continuously formed surfaces where the final panel length required is less than 6 feet.

In Section 51-1.06A(3) in the 1st paragraph, replace items E and F with:

E. When timber members are used to brace falsework bents which are located adjacent to roadways or railroads, all connections for the timber bracing shall be of the bolted type using 5/8-inch diameter or larger bolts or coil rod with a root diameter equal to that of the shank of a 5/8-inch diameter bolt.

F. Falsework member clearances must be at least those shown in the following table:

Falsework member	Clearances	
	To railing members, barriers, and anchored temporary railings	To unanchored temporary railings
Footings	0'-3"	2'-0"
Piles	1'-0"	2'-9"
Other members	2'-0"	2'-9"

In Section 51-1.06C in the 11th paragraph, replace the 1st sentence with:

Falsework for box culverts and other structures with decks lower than the roadway pavement and with span lengths of 14 feet or less shall not be released until the last placed concrete has attained a compressive strength of 1,600 psi, provided that curing of the concrete is not interrupted.

In Section 51-1.11 replace the 6th paragraph with:

Construction methods and equipment employed by the Contractor shall conform to the provisions in Section 7-1.02, "Load Limitations."

In Section 51-1.12D replace the 4th paragraph with:

Expanded polystyrene shall be a commercially available polystyrene board. Expanded polystyrene shall have a minimum flexural strength of 35 psi determined in conformance with the requirements in ASTM Designation: C

203 and a compressive yield strength of between 16 and 40 psi at 5 percent compression. Surfaces of expanded polystyrene against which concrete is placed shall be faced with hardboard. Hardboard shall be 1/8 inch minimum thickness, conforming to ANSI A135.4, any class. Other facing materials may be used provided they furnish equivalent protection. Boards shall be held in place by nails, waterproof adhesive, or other means approved by the Engineer.

In Section 51-1.12F replace the 3rd paragraph with:

Type A and AL joint seals shall consist of a groove in the concrete that is filled with field-mixed silicone sealant.

In Section 51-1.12F in the 6th paragraph, replace the table with:

Movement Rating (MR)	Seal Type
MR ≤ 1 inch	Type A or Type B
1 inch < MR ≤ 2 inches	Type B
2 inches < MR ≤ 4 inches	Joint Seal Assembly (Strip Seal)
MR > 4 inches	Joint Seal Assembly (Modular Unit) or Seismic Joint

In Section 51-1.12F(3)(a) replace the 1st and 2nd paragraphs with:

The sealant must consist of a 2-component silicone sealant that will withstand up to ±50 percent movement. Silicone sealants must be tested under California Test 435 and must comply with the following:

Specification	Requirement
Modulus at 150 percent elongation	8-75 psi
Recovery	21/32 inch max.
Notch Test	Notched or loss of bond 1/4 inch, max.
Water Resistance	Notched or loss of bond 1/4 inch, max.
Ultraviolet Exposure ASTM Designation: G 154, Table X2.1,Cycle 2.	No more than slight checking or cracking.
Cone Penetration	4.5-12.0 mm

In Section 51-1.12F(3)(a) delete the 3rd and 8th paragraphs.

In Section 51-1.12F(3)(a) replace the 10th paragraph with:

A Certificate of Compliance accompanied by a certified test report must be furnished for each batch of silicone sealant in conformance with the provisions in Section 6-1.07, "Certificates of Compliance."

In Section 51-1.12F(3)(b) replace the 2nd paragraph with:

The preformed elastomeric joint seal must conform to the requirements in ASTM D 2628 and the following:

1. The seal must consist of a multichannel, nonporous, homogeneous material furnished in a finished extruded form.
2. The minimum depth of the seal measured at the contact surface must be at least 95 percent of the minimum uncompressed width of the seal as designated by the manufacturer.
3. When tested in conformance with the requirements in California Test 673 for Type B seals, joint seals must provide a movement rating (MR) of not less than that shown on the plans.
4. The top and bottom edges of the joint seal must maintain continuous contact with the sides of the groove over the entire range of joint movement.

5. The seal must be furnished full length for each joint with no more than 1 shop splice in any 60-foot length of seal.
6. The Contractor must demonstrate the adequacy of the procedures to be used in the work before installing seals in the joints.
7. One field splice per joint may be made at locations and by methods approved by the Engineer. The seals are to be manufactured full length for the intended joint, then cut at the approved splice section and rematched before splicing. The Contractor must submit splicing details prepared by the joint seal manufacturer for approval before beginning splicing work.
8. Shop splices and field splices must have no visible offset of exterior surfaces and must show no evidence of bond failure.
9. At all open ends of the seal that would admit water or debris, each cell must be filled to a depth of 3 inches with commercial quality open cell polyurethane foam or closed by other means subject to approval by the Engineer.

In Section 51-1.12F(3)(b) replace the 7th paragraph with:

The joint seal must be installed full length for each joint with equipment that does not twist or distort the seal, elongate the seal longitudinally, or otherwise cause damage to the seal or to the concrete forming the groove.

In Section 51-1.12F(3)(b) in the 11th paragraph, replace the 1st sentence with:

Samples of the prefabricated joint seals, not less than 3 feet in length, will be taken by the Engineer from each lot of material.

In Section 51-1.12H(1) in the 6th paragraph, replace the 4th and 5th sentences with:

Each ply of fabric shall have a breaking strength of not less than 800 pounds per inch of width in each thread direction when 3" x 36" samples are tested on split drum grips. The bond between double plies shall have a minimum peel strength of 20 pounds per inch.

In Section 51-1.12H(1) in the 8th paragraph in the table, replace the hardness (Type A) requirements with:

Hardness (Type A)	D 2240 with 2kg mass.	55 ±5

In Section 51-1.12H(2) in the 1st paragraph in item A, replace the 1st and 2nd sentences with:

The bearings shall consist of alternating steel laminates and internal elastomer laminates with top and bottom elastomer covers. Steel laminates shall have a nominal thickness of 0.075 inch (14 gage).

In Section 51-1.13 replace the 2nd, 3rd, and 4th paragraphs with:

Surfaces of fresh concrete at horizontal construction joints shall be thoroughly consolidated without completely removing surface irregularities. Additionally, surfaces of fresh concrete at horizontal construction joints between girder stems and decks shall be roughened to at least a 1/4-inch amplitude.

Construction joint surfaces shall be cleaned of surface laitance, curing compound, and other foreign materials using abrasive blast methods before fresh concrete is placed against the joint surface.

Construction joint surfaces shall be flushed with water and allowed to dry to a surface dry condition immediately before placing concrete.

In Section 51-1.135 replace the 1st paragraph with:

Mortar shall be composed of cementitious material, sand, and water proportioned and mixed as specified in this Section 51-1.135.

In Section 51-1.135 replace the 3rd paragraph with:

The proportion of cementitious material to sand, measured by volume, shall be 1 to 2 unless otherwise specified.

In Section 51-1.17 in 4th paragraph, replace the 3rd sentence with:

The surfaces shall have a profile trace showing no high points in excess of 0.25 inch, and the portions of the surfaces within the traveled way shall have a profile count of 5 or less in any 100 foot section.

Add:

51-1.17A Deck Crack Treatment

The Contractor shall use all means necessary to minimize the development of shrinkage cracks.

The Contractor shall remove all equipment and materials from the deck and clean the surface as necessary for the Engineer to measure the surface crack intensity. Surface crack intensity will be determined by the Engineer after completion of concrete cure, before prestressing, and before the release of falsework. In any 500 square foot portion of deck within the limits of the new concrete deck, should the intensity of cracking be such that there are more than 50 feet of cracks whose width at any location exceeds 0.02 inch, the deck shall be treated with a high molecular weight methacrylate (HMWM) resin system. The area of deck to be treated shall have a width that extends for the entire width of new deck inside the concrete barriers and a length that extends at least 5 feet beyond the furthest single continuous crack outside the 500 square foot portion, measured from where that crack exceeds 0.02 inch in width, as determined by the Engineer.

Deck crack treatment shall include furnishing, testing, and applying the HMWM resin system, with sand and absorbent material. If grinding is required, deck crack treatment shall take place before grinding.

51-1.17A(1) Submittals

Submit a HMWM resin system placement plan. When HMWM resin is to be applied within 100 feet of a residence, business, or public space including sidewalks under a structure, also submit a public safety plan. Submit plans under Section 5-1.02, "Plans and Working Drawings," of the Standard Specifications. The review time is 15 days.

The HMWM resin system placement plan must include:

1. Schedule of work and testing for each bridge
2. Description of equipment for applying HMWM resin
3. Range of gel time and final cure time for HMWM resin
4. Absorbent material to be used
5. Description of equipment for applying and removing excess sand and absorbent material
6. Procedure for removing HMWM resin from the deck, including equipment
7. Storage and handling of HMWM resin components and absorbent material
8. Disposal of excess HMWM resin and containers

The public safety plan must include:

1. A public notification letter with a list of delivery and posting addresses. The letter must state HMWM resin work locations, dates, times, and what to expect. Deliver the letter to residences and businesses within 100 feet of HMWM resin work locations and to local fire and police officials at least 7 days before starting work. Post the letter at the job site.
2. An airborne emissions monitoring plan prepared and executed by a certified industrial hygienist (CIH) certified in comprehensive practice by the American Board of Industrial Hygiene. The plan must have at least 4 monitoring points including the mixing point, application point, and point of nearest public contact. Monitor airborne emissions during HMWM resin work and submit emissions monitoring results after completing the work.
3. An action plan for protection of the public when airborne emissions levels exceed permissible levels.
4. A copy of the CIH's certification.

If the measures proposed in the safety plan are inadequate to provide for public safety associated with the use of HMWM resin, the Engineer will reject the plan and direct the Contractor to revise the plan. Directions for revisions will be in writing and include detailed comments. The Engineer will notify the Contractor of the approval or rejection of a submitted or revised plan within 15 days of receipt of that plan.

51-1.17A(2) Quality Control and Assurance

Submit samples of HMWM resin components 15 days before use under Section 6-3, "Testing," of the Standard Specifications. Notify the Engineer 15 days before delivery of HMWM resin components in containers over 55 gallons to the job site.

Complete a test area before starting work. Results from airborne emissions monitoring of the test area must be submitted to the Engineer before starting production work.

The test area must:

1. Be approximately 500 square feet
2. Be placed within the project limits outside the traveled way at an approved location
3. Be constructed using the same equipment as the production work
4. Replicate field conditions for the production work
5. Demonstrate proposed means and methods meet the acceptance criteria
6. Demonstrate production work will be completed within the time allowed
7. Demonstrate suitability of the airborne emissions monitoring plan

The test area will be acceptable if:

1. The treated deck surface is tack free and non-oily
2. The sand cover adheres and resists brushing by hand
3. Excess sand and absorbent material has been removed
4. The coefficient of friction is at least 0.35 when tested under California Test 342

51-1.17A(3) Materials

HMWM resin system consists of a resin, promoter, and initiator. HMWM resin must be low odor and comply with the following:

HMWM Resin

Property	Requirement	Test Method
Volatile Content*	30 percent, maximum	ASTM D 2369
Viscosity*	25 cP, maximum, (Brookfield RVT with UL adaptor, 50 RPM at 77°F)	ASTM D 2196
Specific Gravity*	0.90 minimum, at 77°F	ASTM D 1475
Flash Point*	180°F, minimum	ASTM D 3278
Vapor Pressure*	1.0 mm Hg, maximum, at 77°F	ASTM D 323
Tack-free Time	400 minutes, maximum, at 25°C	Specimens prepared per California Test 551
PCC Saturated Surface-Dry Bond Strength	3.5 MPa, minimum at 24 hours and 21 ± 1°C	California Test 551

* Test must be performed before adding initiator.

Sand for abrasive sand finish must:

1. Be commercial quality dry blast sand
2. Have at least 95 percent pass the No. 8 sieve and at least 95 percent retained on the No. 20 sieve when tested under California Test 205

Absorbent material must be diatomaceous earth, abrasive blast dust, or substitute recommended by the HMWM resin supplier and approved by the Engineer.

51-1.17A(4) Construction

HMWM resin system applied by machine must be:

1. Combined in volumetric streams of promoted resin to initiated resin by static in-line mixers
2. Applied without atomization

HMWM resin system may be applied manually. Limit the quantity of resin mixed for manual application to 5 gallons at a time.

Prepare the area to be treated by abrasive blasting. Curing compound, surface contaminants, and foreign material must be removed from the bridge deck surface. Sweep the deck surface clean after abrasive blasting and blow loose material from cracks using high-pressure air.

The deck surface must be dry when abrasive blast cleaning is performed. When abrasive blast cleaning within 10 feet of public traffic, remove dust and residue from abrasive blast cleaning using a vacuum attachment operating concurrently with blasting equipment . If the deck surface becomes contaminated before placing HMWM, abrasive blast clean the contaminated area and sweep the deck clean.

The deck must be dry before applying HMWM resin. The concrete surface must be at least 50 degrees F and at most 100 degrees F. Relative humidity must be expected to be at most 85 percent during the work shift.

Thoroughly mix all components of the HMWM resin system. Apply HMWM resin to the deck surface within 5 minutes of mixing at approximately 90 sq ft per gallon. The Engineer determines the exact application rate. The resin gel time must be between 40 and 90 minutes. HMWM resin that thickens during application is rejected.

Spread the HMWM resin system uniformly. Completely cover surfaces to be treated and fill all cracks. Redistribute excess resin using squeegees or brooms within 10 minutes of application. For textured or grooved deck surfaces, excess resin must be removed from the texture indentations.

Apply the abrasive sand finish of at least 2 pounds per square yard or until saturation as determined by the Engineer no sooner than 20 minutes after applying resin. Apply absorbent material before opening lane to traffic. Remove excess sand and absorbent material by vacuuming or power sweeping.

Traffic or equipment will be allowed on the overlay after the Engineer has determined:

1. The treated deck surface is tack free and non-oily
2. The sand cover adheres and resists brushing by hand
3. Excess sand and absorbent material has been removed
4. No material will be tracked beyond limits of treatment by traffic

In Section 51-1.18C replace the 2nd paragraph with:

When Class 2 surface finish (gun finish) is specified, ordinary surface finish shall first be completed. The concrete surfaces shall then be abrasive blasted to a rough texture and thoroughly washed down with water. While the washed surfaces are damp, but not wet, a finish coating of machine applied mortar, approximately 1/4 inch thick, shall be applied in not less than 2 passes. The coating shall be pneumatically applied and shall consist of either (1) sand, cementitious material, and water mechanically mixed prior to its introduction to the nozzle, or (2) premixed sand and cementitious material to which water is added prior to its expulsion from the nozzle. The use of admixtures shall be subject to the approval of the Engineer as provided in Section 90, "Portland Cement Concrete." Unless otherwise specified, supplementary cementitious materials will not be required. The proportion of cementitious material to sand shall be not less than one to 4, unless otherwise directed by the Engineer. Sand shall be of a grading suitable for the purpose intended. The machines shall be operated and the coating shall be applied in conformance with standard practice. The coating shall be firmly bonded to the concrete surfaces on which it is applied.

In Section 51-1.18C replace the 5th paragraph with:

When surfaces to be finished are in pedestrian undercrossings, the sand shall be silica sand and the cementitious material shall be standard white portland cement.

In Section 51-1.23 add:

Full compensation for deck crack treatment, including the public safety plan, shall be considered as included in the contract price paid per cubic yard for structural concrete, bridge, and no additional compensation will be allowed therefor.

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SECTION 52 REINFORCEMENT
(Issued 06-05-09)

In Section 52-1.02(B) between the 3rd and 4th paragraphs, add:

The epoxy powder coating shall be selected from the Department's Pre-Qualified Products List.

In Section 52-1.02(B) replace the 14th paragraph with:

Except for lap splices, splices for epoxy-coated reinforcement shall be coated with a corrosion protection covering that is selected from the Department's Pre-Qualified Products List. The covering shall be installed in accordance with the manufacturer's recommendations.

In Section 52-1.07 in the 11th paragraph, replace the table with:

Height Zone (H) (Feet above ground)	Wind Pressure Value (psf)
$H \leq 30$	20
$30 < H \leq 50$	25
$50 < H \leq 100$	30
$H > 100$	35

In Section 52-1.08B(1) replace the 1st paragraph with:

Mechanical splices to be used in the work shall be selected from the Department's Pre-Qualified Products List.

In Section 52-1.08B(1) in the 2nd paragraph, replace the table with:

Reinforcing Bar Number	Total Slip
4	0.020-inch
5	0.020-inch
6	0.020-inch
7	0.028-inch
8	0.028-inch
9	0.028-inch
10	0.036-inch
11	0.036-inch
14	0.048-inch
18	0.060-inch

In Section 52-1.08B(1), in the 6th paragraph, delete item C.

In Section 52-1.08B(2) in the 6th paragraph, replace the subparagraph with:

The minimum preheat and interpass temperatures shall be 400º F for Grade 40 bars and 600º F for Grade 60 bars. Immediately after completing the welding, at least 6 inches of the bar on each side of the splice shall be covered by an insulated wrapping to control the rate of cooling. The insulated wrapping shall remain in place until the bar has cooled below 200º F.

Replace Section 52-1.08B(3) with:

52-1.08B(3) Resistance Butt Welds

Shop produced resistance butt welds shall be produced by a fabricator who is selected from the Department's Pre-Qualified Products List.

A Certificate of Compliance conforming to the provisions in Section 6-1.07, "Certificates of Compliance," shall be furnished for each shipment of splice material. The Certificate of Compliance shall include heat number, lot number and mill certificates.

In Section 52-1.08C replace the 3rd paragraph with:

Testing on prequalification and production sample splices shall be performed at an approved independent testing laboratory. The laboratory shall not be employed or compensated by any subcontractor, or by other persons or entities hired by subcontractors who will provide other services or materials for the project.

The independent testing laboratory shall be selected from the Department's Pre-Qualified Products List.

In Section 52-1.08C replace the 5th paragraph with:

Prequalification and production sample splices and testing shall conform to California Test 670 and these specifications.

In Section 52-1.08C delete the 6th paragraph.

In Section 52-1.08C replace the 8th paragraph with:

Each sample splice, as defined herein, shall be identified as representing either a prequalification or production test sample splice.

In Section 52-1.08C in the 10th paragraph, delete the last sentence.

Replace Section 52-1.08C(1) with:

52-1.08C(1) Splice Prequalification Report

Before using any service splices or ultimate butt splices in the work, the Contractor shall submit a Splice Prequalification Report. The report shall include the following:

A. A copy of the manufacturer's product literature giving complete data on the splice material and installation procedures.
B. Names of the operators who will be performing the splicing.
C. Descriptions of the positions, locations, equipment, and procedures that will be used in the work.
D. Certifications from the fabricator for prequalification of operators and procedures based on sample tests performed no more than 2 years before submitting the report. Each operator shall be certified by performing 2 sample splices for each bar size of each splice type that the operator will be performing in the work. For deformation-dependent types of splice devices, each operator shall be certified by performing 2 additional samples for each bar size and deformation pattern that will be used in the work.

Prequalification sample splices shall be tested by an approved independent testing laboratory and shall conform to the appropriate production test criteria and slip requirements specified herein. When epoxy-coated reinforcement is required, resistance butt welded sample splices shall have the weld flash removed by the same procedure as will be used in the work, before coating and testing. The Splice Prequalification Report shall include the certified test results for all prequalification sample splices.

The QCM shall review and approve the Splice Prequalification Report before submitting it to the Engineer for approval. The Contractor shall allow 2 weeks for the review and approval of a complete report before performing any service splicing or ultimate butt splicing in the work.

In Section 52-1.08C(2)(a) replace the 1st, 2nd, 3rd, 4th, and 5th paragraphs with:

Production tests shall be performed by an approved independent testing laboratory for all service splices used in the work. A production test shall consist of testing 4 sample splices prepared for each lot of completed splices. The samples shall be prepared by the Contractor using the same splice material, position, operators, location, and equipment, and following the same procedure as used in the work.

At least one week before testing, the Contractor shall notify the Engineer in writing of the date and location where the testing of the samples will be performed.

The 4 samples from each production test shall be securely bundled together and identified with a completed sample identification card before shipment to the approved independent testing laboratory. The card will be furnished by the Engineer. Bundles of samples containing fewer than 4 samples of splices shall not be tested.

Before performing any tensile tests on production test sample splices, one of the 4 samples shall be tested for, and shall conform to, the requirements for total slip in Section 52-1.08B(1), "Mechanical Splices." Should this sample not meet the total slip requirements, one retest, in which the 3 remaining samples are tested for total slip, will be allowed. Should any of the 3 remaining samples not conform to the total slip requirements, all splices in the lot represented by this production test will be rejected.

If 3 or more sample splices from a production test conform to the provisions in this Section 52-1.08C(2), "Service Splice Test Criteria," all splices in the lot represented by this production test will be considered acceptable.

Replace Section 52-1.08C(2)(b) with:

52-1.08C(2)(b) Quality Assurance Test Requirements for Service Splices

In addition to the required production tests, the Contractor shall concurrently prepare 4 service quality assurance sample splices for:

A. The first production test performed.
B. One of every 5 subsequent production tests, or fraction thereof, randomly selected by the Engineer.

These service quality assurance sample splices shall be prepared in the same manner as specified herein for service production sample splices.

The service quality assurance sample splices shall be shipped to the Transportation Laboratory for quality assurance testing. Each set of 4 sample splices shall be securely bundled together and identified by location and contract number with weatherproof markings before shipment. Bundles containing fewer than 4 samples of splices will not be tested. Sample splices not accompanied by the supporting documentation required in Section 52-1.08B(1), "Mechanical Splices," for mechanical splices, or in Section 52-1.08B(3), "Resistance Butt Welds," for resistance butt welds, will not be tested.

Quality assurance testing will be performed in conformance with the requirements for service production sample splices in Section 52-1.08C(2)(a), "Production Test Requirements for Service Splices."

Replace Section 52-1.08C(3) with:

52-1.08C(3) Ultimate Butt Splice Test Criteria

Ultimate production and quality assurance sample splices shall be tensile tested in conformance with the requirements described in ASTM Designation: A 370 and California Test 670.

Each sample splice shall be identified as representing a prequalification, production, or quality assurance sample splice.

The portion of hoop reinforcing bar, removed to obtain a sample splice, shall be replaced using a prequalified ultimate mechanical butt splice, or the hoop shall be replaced in kind.

Reinforcing bars, other than hoops, from which sample splices are removed, shall be repaired using ultimate mechanical butt splices conforming to the provisions in Section 52-1.08C(1), "Splice Prequalification Report," or the bars shall be replaced in kind. These bars shall be repaired or replaced such that no splices are located in any "No Splice Zone" shown on the plans.

Ultimate production and quality assurance sample splices shall rupture either: 1) in the reinforcing bar but outside of the affected zone, provided that the sample splice has visible necking or 2) anywhere, provided that the sample splice has achieved the strain requirement for necking.

When tested in conformance with the requirements in California Test 670, "Necking (Option I)," the visible necking shall be such that there is a visible decrease in the sample's cross-sectional area at the point of rupture.

When tested in conformance with the requirements in California Test 670, "Necking (Option II)," the strain requirement for necking shall be such that the largest measured strain is not less than 6 percent for No. 11 and larger bars, or not less than 9 percent for No. 10 and smaller bars.

The affected zone is the portion of the reinforcing bar where any properties of the bar, including the physical, metallurgical, or material characteristics, have been altered by fabrication or installation of the splice. The weld and one inch adjacent to the weld will be considered part of the affected zone.

In Section 52-1.08C(3)(a) replace the 1st paragraph with:

Production tests shall be performed for all ultimate butt splices used in the work. A production test shall consist of testing 4 sample splices removed from each lot of completed splices.

In Section 52-1.08C(3)(a) replace the 3rd paragraph with:

After notification has been received, the Engineer will randomly select the 4 sample splices to be removed from the lot and place tamper-proof markings or seals on them. These ultimate production sample splices shall be removed by the Contractor, and tested by an approved independent testing laboratory.

In Section 52-1.08(C)(3)(a) replace the 5th, 6th, and 7th paragraphs with:

A sample splice will be rejected if a tamper-proof marking or seal is disturbed before testing.

The 4 sample splices from each production test shall be securely bundled together and identified with a completed sample identification card before shipment to the approved independent testing laboratory. The card will be furnished by the Engineer. Bundles of samples containing fewer than 4 sample splices shall not be tested.

Before performing any tensile tests on production test sample splices, one of the 4 sample splices shall be tested for, and shall conform to, the requirements for total slip in Section 52-1.08B(1), "Mechanical Splices." Should this sample splice not meet these requirements, one retest, in which the 3 remaining sample splices are tested for total slip, will be allowed. Should any of the 3 remaining sample splices not conform to these requirements, all splices in the lot represented by this production test will be rejected.

Replace Section 52-1.08C(3)(b) with:

52-1.08C(3)(b) Quality Assurance Test Requirements for Ultimate Butt Splices

In addition to the required production tests, the Contractor shall concurrently prepare 4 ultimate quality assurance sample splices for:

A. The first production test performed.
B. One of every 5 subsequent production tests, or fraction thereof, randomly selected by the Engineer.

These ultimate quality assurance sample splices shall be prepared in the same manner as specified herein for ultimate production sample splices.

The ultimate quality assurance sample splices shall be shipped to the Transportation Laboratory for quality assurance testing. Each set of 4 sample splices shall be securely bundled together and identified by location and contract number with weatherproof markings before shipment. Bundles containing fewer than 4 samples of splices will not be tested. Sample splices not accompanied by the supporting documentation required in Section 52-1.08B(1), "Mechanical Splices," for mechanical splices, or in Section 52-1.08B(3), "Resistance Butt Welds," for resistance butt welds, will not be tested.

Quality assurance testing will be performed in conformance with the requirements for ultimate production sample splices in Section 52-1.08C(3)(a), "Production Test Requirements for Ultimate Butt Splices."

Replace Section 52-1.08D with:

A Production Test Report for all testing performed on each lot shall be prepared by the approved independent testing laboratory performing the testing and submitted to the QCM for review and approval. The report shall be signed by an engineer who represents the laboratory and is registered as a Civil Engineer in the State of California. The report shall include, as a minimum, the following information for each test: contract number, bridge number, lot number and location, bar size, type of splice, length of mechanical splice, length of test specimen, physical condition of test sample splice, any notable defects, total measured slip, and ultimate tensile strength of each splice. In addition, the report shall include location of visible necking area and largest measured strain for ultimate butt splices.

The QCM must review, approve, and forward each Production Test Report to the Engineer for review before the splices represented by the report are encased in concrete. The Engineer will have 3 working days to review each Production Test Report and respond in writing after a complete report has been received. Should the Contractor elect to encase any splices before receiving notification from the Engineer, it is expressly understood that the Contractor will not be relieved of the responsibility for incorporating material in the work that conforms to the requirements of the plans and specifications. Material not conforming to these requirements will be subject to rejection.

Quality assurance test results for each bundle of 4 samples of splices will be reported in writing to the Contractor within 3 working days after receipt of the bundle by the Transportation Laboratory. In the event that more than one bundle is received on the same day, 2 additional working days shall be allowed for providing test results for each additional bundle received. A test report will be made for each bundle received. Should the Contractor elect to encase splices before receiving notification from the Engineer, it is expressly understood that the Contractor will not be relieved of the responsibility for incorporating material in the work that conforms to the requirements of the plans and specifications. Material not conforming to these requirements will be subject to rejection.

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SECTION 53 SHOTCRETE
(Issued 11-02-07)

In Section 53-1.01 replace the 3rd paragraph with:

The dry-mix process shall consist of delivering dry mixed aggregate and cementitious material pneumatically or mechanically to the nozzle body and adding water and mixing the materials in the nozzle body. The wet-mix process shall consist of delivering mixed aggregate, cement, and water pneumatically to the nozzle and adding any admixture at the nozzle.

In Section 53-1.02 replace the 1st through 4th paragraphs with:

Cementitious material, fine aggregate, and mixing water shall conform to the provisions in Section 90, "Portland Cement Concrete."

Shotcrete to be mixed and applied by the dry-mix process shall consist of one part cementitious material to not more than 4.5 parts fine aggregate, thoroughly mixed in a dry state before being charged into the machine. Measurement may be either by volume or by weight. The fine aggregate shall contain not more than 6 percent moisture by weight.

Shotcrete to be mixed and applied by the wet-mix process shall consist of cementitious material, fine aggregate, and water and shall contain not less than 632 pounds of cementitious material per cubic yard. A maximum of 30 percent pea gravel may be substituted for fine aggregate. The maximum size of pea gravel shall be such that 100 percent passes the 1/2 inch screen and at least 90 percent passes the 3/8 inch screen.

Admixtures may be added to shotcrete and shall conform to the provisions in Section 90-4, "Admixtures."

In Section 53-1.04 in the 3rd paragraph, replace item C with:

C. Aggregate and cementitious material that have been mixed for more than 45 minutes shall not be used unless otherwise permitted by the Engineer.

Replace Section 53-1.07 with:

53-1.07 MEASUREMENT

Quantities of shotcrete will be measured by the cubic yard computed from measurements, along the slope, of actual areas placed and the theoretical thickness shown on the plans. The Department does not pay for shotcrete placed outside the dimensions shown on the plans or to fill low foundation.

Replace Section 53-1.08 with:

53-1.08 PAYMENT

The contract price paid per cubic yard for shotcrete shall include full compensation for furnishing all labor, materials, tools, equipment, and incidentals, and for doing all the work involved in placing shotcrete, including preparing the foundation, wire reinforcement, structure backfill, joint filling material, and if required by the plans, drains with sacked pervious backfill material, as shown on the plans, as specified in these specifications and the special provisions, and as directed by the Engineer.

^^

SECTION 54 WATERPROOFING
(Issued 07-01-11)

In Section 54-1.02, replace the 1st paragraph with:

Waterproofing asphalt shall conform to the requirements in ASTM Designation: D 449, Type I for below ground and Type II for above ground.

^^

SECTION 55 STEEL STRUCTURES
(Issued 08-05-11)

In Section 55-1.01 replace the 4th paragraph with:

Design details, fabrication, and workmanship for steel railway bridges shall conform to the provisions in Chapter 15, "Steel Structures," of the AREMA Manual for Railway Engineering.

In Section 55-1.05 replace the 3rd paragraph with:

Construction methods and equipment employed by the Contractor shall conform to the provisions in Section 7-1.02, "Load Limitations."

In Section 55-2.01 replace the table in the 5th paragraph with:

Material Conforming to ASTM Designation: A 709/A 709M	CVN Impact Value (Ft. Lbs at Temp.)
Grade 36	15 at 40º F
Grade 50* (2 inches and under in thickness)	15 at 40º F
Grade 50W* (2 inches and under in thickness)	15 at 40º F
Grade 50* (Over 2 inches to 4 inches in thickness)	20 at 40º F
Grade 50W* (Over 2 inches to 4 inches in thickness)	20 at 40º F
Grade HPS 50W* (4 inches and under in thickness)	20 at 10º F
Grade HPS 70W (4 inches and under in thickness)	25 at -10º F
Grade 100 ($2\frac{1}{2}$ inches and under in thickness)	25 at 0º F
Grade 100W (Over $2\frac{1}{2}$ inches to 4 inches in thickness)	35 at 0º F

* If the yield point of the material exceeds 65,000 psi, the temperature for the CVN impact value for acceptability shall be reduced 15º F for each increment of 10,000 psi above 65,000 psi

In Section 55-2.01 replace the Structural Steel Materials table with:

Structural Steel Materials

Material	Specification
Structural steel:	
Carbon steel	ASTM: A 709/A 709M, Grade 36 or {A 36/A 36M}[a]
High strength low alloy columbium vanadium steel	ASTM: A 709/A 709M, Grade 50 or {A 572/A 572M, Grade 50}[a]
High strength low alloy structural steel	ASTM: A 709/A 709M, Grade 50W, Grade HPS 50W, or {A 588/A 588M}[a]
High strength low alloy structural steel plate	ASTM: A 709/A 709M, Grade HPS 70W
High-yield strength, quenched and tempered alloy steel plate suitable for welding	ASTM: A 709/A 709M, Grade 100 and Grade 100W, or {A 514/A 514M}[a]
Steel fastener components for general applications:	
Bolts and studs	ASTM: A 307
Anchor bolts	ASTM: F 1554 or A 307, Grade C
High-strength bolts and studs	ASTM: A 449, Type 1
High-strength threaded rods	ASTM: A 449, Type 1
High-strength nonheaded anchor bolts	ASTM: F 1554, Grade 105, Class 2A
Nuts	ASTM: A 563, including Appendix X1[b]
Washers	ASTM: F 844
Components of high-strength steel fastener assemblies for use in structural steel joints:	
Bolts	ASTM: A 325, Type 1
Tension control bolts	ASTM: F 1852, Type 1
Nuts	ASTM: A 563, including Appendix X1[b]
Hardened washers	ASTM : F 436, Type 1, Circular, including S1 supplementary requirements
Direct tension indicators	ASTM: F 959, Type 325, zinc-coated
Carbon steel for forgings, pins and rollers	ASTM: A 668/A 668M, Class D
Alloy steel for forgings	ASTM: A 668/A 668M, Class G
Pin nuts	ASTM: A 36/A 36M
Carbon-steel castings	ASTM: A 27/A 27M, Grade 65-35, Class 1
Malleable iron castings	ASTM: A 47/A 47M, Grade 32510 (Grade 22010)
Gray iron castings	ASTM: A 48, Class 30B
Carbon steel structural tubing	ASTM: A 500, Grade B or A 501
Steel pipe (Hydrostatic testing will not apply)	ASTM: A 53, Type E or S, Grade B; A 106, Grade B; or A 139, Grade B
Stud connectors	AASHTO/AWS D1.5

a Grades that may be substituted for the equivalent ASTM Designation: A 709 steel, at the Contractor's option, subject to the modifications and additions specified and to the requirements of A 709.

b Zinc-coated nuts that will be tightened beyond snug or wrench tight shall be furnished with a dry lubricant conforming to Supplementary Requirement S2 in ASTM Designation: A 563.

In Section 55-2.04 delete the 1st paragraph.

Delete Section 55-2.05.

In Section 55-3.05 replace the 1st paragraph with:

Surfaces of bearing and base plates and other metal surfaces that are to come in contact with each other or with ground concrete surfaces shall be flat to within 1/32-inch tolerance in 12 inches and to within 1/16-inch tolerance overall. Surfaces of bearing and base plates and other metal bearing surfaces that are to come in contact with preformed fabric pads, elastomeric bearing pads, or mortar shall be flat to within 1/8-inch tolerance in 12 inches and to within 3/16-inch tolerance overall.

In Section 55-3.07 in the 1st paragraph, replace item B with:

B. The radius of bend measured to the concave face shall conform to the requirements in ASTM Designation: A6/A6M

In Section 55-3.10 in the 1st paragraph, replace item B with:

B. Internal threads shall conform to the requirements in ASTM Designation: A 563.

In Section 55-3.19 replace the 3rd paragraph with:

Immediately before setting bearing assemblies or masonry plates directly on ground concrete surfaces, the Contractor shall thoroughly clean the surfaces of the concrete and the metal to be in contact and shall apply a coating of nonsag polysulfide or polyurethane caulking conforming to the requirements in ASTM Designation: C 920 to contact areas to provide full bedding.

In Section 55-4.01 in the 1st paragraph, replace item D with:

D. To determine the pay quantities of galvanized metal, the weight to be added to the calculated weight of the base metal for the galvanizing will be determined from the table of weights of zinc coatings specified in ASTM Designation: A 153/A 153M.

^^

SECTION 56 SIGNS
(Issued 07-20-12)

In Section 56-1.01 in the 2nd paragraph, replace the 1st sentence with:

Sign structures shall be of the following types: truss, tubular, lightweight and bridge mounted.

In Section 56-1.02A replace the 1st paragraph with:

Bars and plates shall be structural steel complying with one or more of the following:

1. ASTM Designation: A36/A36M
2. ASTM Designation: A709/A709M, Grade 36 or 50
3. ASTM Designation: A572/A572M, Grade 50

Other open shapes shall be structural steel complying with one or more of the following:

1. ASTM Designation: A36/A36M
2. ASTM Designation: A709/A709M, Grade 36 or 50
3. ASTM Designation: A992/A992M

Light fixture mounting channel shall be a continuous slot channel made from one of the following:

1. Steel complying with ASTM Designation: A1011/A1011M, Designation SS, Grade 33
2. Extruded aluminum of alloy 6063-T6 complying with ASTM Designation: B221 or B221M

In Section 56-1.02B delete the 2nd paragraph.

In Section 56-1.02E replace the 1st paragraph with:

Pipe posts shall be welded or seamless steel pipe conforming to the requirements in ASTM Designation: A 53/A 53M, Grade B; ASTM Designation: A 106/A 106M, Grade B; or API Specification 5L PSL2 Grade B or Grade X42R or Grade X42M. At the option of the Contractor, posts may be fabricated from structural steel conforming to the requirements in ASTM Designation: A 36/A 36M.

Pipe posts shall not be spiral seam welded.

In Section 56-1.02F replace item B of the 1st paragraph with:

B. Material for gratings shall be structural steel conforming to the requirements in ASTM Designation: A 1011/A 1011M, Designation CS, Type B or Designation SS, Grade 36, Type 1.

In Section 56-1.03 replace the 5th paragraph with:

Clips, eyes, or removable brackets shall be affixed to all signs and all posts and shall be used to secure the sign during shipping and for lifting and moving during erection as necessary to prevent damage to the finished galvanized or painted surfaces. Brackets on tubular sign structures shall be removed after erection. Details of the devices shall be shown on the working drawings.

In Section 56-1.03 delete the 12th paragraph.

In Section 56-1.05 replace the 1st paragraph with:

Excepting tubular type, all ferrous metal parts of sign structures shall be galvanized and not painted, unless otherwise specified in the special provisions.

In Section 56-1.05 replace the 2nd paragraph with:

Except as herein provided, all exterior surfaces including those areas to be covered by sign panels of tubular type of sign structures shall be cleaned and painted as provided in Section 59-5, "Painting Sign Structures," and as provided in the special provisions. There shall be no chemical treatment of galvanized surfaces prior to cleaning and painting. Walkway gratings, walkway brackets, gutters, safety railings, steel mountings for light fixtures, and all nuts, bolts, and washers for sign structures shall be galvanized after fabrication and shall not be painted.

In Section 56-1.05 replace the 3rd paragraph with:

Galvanizing shall conform to the provisions in Section 75-1.05, "Galvanizing," except that when permission is granted by the Engineer, surfaces may be coated with zinc by the metalizing process. Metalizing shall be performed in conformance with the AWS requirements. The thickness of the sprayed zinc coat shall be 10 ± 2 mils. The thickness of the sprayed zinc coat on faying surfaces shall not be more than 10 mils.

In Section 56-1.05, add:

Zinc solders or zinc alloys that contain tin shall not be used to repair a damaged galvanized surface.

In Section 56-1.07, add:

Bridge-mounted signs shall not be fastened to concrete elements of bridges or railings before the concrete attains a compressive strength of 2,500 psi.

In Section 56-1.10 replace the 4th paragraph with:

The contract price paid per pound for install sign structure of the type or types designated in the Engineer's Estimate shall include full compensation for furnishing all labor, materials, tools, equipment and incidentals, and for doing all the work involved in installing sign structures, complete in place, including installing anchor bolt assemblies, removable sign panel frames, and sign panels and performing any welding, painting or galvanizing required during installation, as shown on the plans, as specified in these specifications and the special provisions, and as directed by the Engineer.

In Section 56-2.03 replace the 4th paragraph with:

Backfill material for metal posts shall consist of minor concrete conforming to the provisions in Section 90-10, "Minor Concrete," and shall contain not less than 463 pounds of cementitious material per cubic yard.

^^

SECTION 59 PAINTING
(Issued 10-19-12)

In Section 59-1.01 add:

Coatings selected for use shall conform to the volatile organic compound limits specified for the air quality district where the project is located.

In Section 59-1.03 replace the 3rd paragraph with:

Painting shall be done in a neat and workmanlike manner. Unless otherwise specified, paint shall be applied by brush, or spray, or roller, or any combination of these methods. Gun extensions shall not be used.

In Section 59-1.03 replace the 5th paragraph with:

Unless otherwise specified, should 7 days elapse between paint applications, the painted surface shall be pressure rinsed prior to the next paint application. Pressure rinsing is defined as a pressurized water rinse with a minimum nozzle pressure of 1,160 psi. During rinsing, the tip of the pressure nozzle shall be placed between 12 inches and 18 inches from the surface to be rinsed. The nozzle shall have a maximum fan tip angle of 30°.

In Section 59-2.01 replace the 2nd paragraph with:

Unless otherwise specified, no painting Contractors or subcontractors will be permitted to perform work without having the following current "SSPC: The Society for Protective Coatings" (formerly the Steel Structures Painting Council) certifications in good standing throughout the duration of the contract:

A. For cleaning and painting structural steel in the field, certification in conformance with the requirements in Qualification Procedure No. 1, "Standard Procedure For Evaluating Painting Contractors (Field Application to Complex Industrial Structures)" (SSPC-QP 1).
B. For removing paint from structural steel, certification in conformance with the requirements in Qualification Procedure No. 2, "Standard Procedure for the Qualification of Painting Contractors (Field Removal of Hazardous Coatings from Complex Structures)" (SSPC-QP 2, Category A).
C. For cleaning and painting structural steel in a permanent painting facility, certification in conformance with the requirements in AISC-420-10/SSPC-QP 3, "Certification Standard for Shop Application of Complex Protective Coating Systems." All cleaning and painting of structural steel shall be performed in an Enclosed Shop.

In Section 59-2.03 replace the 3rd paragraph with:

Exposed steel or other metal surfaces to be blast cleaned shall be cleaned in conformance with the requirements in SSPC-SP 6/NACE No. 3, "Commercial Blast Cleaning," of the "SSPC: The Society for Protective Coatings." Blast cleaning shall leave all surfaces with a dense, uniform, angular anchor pattern of not less than 1.5 mil as measured in conformance with the requirements in ASTM Designation: D 4417.

Replace Section 59-2.05 with:

59-2.05 CLEANING PAINTED SURFACES

All previously painted surfaces shall be cleaned by pressure washing or steam cleaning before other cleaning or painting activities are performed. Gloss on the existing paint shall be removed without removing sound paint. Areas

of gloss remaining after cleaning shall be roughened using 100 to 200-grit sandpaper. Any paint that becomes loose, curled, lifted, or that loses its bond after cleaning shall be removed to sound paint or metal.

Pressure washing includes cleaning surfaces using a pressure wash system with a nozzle pressure from 2,500 to 5,000 psi and a maximum fan tip angle of 45 degrees.

Steam cleaning includes cleaning dirt, grease, loose chalky paint, and other foreign material from surfaces using steam. The steam temperature at the nozzle shall be from 265 to 375 degrees F. A biodegradable detergent shall be used during steam cleaning. After steam cleaning, cleaned surfaces shall be rinsed clean with fresh water. Steam cleaning shall not be performed more than 2 weeks before painting or other phases of cleaning. Steam-cleaned surfaces shall not be painted until they are thoroughly dry and 24 hours have elapsed after steam cleaning.

In Section 59-2.12 replace the 3rd and 4th paragraphs with:

Contact surfaces of stiffeners, railings, built up members or open seam exceeding 6 mils in width that would retain moisture, shall be caulked with polysulfide or polyurethane sealing compound conforming to the requirements in ASTM Designation: C 920, Type S, Grade NS, Class 25, Use O, or other approved material.

The dry film thickness of the paint will be measured in place with a calibrated Type 2 magnetic film thickness gage in conformance with the requirements in SSPC-PA 2, "Measurement of Dry Coating Thickness with Magnetic Gages," of the "SSPC: The Society for Protective Coatings," except that there shall be no limit to the number or location of spot measurements to verify compliance with specified thickness requirements.

In Section 59-5.01 replace the 1st paragraph with:

Tubular sign structures shall be cleaned and painted in conformance with the provisions in Section 59-1, "General," and this Section 59-5. Sign structures, other than tubular sign structures, shall not be painted unless otherwise specified in the special provisions.

^^

SECTION 63: CAST-IN-PLACE CONCRETE PIPE
(Issued 10-21-11)

Replace Section 63 with:

SECTION 63: (BLANK)

^^

SECTION 64 PLASTIC PIPE
(Issued 06-05-09)

In Section 64-1.02 replace the 5th paragraph with:

HDPE compounds used in the manufacture of corrugated polyethylene pipe and fittings shall comply with AASHTO M 294 except that the mix shall contain not less than 2 nor greater than 4 percent well dispersed carbon black. HDPE compounds used in the manufacture of ribbed profile wall polyethylene pipe shall comply with ASTM F 894 except that Type E ultraviolet stabilizers shall not be allowed and carbon black shall be well dispersed in an amount not less than 2 percent nor greater than 4 percent.

Manufacturers of corrugated polyethylene pipe shall:

1. Participate in the National Transportation Product Evaluation Control Program (NTPEP) for each plant supplying corrugated polyethylene pipe and fittings for the project.
2. Conduct and maintain a quality control program under NTPEP.

3. Submit a copy to the Engineer of manufacturing plant audits and NTPEP test results from the current cycle of NTPEP testing for all pipe diameters supplied.

Type D corrugated polyethylene pipe is not allowed. Corrugated polyethylene pipe greater than 60 inches in nominal diameter is not allowed.

In Section 64-1.05 replace the 1st paragraph with:

Excavation, backfill, and shaped bedding shall comply with Section 19-3, "Structure Excavation and Backfill," except the following:

1. At locations where pipe is to be backfilled with concrete, the backfill shall comply with Section 64-1.06, "Concrete Backfill."
2. Corrugated polyethylene pipe that is greater than 48 inches in nominal diameter but not exceeding 60 inches in nominal diameter shall be backfilled with either controlled low strength material under the special provisions or slurry cement backfill under Section 19-3.062, "Slurry Cement Backfill."
3. Where cementitious or flowable backfill is used for structure backfill, the backfill shall be placed to a level not less than 12 inches above the crown of the pipe.

In Section 64-1.06 replace the 1st paragraph with:

At locations where pipe is to be backfilled with concrete as shown on the plans, the concrete backfill shall be constructed of minor concrete or Class 4 concrete conforming to the provisions in Section 90, "Portland Cement Concrete." Minor concrete shall contain not less than 380 pounds of cementitious material per cubic yard. The concrete to be used will be designated in the contract item or shown on the plans.

In Section 64-1.06 replace the 3rd paragraph with:

The surface of the concrete backfill shall be broomed with a heavy broom to produce a uniform rough surface if hot mix asphalt is to be placed directly thereon.

^^

SECTION 65 REINFORCED CONCRETE PIPE
(Issued 07-20-12)

In Section 65-1.02 replace the 1st paragraph with:

Cementitious material and aggregate shall conform to the provisions in Section 90-2, "Materials" except that grading requirements shall not apply to the aggregate. Use of supplemental cementitious material shall conform to AASHTO Designation: M 170.

In Section 65-1.02A(1) in the 11th paragraph, replace item c with:

c. Cementitious material and aggregate for non-reinforced concrete pipe shall conform to the provisions in Section 65-1.02, "Materials."

In Section 65-1.035 replace the 1st paragraph with:

At locations where pipe is to be backfilled with concrete as shown on the plans, the concrete backfill shall be constructed of minor concrete or Class 4 concrete in conformance with the provisions in Section 90, "Portland Cement Concrete." Minor concrete shall contain not less than 380 pounds of cementitious material per cubic yard. The concrete to be used will be designated in the contract item.

In Section 65-1.035 replace the 3rd paragraph with:

The surface of the concrete backfill shall be broomed with a heavy broom to produce a uniform rough surface if hot mix asphalt is to be placed directly thereon.

Replace Section 65-1.05 with:

65-1.05 (BLANK)

In Section 65-1.06 in the 2nd paragraph, replace the 1st subparagraph with:

Cement Mortar. - Mortar shall be composed of one part cementitious material and 2 parts sand by volume. Supplementary cementitious material will not be required.

In Section 65-1.10 in the 1st paragraph in the 1st sentence, delete "jacked reinforced concrete pipe."

In Section 65-1.10 delete the 2nd paragraph.

^^^

SECTION 66 CORRUGATED METAL PIPE
(Issued 07-20-12)

In Section 66-1.045 replace the 1st paragraph with:

At locations where pipe is to be backfilled with concrete as shown on the plans, the concrete backfill shall be constructed of minor concrete or Class 4 concrete conforming to the provisions in Section 90, "Portland Cement Concrete." Minor concrete shall contain not less than 380 pounds of cementitious material per cubic yard. The concrete to be used will be designated in the contract item or shown on the plans.

In Section 66-1.045 replace the 3rd paragraph with:

The surface of the concrete backfill shall be broomed with a heavy broom to produce a uniform rough surface if hot mix asphalt is to be placed directly thereon.

Replace Section 66-3.10 with:

66-3.10 (BLANK)

In Section 66-4.02 delete the 2nd paragraph.

^^^

SECTION 68 SUBSURFACE DRAINS
(Issued 07-31-07)

In Section 68-3.02D replace the 1st and 2nd paragraphs with:

Concrete for splash pads shall be produced from minor concrete conforming to the provisions in Section 90-10, "Minor Concrete." Minor concrete shall contain not less than 470 pounds of cementitious material per cubic yard.

Mortar placed where edge drain outlets and vents connect to drainage pipe and existing drainage inlets shall conform to the provisions in Section 51-1.135, "Mortar."

In Section 68-3.03 replace the 13th paragraph with:

Cement treated permeable material, which is not covered with hot mix asphalt within 12 hours after compaction of the permeable material, shall be cured by either sprinkling the material with a fine spray of water every 4 hours during daylight hours or covering the material with a white polyethylene sheet, not less than 6 mils thick. The above curing requirements shall begin at 7:00 a.m. on the morning following compaction of the cement treated permeable material and continue for the next 72 hours or until the material is covered with hot mix asphalt, whichever is less. The cement treated permeable material shall not be sprayed with water during the first 12 hours after compacting, but may be covered with the polyethylene sheet during the first 12 hours or prior to the beginning of the cure period.

In Section 68-3.03 replace the 17th and 18th paragraphs with:

Hot mix asphalt for backfilling trenches in existing paved areas shall be produced from commercial quality aggregates and asphalt and mixed at a central mixing plant. The aggregate shall conform to the 3/4 inch grading, or the 1/2 inch grading for Type A and Type B hot mix asphalt specified in Section 39-1.02E, "Aggregate." The amount of asphalt binder to be mixed with the aggregate shall be between 4 percent and 7 percent by weight of the dry aggregate, as determined by the Engineer.

Hot mix asphalt backfill shall be spread and compacted in approximately 2 equal layers by methods that will produce a hot mix asphalt surfacing of uniform smoothness, texture and density. Each layer shall be compacted before the temperature of the mixture drops below 250 ºF. Prior to placing the hot mix asphalt backfill, a tack coat of asphaltic emulsion conforming to the provisions in Section 94, "Asphaltic Emulsions," shall be applied to the vertical edges of existing pavement at an approximate rate of 0.05 gallon per square yard.

In Section 68-3.03 replace the 20th paragraph with:

Type A pavement markers conforming to the details shown on the plans and the provisions in Section 85, "Pavement Markers," shall be placed on paved shoulders or dikes at outlet, vent and cleanout locations as directed by the Engineer. The waiting period for placing pavement markers on new hot mix asphalt surfacing will not apply.

Replace Section 68-3.05 with:

68-3.05 PAYMENT

The contract price paid per linear foot for plastic pipe (edge drain) of the size or sizes shown in the Engineer's Estimate shall include full compensation for furnishing all labor, materials, tools, equipment, and incidentals and for doing all the work involved in installing edge drains complete in place, including excavation (and removal of any concrete deposits that may occur along the lower edge of the concrete pavement in Type 1 installations) and hot mix asphalt backfill for Type 1 edge drain installation, tack coat, filter fabric, and treated permeable material, as shown on the plans, as specified in these specifications and the special provisions, and as directed by the Engineer.

The contract price paid per linear foot for plastic pipe (edge drain outlet) of the size or sizes shown in the Engineer's Estimate shall include full compensation for furnishing all labor, materials, tools, equipment, and incidentals and for doing all the work involved in installing edge drain outlets, vents and cleanouts complete in place, including outlet and vent covers, expansion plugs, pavement markers, concrete splash pads, connecting outlets and vents to drainage facilities, and excavation and backfill [aggregate base, hot mix asphalt, tack coat, and native material] for outlets, vents, and cleanouts to be installed in embankments and existing shoulders, as shown on the plans, as specified in these specifications and the special provisions, and as directed by the Engineer.

^^

SECTION 69 OVERSIDE DRAINS

(Issued 07-31-07)

In Section 69-1.01 replace the 1st paragraph with:

This work shall consist of furnishing and installing entrance tapers, pipe downdrains, tapered inlets, flume downdrains, anchor assemblies, reducers, slip joints and hot mix asphalt overside drains to collect and carry surface drainage down the roadway slopes as shown on the plans or as directed by the Engineer and as specified in these specifications and the special provisions.

Replace Section 69-1.02D with:

69-1.02D Hot Mix Asphalt

Hot mix asphalt for overside drains shall conform to the provisions in Section 39-1.13, "Miscellaneous Areas."

Replace Section 69-1.04 with:

69-1.04 HOT MIX ASPHALT OVERSIDE DRAINS

Hot mix asphalt overside drains shall be constructed as shown on the plans or as directed by the Engineer. The hot mix asphalt shall be placed in conformance with the provisions in Section 39-1.13, "Miscellaneous Areas."

In Section 69-1.06 replace the 2nd paragraph with:

Quantities of hot mix asphalt placed for overside drains will be paid for as provided in Section 39-5, "Measurement and Payment," for hot mix asphalt placed in miscellaneous areas.

^^

SECTION 70 MISCELLANEOUS FACILITIES
(Issued 01-20-12)

In Section 70-1.02C replace the 2nd paragraph with:

Precast concrete flared end sections shall conform to the requirements for Class III Reinforced Concrete Pipe in AASHTO Designation: M 170M. Cementitious materials and aggregate shall conform to the provisions in Section 90-2, "Materials," except that grading requirements shall not apply to the aggregate. Use of supplementary cementitious material shall conform to the requirements in AASHTO Designation: M 170. The area of steel reinforcement per linear foot of flared end section shall be at least equal to the minimum steel requirements for circular reinforcement in circular pipe for the internal diameter of the circular portion of the flared end section. The basis of acceptance of the precast concrete flared end section shall conform to the requirements of Section 5.1.2 of AASHTO Designation: M 170.

In Section 70-1.02C replace the 3rd paragraph with:

Plastic flared end sections shall conform to the requirements in ASTM Designation: D 3350.

In Section 70-1.02H replace the 1st paragraph with:

Precast concrete pipe risers and pipe reducers, and precast concrete pipe sections, adjustment rings and tapered sections for pipe energy dissipators, pipe inlets and pipe manholes shall conform to the requirements in AASHTO Designation: M 199M/M 199, except that the cementitious material and aggregate shall conform to the provisions in Section 90-2, "Materials," except that grading requirements shall not apply to the aggregate. Use of supplementary cementitious material shall conform to the requirements in AASHTO Designation: M 170.

In Section 70-1.03 replace the 2nd paragraph with:

Cutoff walls for precast concrete flared end sections shall be constructed of minor concrete conforming to the provisions in Section 90-10, "Minor Concrete." Minor concrete shall contain not less than 470 pounds of cementitious material per cubic yard.

^^

SECTION 72 SLOPE PROTECTION
(Issued 07-20-12)

In Section 72-4.04 replace the 6th paragraph with:

Pervious backfill material, if required by the plans, shall be placed as shown. A securely tied sack containing one cubic foot of pervious backfill material shall be placed at each weep hole and drain hole. The sack material shall conform to the requirements for filter fabric in Section 88-1.02, "Filtration."

Replace Section 72-5.05 with:

72-5.05 Measurement

Concreted-rock slope protection is measured by the ton or cubic yard.

Quantities of concreted-rock slope protection to be paid for by the cubic yard will be determined from the dimensions shown on the plans or the dimensions directed by the Engineer, and concreted-rock slope protection placed in excess of these dimensions will not be paid for.

Quantities of concreted-rock slope protection to be paid for by the ton will be determined from the weight of the rock in conformance with the provisions in Section 9-1.01, "Measurement of Quantities."

In Section 72-5.06 replace the 1st sentence with:

The contract price paid per cubic yard or per ton for concreted-rock slope protection designated in the Engineer's Estimate includes full compensation for furnishing all labor, materials, tools, equipment, and incidentals, and for doing all work involved in constructing the concreted-rock slope protection, complete in place, including excavating and backfilling footing trenches and furnishing and placing concrete, as shown on the plans, and as specified in these specifications and the special provisions, and as directed by the Engineer.

^^

SECTION 73 CONCRETE CURBS AND SIDEWALKS
(Issued 06-05-09)

In Section 73-1.01 in the 2nd paragraph, replace item 2 with:

2. Minor concrete shall contain not less than 463 pounds of cementitious material per cubic yard except that when extruded or slip-formed curbs are constructed using 3/8-inch maximum size aggregate, minor concrete shall contain not less than 505 pounds of cementitious material per cubic yard.

In Section 73-1.06 replace the 15th paragraph with:

Where hot mix asphalt or portland cement concrete pavements are to be placed around or adjacent to manholes, pipe inlets or other miscellaneous structures in sidewalk, gutter depression, island paving, curb ramps or driveway areas, the structures shall not be constructed to final grade until after the pavements have been constructed for a reasonable distance on each side of the structures.

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SECTION 74 PUMPING PLANT EQUIPMENT
(Issued 07-01-08)

In Section 74-1.02 delete the 2nd paragraph.

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SECTION 75 MISCELLANEOUS METAL
(Issued 07-01-11)

In Section 75-1.02 replace the 6th paragraph with:

Manhole frames and covers shall conform to AASHTO M 306.

In Section 75-1.02 replace the 10th paragraph with:

Unless otherwise specified, materials shall conform to the following specifications:

Material	Specification
Steel bars, plates and shapes	ASTM Designation: A 36/A 36M or A 575, A 576 (AISI or M Grades 1016 through 1030)
Steel fastener components for general applications:	
Bolts and studs	ASTM Designation: A 307
Headed anchor bolts	ASTM Designation: A 307, Grade B, including S1 supplementary requirements
Nonheaded anchor bolts	ASTM Designation: F 1554 or A 307, Grade C, including S1 supplementary requirements and S1.6 of AASHTO Designation: M 314 supplementary requirements, or AASHTO Designation: M 314, Grade 36 or 55, including S1 supplementary requirements
High-strength bolts and studs, threaded rods, and nonheaded anchor bolts	ASTM Designation: A 449, Type 1
Nuts	ASTM Designation: A 563, including Appendix X1*
Washers	ASTM Designation: F 844
Components of high-strength steel fastener assemblies for use in structural steel joints:	
Bolts	ASTM Designation: A 325, Type 1
Tension control bolts	ASTM Designation: F 1852, Type 1
Nuts	ASTM Designation: A 563, including Appendix X1*
Hardened washers	ASTM Designation: F 436, Type 1, Circular, including S1 supplementary requirements
Direct tension indicators	ASTM Designation: F 959, Type 325, zinc-coated
Stainless steel fasteners (Alloys 304 & 316) for general applications:	
Bolts, screws, studs, threaded rods, and nonheaded anchor bolts	ASTM Designation: F 593 or F 738M
Nuts	ASTM Designation: F 594 or F 836M
Washers	ASTM Designation: A 240/A 240M and ANSI B 18.22M
Carbon-steel castings	ASTM Designation: A 27/A 27M, Grade 65-35, Class 1
Malleable iron castings	ASTM Designation: A 47, Grade 32510 or A 47M, Grade 22010
Gray iron castings Inside a roadbed Outside a roadbed	 AASHTO M 306 AASHTO M306 except only AASHTO M105, Class 35B is allowed
Ductile iron castings	ASTM Designation: A 536, Grade 65-45-12
Cast iron pipe	Commercial quality
Steel pipe	Commercial quality, welded or extruded
Other parts for general applications	Commercial quality

*Zinc-coated nuts that will be tightened beyond snug or wrench tight shall be furnished with a dyed dry lubricant conforming to Supplementary Requirement S2 in ASTM Designation: A 563.

In Section 75-1.03 replace the 13th paragraph with:

Concrete anchorage devices shall be mechanical expansion or resin capsule types installed in drilled holes or cast-in-place insert types. The anchorage devices shall be selected from the Department's Pre-Qualified Products List. The qualification requirements for concrete anchorage devices may be obtained from the Pre-Qualified Products List Web site.

The anchorage devices shall be a complete system, including threaded studs, hex nuts, and cut washers. Thread dimensions for externally threaded concrete anchorage devices prior to zinc coating shall conform to the requirements in ASME Standard: B1.1 having Class 2A tolerances or ASME Standard: B1.13M having Grade 6g tolerances. Thread dimensions for internally threaded concrete anchorage devices shall conform to the requirements in ASTM A 563.

In Section 75-1.03 replace the 18th paragraph with:

Mechanical expansion anchors shall, when installed in accordance with the manufacturer's instructions and these specifications and tested in conformance with the requirements in California Test 681, withstand the application of a sustained tension test load of at least the following values for at least 48 hours with a movement not greater than 0.035 inch:

Stud Diameter (inches)	Sustained Tension Test Load (pounds)
*3/4	5,000
5/8	4,100
1/2	3,200
3/8	2,100
1/4	1,000

* Maximum stud diameter permitted for mechanical expansion anchors.

Resin capsule anchors shall, when installed in accordance with the manufacturer's instructions and these specifications and tested in conformance with the requirements in California Test 681, withstand the application of a sustained tension test load of at least the following values for at least 48 hours with a movement not greater than 0.010 inch:

Stud Diameter (inches)	Sustained Tension Test Load (pounds)
1-1/4	31,000
1	17,900
7/8	14,400
3/4	5,000
5/8	4,100
1/2	3,200
3/8	2,100
1/4	1,000

At least 25 days before use, the Contractor shall submit one sample of each resin capsule anchor per lot to the Transportation Laboratory for testing. A lot of resin capsule anchors is 100 units, or fraction thereof, of the same brand and product name.

In Section 75-1.03 replace the 20th paragraph with:

A Certificate of Compliance for concrete anchorage devices shall be furnished to the Engineer in conformance with the provisions in Section 6-1.07, "Certificates of Compliance."

In Section 75-1.03 replace the 24th paragraph with:

Sealing compound, for caulking and adhesive sealing, shall be a polysulfide or polyurethane material conforming to the requirements in ASTM Designation: C 920, Type S, Grade NS, Class 25, Use O.

In Section 75-1.035 in the 3rd paragraph, replace the 1st sentence with:

Cables shall be 3/4 inch preformed, 6 x 19, wire strand core or independent wire rope core (IWRC), galvanized in conformance with the requirements in Federal Specification RR-W-410, right regular lay, manufactured of improved plow steel with a minimum breaking strength of 23 tons.

In Section 75-1.035 in the 4th paragraph, replace item C with:

C. Nuts shall conform to the requirements in ASTM Designation: A 563 including Appendix X1, except lubrication is not required.

In Section 75-1.035 replace the 12th paragraph with:

Concrete for filling cable drum units shall conform to the provisions in Section 90-10, "Minor Concrete," or at the option of the Contractor, may be a mix with 3/8-inch maximum size aggregate and not less than 675 pounds of cementitious material per cubic yard.

In Section 75-1.05 replace the 6th paragraph with:

Galvanizing of iron and steel hardware and nuts and bolts, when specified or shown on the plans, shall conform to the requirements in ASTM Designation: A 153/A 153M, except whenever threaded studs, bolts, nuts, and washers are specified to conform to the requirements in ASTM Designation: A 307, A 325, A 449, A 563, F 436, or F 1554 and zinc coating is required, they shall be hot-dip zinc coated or mechanically zinc coated in conformance with the requirements in the ASTM Designations. Unless otherwise specified, galvanizing shall be performed after fabrication.

In Section 75-1.05 replace the 8th paragraph with:

Tapping of nuts or other internally threaded parts to be used with zinc coated bolts, anchor bars or studs shall be done after galvanizing and shall conform to the requirements for thread dimensions and overtapping allowances in ASTM Designation: A 563.

^^

SECTION 80 FENCES
(Issued 01-05-07)

In Section 80-3.01F replace the 4th paragraph with:

Portland cement concrete for metal post and brace footings and for deadmen shall be minor concrete conforming to the provisions in Section 90-10, "Minor Concrete." Minor concrete shall contain not less than 470 pounds of cementitious material per cubic yard.

In Section 80-4.01C replace the 4th paragraph with:

Portland cement concrete for metal post and for deadmen shall be produced from minor concrete conforming to the provisions in Section 90-10, "Minor Concrete." Minor concrete shall contain not less than 470 pounds of cementitious material per cubic yard.

^^

SECTION 83 RAILINGS AND BARRIERS
(Issued 07-01-11)

In Section 83-1.02 replace the 7th paragraph with:

Mortar shall conform to the provisions in Section 51-1.135, "Mortar," and shall consist of one part by volume of cementitious material and 3 parts of clean sand.

In Section 83-1.02B in the 24th paragraph in the 8th subparagraph, replace the 1st sentence with:

Anchor cable shall be 3/4 inch preformed, 6 x 19, wire strand core or independent wire rope core (IWRC), galvanized in conformance with the requirements in Federal Specification RR-W-410, right regular lay, manufactured of improved plow steel with a minimum breaking strength of 23 tons.

In Section 83-1.02E in the 6th paragraph, replace the 2nd sentence with:

Cable shall be galvanized in conformance with the requirements in Federal Specification RR-W-410.

In Section 83-1.02I replace the 5th paragraph with:

Where shown on the plans, cables used in the frame shall be 5/16 inch in diameter, wire rope, with a minimum breaking strength of 5,000 pounds and shall be galvanized in conformance with the requirements in Federal Specification RR-W-410.

In Section 83-1.02I replace the 14th paragraph with:

Chain link fabric shall be 11-gage conforming to one of the following:

1. AASHTO Designation: M181, Type I, Class C
2. AASHTO Designation: M181, Type IV, Class A
3. ASTM F 1345, Class 2

In Section 83-2.02D(1) replace the 5th paragraph with:

When concrete barriers are to be constructed on existing structures, the dowels shall be bonded in holes drilled in the existing concrete. Drilling of holes and bonding of dowels shall conform to the following:

1. The bonding materials shall be either magnesium phosphate concrete, modified high alumina based concrete or portland cement based concrete. Magnesium phosphate concrete shall be either single component (water activated) or dual component (with a prepackaged liquid activator). Modified high alumina based concrete and portland cement based concrete shall be water activated. Bonding materials shall conform to the following requirements:

Property	Test Method	Requirements
Compressive Strength		
at 3 hours, MPa	California Test 551	21 min.
at 24 hours, MPa	California Test 551	35 min.
Flexure Strength		
at 24 hours, MPa	California Test 551	3.5 min.
Bond Strength: at 24 hours		
SSD Concrete, MPa	California Test 551	2.1 min.
Dry Concrete, MPa	California Test 551	2.8 min.
Water Absorption, %	California Test 551	10 max.
Abrasion Resistance		
at 24 hours, grams	California Test 550	25 max.
Drying Shrinkage at 4 days, %	ASTM Designation: C 596	0.13 max.
Soluble Chlorides by weight, %	California Test 422	0.05 max.
Water Soluble Sulfates by weight, %	California Test 417	0.25 max.

2. Magnesium phosphate concrete shall be formulated for minimum initial set time of 15 minutes and minimum final set time of 25 minutes at 70° F. The materials, prior to use, shall be stored in a cool, dry environment.
3. Mix water used with water activated material shall conform to the provisions in Section 90-2.03, "Water."
4. The quantity of water for single component type or liquid activator (for dual component type) to be blended with the dry component, shall be within the limits recommended by the manufacturer and shall be the least amount required to produce a pourable batter.
5. Addition of retarders, when required and approved by the Engineer, shall be in conformance with the manufacturer's recommendations.
6. Before using concrete material that has not been previously approved, a minimum of 45 pounds shall be submitted to the Engineer for testing. The Contractor shall allow 45 days for the testing. Each shipment of concrete material that has been previously approved shall be accompanied by a Certificate of Compliance as provided in Section 6-1.07, "Certificates of Compliance."
7. Magnesium phosphate concrete shall not be mixed in containers or worked with tools containing zinc, cadmium, aluminum or copper metals. Modified high alumina based concrete shall not be mixed in containers or worked with tools containing aluminum.
8. The surface of any dowel coated with zinc or cadmium shall be coated with a colored lacquer before installation of the dowel. The lacquer shall be allowed to dry thoroughly before embedment of the dowels.
9. The holes shall be drilled by methods that will not shatter or damage the concrete adjacent to the hole. The diameter of the drilled hole shall be $1/2$ inch larger than the nominal diameter of the dowels.
10. The drilled holes shall be clean and dry at the time of placing the bonding material and the steel dowels. Bonding material and dowel shall completely fill the drilled hole. The surface temperature shall be 40° F or above when the bonding material is placed.
11. After bonding, dowels shall remain undisturbed for a minimum of 3 hours or until the bonding material has reached a strength sufficient to support the dowels. Dowels that are improperly bonded, as determined by the Engineer, shall be removed. The holes shall be cleaned or new holes shall be drilled and the dowels replaced and securely bonded to the concrete. Removing, redrilling and replacing improperly bonded dowels shall be performed at the Contractor's expense. Modified high alumina based concrete and portland cement based concrete shall be cured in conformance with the provisions in Section 90-7.01B, "Curing Compound Method," of the Standard Specifications. Magnesium phosphate concrete shall not be cured.

In Section 83-2.02D(1) replace the 8th paragraph with:

Granular material for backfill between the 2 walls of concrete barrier (Types 50E, 60F, 60GE and 60SF), as shown on the plans, shall be placed without compaction.

In Section 83-2.02D(2) in the 1st paragraph, replace item b with:

b. If the 3/8-inch maximum size aggregate grading is used to construct extruded or slip-formed concrete barriers, the cementitious material content of the minor concrete shall be not less than 675 pounds per cubic yard.

In Section 83-2.02D(2) replace the 3rd paragraph with:

The concrete paving between the tops of the 2 walls of concrete barrier (Types 50E, 60F, 60GE, and 60SF) and the optional concrete slab at the base between the 2 walls of concrete barrier (Types 50E, 60F, 60GE, and 60SF) shall be constructed of minor concrete conforming to the provisions of Section 90-10, "Minor Concrete," except that the minor concrete shall contain not less than 505 pounds of cementitious material per cubic yard.

In Section 83-2.02D(2) replace the 8th paragraph with:

Granular material for backfill between the 2 walls of concrete barrier (Types 50E, 60F, 60GE and 60SF) shall be earthy material suitable for the purpose intended, having no rocks, lumps or clods exceeding1-1/2 inches in greatest dimension.

In Section 83-2.03 replace the 8th and 9th paragraphs with:

Concrete barriers, except Type 50E, Type 60F, Type 60GE, and Type 60SF will be measured along the top of the barrier.

Concrete barriers Type 50E, Type 60F, Type 60GE, and Type 60SF will be measured once along the centerline between the 2 walls of the barrier.

In Section 83-2.04 replace the 3rd paragraph with:

The contract prices paid per linear foot for concrete barrier of the type or types listed in the Engineer's Estimate shall include full compensation for furnishing all labor, materials, tools, equipment and incidentals, and for doing all the work involved in constructing the concrete barriers, complete in place, including bar reinforcing steel, steel dowels and drilling and bonding dowels in structures, hardware for steel plate barrier, miscellaneous metal, excavation, backfill (including concrete paving for, and granular material or concrete slab used as backfill in Type 50E, Type 60F, Type 60GE, and Type 60SF concrete barrier), and disposing of surplus material and for furnishing, placing, removing and disposing of the temporary railing for closing the gap between existing barrier and the concrete barrier being constructed, as shown on the plans, as specified in these specifications and the special provisions, and as directed by the Engineer.

^^^

SECTION 85 PAVEMENT MARKERS
(Issued 07-31-07)

In Section 85-1.06 replace the 6th paragraph with:

Pavement markers shall not be placed on new hot mix asphalt surfacing or seal coat until the surfacing or seal coat has been opened to public traffic for a period of not less than 7 days when hot melt bituminous adhesive is used, and not less than 14 days when epoxy adhesive is used.

In Section 85-1.06 in the 14th paragraph, replace the 2nd sentence with:

Cleaning shall be done by blast cleaning on all surfaces regardless of age or type, except that blast cleaning of clean, new hot mix asphalt and clean, new seal coat surfaces will not be required when hot melt bituminous adhesive is used.

^^^

SECTION 88 ENGINEERING FABRICS
(Issued 01-20-12)

Replace Section 88 with:
SECTION 88 GEOSYNTHETICS

88-1.01 GENERAL

88-1.01A Summary

Section 88 includes specifications for geosynthetics. Geosynthetics are used for:

1. Filtration
2. Drainage
3. Reinforcement
4. Water pollution control
5. Channel and shore protection
6. Pavement interlayer
7. Separation and stabilization

88-1.01B Submittals

Submit:

1. Certificate of Compliance under Section 6-1.07, "Certificates of Compliance"
2. Samples representing each lot
3. Minimum average roll values (MARV)

Label submittals with the manufacturer's name and product information.

88-1.01C Quality Control and Assurance

Treat geosynthetics to resist degradation from exposure to sunlight. Using covers, protect geosynthetics from moisture, sunlight, and shipping and storage damage.

88-1.02 FILTRATION

88-1.02A Filter Fabric

Geosynthetics used for filter fabric must be permeable and nonwoven. Filter fabric must consist of 1 of the following:

1. Polyester
2. Polypropylene
3. Combined polyester and polypropylene

Filter fabric must comply with:

Filter Fabric

Property	ASTM	Specification		
		Class A	Class B	Class C
Grab breaking load, 1-inch grip, lb minimum in each direction	D 4632	157		
Apparent elongation, percent minimum in each direction	D 4632	50		
Puncture strength, lb minimum	D 6241	600		
Ultraviolet resistance, percent minimum retained grab breaking load, 500 hr	D 4355	70		
Permittivity, sec^{-1} minimum	D 4491	0.5	0.2	0.1
Apparent opening size, average roll value, U.S. Standard sieve size maximum	D 4751	40	60	70

88-1.03 DRAINAGE

88-1.03A Geocomposite Wall Drain

Geocomposite wall drain must consist of a polymeric core with filter fabric integrally bonded to 1 or both sides of the core creating a stable drainage void.

Filter fabric must comply with Section 88-1.02, "Filtration."

Geocomposite wall drain must comply with:

Geocomposite Wall Drain

Property	ASTM	Specification
Thickness with fabric, inches maximum	--	2
Transmissivity, gradient = 1.0, normal stress = 5,000 psf, gal/min/ft	D 4716	4

88-1.04 REINFORCEMENT

88-1.04A Geotechnical Subsurface Reinforcement

General

Geosynthetic used for geotechnical subsurface reinforcement must be either of the following:

1. Geotextile
2. Geogrid

Geotextile permittivity must be at least 0.05 sec^{-1} determined under ASTM D 4491.

Geogrid must have a regular and defined open area. The open area must be from 50 to 90 percent of the total grid area.

Long Term Design Strength

Long Term Design Strength (LTDS) of geosynthetic reinforcement is the ultimate tensile strength in the primary strength direction divided by reduction factors. Calculate the LTDS from the guidelines in Geosynthetic Research Institute (GRI) Standard Practice GG4a, GRI GG4b, or GRI GT7.

The product of the appropriate reduction factors must be at least 1.30. Determine the reduction factor for creep using a 75-year design life for permanent applications and a 5-year design life for temporary applications. Determine the installation damage reduction factor based on the characteristics of the backfill materials used.

If test data is not available, use default values of reduction factors in the GRI Standard Practice to calculate LTDS.

Submit the LTDS and its supporting calculations at least 15 days before placing geosynthetic reinforcement. Do not install before the Engineer's approval. The LTDS must be signed by an engineer who is registered as a civil engineer in the State.

88-1.05 WATER POLLUTION CONTROL

Geosynthetics used for water pollution control must comply with:

Water Pollution Control Geosynthetics

Property	ASTM	Application						
		Silt Fence		Sediment Filter Bag		Gravel-Filled Bags	Temporary Cover	
		Woven	Non-woven	Woven	Non-woven		Woven	Non-woven
Grab breaking load, 1-inch grip, lb minimum in each direction	D 4632	120	120	200	250	205	200	200
Apparent elongation, percent minimum, in each direction	D 4632	15	50	10	50	--	15	50
Water flow rate, gallons per minute/square foot minimum and maximum average roll value	D 4491	10 - 100	100 - 150	100 - 200	75 - 200	80 - 150	4 - 10	80 - 120
Permittivity, sec^{-1} minimum	D 4491	0.05	1.1	1.0	1.0	0.2	0.05	1.0
Apparent opening size, inches maximum average roll value	D 4751	0.023	0.012	0.023	0.012	0.016	0.023	0.012
Ultraviolet resistance, percent minimum retained grab breaking load, 500 hr.	D 4355	70	70	70	70	70	70	70

88-1.06 CHANNEL AND SHORE PROTECTION

88-1.06A Rock Slope Protection

Rock slope protection (RSP) fabric must be a permeable, nonwoven, needle-punched geotextile. RSP fabric consists of 1 of the following:

1. Polyester
2. Polypropylene
3. Combined polyester and polypropylene

Polymers must be either virgin compounds or clean reworked material. Do not subject virgin compounds to use or processing other than required for initial manufacture. Clean reworked material must be previously processed material from the processor's own production that has been reground, pelletized, or solvated. RSP fabric must not consist of more than 20 percent by weight of clean reworked material. Do not use recycled materials from either post-consumer or post-industrial sources.

Class 8 or Class 10 RSP fabric must comply with:

Rock Slope Protection Fabric

Property	ASTM	Specification	
		Class 8	Class 10
Weight, oz/yd^2 minimum	D 5261	7.5	9.5
Grab breaking load, lb 1-inch grip, min. in each direction	D 4632	200	250
Apparent elongation, percent min., in each direction	D 4632	50	50
Permittivity, sec^{-1}, minimum	D 4491	1.0	0.70
Apparent opening size, U.S. Standard sieve size minimum and maximum	D 4751	70 - 100	70 - 100
Ultraviolet resistance, percent minimum retained grab breaking load, 500 hr.	D4355	70	70

88-1.07 PAVEMENT INTERLAYER

88-1.07A Paving Fabric

Geosynthetics used for paving fabric must be nonwoven. Paving fabric must comply with:

Geosynthetic Paving Fabric

Property	ASTM	Specification
Mass per unit area, oz/yd^2 minimum	D 5261	4.1
Grab breaking load, lb 1-inch grip, minimum, in each direction	D 4632	100
Apparent elongation, percent minimum in each direction	D 4632	50
Hydraulic bursting strength, psi minimum	D 3786	200
Melting point, °F minimum	D 276	325
Asphalt retention, gal/yd^2 minimum	D 6140	0.2

88-1.07B Paving Mat

Geosynthetics used for paving mat must be a nonwoven fiberglass and polyester hybrid material. Paving mat must comply with:

Geosynthetic Paving Mat

Property	ASTM	Specification
Breaking force, lb/2 inches minimum	D 5035	45
Ultimate elongation, percent maximum	D 5035	5
Mass per unit area, oz/ sq yd minimum	D 5261	3.7
Melting point, °F minimum	D 276	400
Asphalt retention, gal/yd^2 minimum	D 6140	0.10

88-1.07C Paving Grid

Geosynthetics used for paving grid must be a geopolymer material formed into a grid of integrally connected elements with openings. Paving grid must comply with:

Geosynthetic Paving Grid

Property	Test	Specification		
		Class I	Class II	Class III
Tensile strength at ultimate, lb/in [a] minimum	ASTM D 6637	560 x 1,120	560	280
Aperture size, inch minimum	Calipered	0.5	0.5	0.5
Elongation, % maximum	ASTM D 6637	12	12	12
Mass per area, oz / sqyd minimum	ASTM D 5261	16	10	5.5
Melting point, °F minimum	ASTM D 276	325	325	325

Note:
[a] For Class I, machine direction x cross direction. For Class II and Class III, both directions.

88-1.07D Paving Geocomposite Grid

Paving geocomposite grid consists of paving grid specified under Section 88-1.07C, "Paving Grid," bonded or integrated with paving fabric specified under Section 88-1.07A, "Paving Fabric."

Paving geocomposite grid must have a peel strength of at least 10 pounds per foot determined under ASTM D 413.

88-1.07E Geocomposite Strip Membrane

Geocomposite strip membrane must consist of various widths of strips manufactured from of asphaltic rubber and geosynthetics. Geocomposite strip membrane must comply with:

Geocomposite Strip Membrane

Property	ASTM	Specification
Strip tensile strength, lbs/inch minimum	D 882	50
Elongation at break, % minimum	D 882	50
Resistance to puncture, lbs. minimum	E 154	200
Permeance, perms maximum	E 96/E 96M	0.10
Pliability, 1/4 inch mandrel with sample conditioned at 25 °F	D 146	No cracks in fabric or bitumen
Melting point, °F	D 276	325

88-1.08 SEPARATION AND STABILIZATION

88-1.08A Subgrade Enhancement Geotextile

Subgrade enhancement geotextile must consist of either of the following:

1. Polyester
2. Polypropylene

Subgrade enhancement geotextile must comply with:

Subgrade Enhancement Geotextile

Property	ASTM	Specification [a]				
		Class A1	Class A2	Class B1	Class B2	Class B3
Elongation at break, %	D 4632	<50	≥50	<50	<50	≥50
Grab tensile strength, lb minimum	D4632	250	160	--	320	200
Wide width tensile strength at 5% strain, lb/ft minimum	D 4595	--	--	2,000	--	--
Wide width tensile strength at ultimate strength, lb/ft minimum	D 4595	--	--	4,800	--	--
Tear strength, lb minimum	D 4533	90	60	--	120	80
Puncture strength, lb minimum	D 6241	500	310	620	620	430
Permittivity, sec^{-1} minimum	D 4491	0.05	0.05	0.20	0.20	0.20
Apparent opening size, inches maximum	D 4751	0.012	0.012	0.024	0.012	0.012
Ultraviolet stability (retained strength after 500 hrs exposure), % minimum	D 4355	70	70	70	70	70

Notes:
[a] Specifications are based on minimum average roll value in the weaker principle direction except apparent opening size is based on maximum average roll value.

88-1.09 PAYMENT

The Department measures and pays for geosynthetics under the specifications requiring their use.

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SECTION 90 PORTLAND CEMENT CONCRETE
(Issued 08-05-11)

Replace Section 90 with:

SECTION 90 PORTLAND CEMENT CONCRETE

90-1 GENERAL

90-1.01 DESCRIPTION

Portland cement concrete shall be composed of cementitious material, fine aggregate, coarse aggregate, admixtures if used, and water, proportioned and mixed as specified in these specifications.

The Contractor shall determine the mix proportions for concrete in conformance with these specifications.

Minor concrete shall contain not less than 505 pounds of cementitious material per cubic yard unless otherwise specified in these specifications or the special provisions.

Unless otherwise designated on the plans or specified in these specifications or the special provisions, the amount of cementitious material used per cubic yard of concrete in structures or portions of structures shall conform to the following:

Use	Cementitious Material Content (Pounds/CY)
Concrete designated by compressive strength:	
Deck slabs and slab spans of bridges	675 min., 800 max.
Roof sections of exposed top box culverts	675 min., 800 max.
Other portions of structures	590 min., 800 max.
Concrete not designated by compressive strength:	
Deck slabs and slab spans of bridges	675 min.
Roof sections of exposed top box culverts	675 min.
Prestressed members	675 min.
Seal courses	675 min.
Other portions of structures	590 min.
Concrete for precast members	590 min., 925 max.

Except for minor structures, the minimum required compressive strength for concrete in structures or portions of structures shall be the strength specified, or 3600 pounds per square inch at 28 days, whichever is greater.

Except for when a modulus of rupture is specified, the minimum required compressive strength for concrete shall be the strength specified, or 2,500 pounds per square inch, whichever is greater. Concrete shall be proportioned such that the concrete will attain the minimum required compressive strength.

If the specified 28-day compressive strength is 3,600 pounds per square inch or greater, the concrete is designated by compressive strength. For concrete with a 28-day compressive strength greater than 3,600 pounds per square inch, 42 days will be allowed to obtain the specified strength.

For concrete not designated by compressive strength, the Engineer may test the concrete for compressive strength. The concrete will be accepted if the compressive strength at 28 days attains 85 percent or more of the minimum required compressive strength.

Concrete shall be proportioned to conform to the following shrinkage limitations when tested in conformance with the requirements of AASHTO Designation: T 160, modified as follows:

Condition	Maximum Shrinkage of Laboratory Cast Specimens at 28 days Drying (average of 3, %)
Paving and approach slab concrete	0.050
Bridge deck concrete	0.045

Note: Shrinkage requirement is waived for concrete that is used for precast elements.

Shrinkage tests shall be either:

A. Performed by a laboratory accredited to perform AASHTO Designation: T 160, or
B. Performed by a laboratory that maintains a current rating of 3 or better for the Cement and Concrete Reference Laboratory (CCRL) concrete proficiency sample program.

Laboratory cast specimens shall have a 4" x 4" cross section. Specimens shall be removed from the molds 23 ± 1 hours after mixing the concrete and placed in lime water at 73 ± 3 °F to 7 days age. A comparator reading shall be taken at 7 days age and recorded as the initial reading. Specimens then shall be stored in a humidity controlled room maintained at 73 ± 3 °F and 50 ± 4 percent relative humidity for the remainder of the test. Subsequent readings shall be taken at 7, 14, 21, and 28 days drying.

Test data verifying conformance to the shrinkage limitations shall be submitted with the mix design. Shrinkage testing data accepted by the Engineer no more than 3 years prior to the first working day of this contract will be acceptable for this entire contract, provided the data was for concrete with similar proportions and the same materials and material sources to be used on this contract. Concrete shall be considered to have similar proportions if, when compared to concrete to be used on this project, no more than 2 mix design elements are varied. Varied mix design elements shall fall within the tolerances in the following table:

Mix Design Element	Tolerance (±)
Water to cementitious material ratio	0.03
Total water content	5 %
Coarse aggregate (weight per cubic yard)	10 %
Fine aggregate (weight per cubic yard)	10 %
Supplementary cementitious material content	5 %
Admixture (as originally dosed)	25 %

Note: Admixtures must be of the same brand.

Before using concrete or in advance of revising the mix proportions, the Contractor shall submit in writing to the Engineer a copy of the mix design.

Compliance with cementitious material content requirements will be verified in conformance with procedures described in California Test 518 for cement content. For testing purposes, supplementary cementitious material (SCM) shall be considered to be cement. Batch proportions shall be adjusted as necessary to produce concrete having the specified cementitious material content.

If any concrete has a cementitious material, portland cement, or SCM content that is less than the minimum required, the concrete shall be removed. However, if the Engineer determines that the concrete is structurally adequate, the concrete may remain in place and the Contractor shall pay to the State $0.25 for each pound of cementitious material, portland cement, or SCM that is less than the minimum required. The Department may deduct the amount from any moneys due, or that may become due, the Contractor under the contract. The deductions will not be made unless the difference between the contents required and those actually provided exceeds the batching tolerances permitted by Section 90-5, "Proportioning." No deductions will be made based on the results of California Test 518.

The requirements of the preceding paragraph shall not apply to minor concrete.

90-2 MATERIALS

90-2.01 CEMENTITIOUS MATERIALS

Unless otherwise specified, cementitious material shall be either a combination of Type II or Type V portland cement and SCM, or a blended cement. No cementitious material shall be used in the work unless it is on the Department's Pre-Qualified Products List at the time of mix design submittal. Information regarding cementitious material qualification and placement on the Department's approved list can be obtained at the Transportation Laboratory.

Cementitious materials used in cast-in-place concrete for exposed surfaces of like elements of a structure shall be from the same sources and of the same proportions.

Cementitious materials shall be protected from moisture until used. Sacked cementitious materials shall be piled to permit access for tallying, inspecting, and identifying each shipment.

Facilities shall be provided to ensure that the various cementitious materials meeting this Section 90-2.01 are kept separate from each other and from other cementitious materials. A storage silo containing a cementitous material shall be emptied before using that silo for a different cementitious material. Blended cements with a percentage of SCM differing by more than 2 percentage points are considered different cementitious materials. Sampling cementitious materials shall be in conformance with California Test 125.

The Contractor shall furnish a Certificate of Compliance for cementitious materials in conformance with the provisions in Section 6-1.07, "Certificates of Compliance." The Certificate of Compliance shall indicate the source by name and location (including country, state, and city). If cementitious material is delivered directly to the job site, the Certificate of Compliance shall be signed by the cementitious material supplier. If the cementitious material is used in ready-mixed concrete or in precast concrete products purchased as such by the Contractor, the Certificate of Compliance shall be signed by the manufacturer of the concrete or product. If blended cement is used, the Certificate of Compliance shall include a statement signed by the blended cement supplier that indicates the actual percentage, by weight, of SCM in the blend. Weight of SCM shall be by weighing device conforming to Section 9-1.01, "Measurement of Quantities," or as determined by chemical analysis.

90-2.01A Cement

Portland cement shall conform to the requirements in ASTM Designation: C 150 except the C_3S content of Type II cement shall not exceed 65 percent.

Blended cement shall conform to the requirements for Portland Blast-Furnace Slag Cement, Type IS (MS) or Portland-Pozzolan Cement, Type IP (MS) in AASHTO Designation: M 240, except that the maximum limits on the pozzolan content shall not apply. Blended cement shall be comprised of Type II or Type V cement and SCM

produced by intergrinding portland cement clinker and granulated blast furnace slag, ground granulated blast furnace slag (GGBFS), or pozzolan; by blending portland cement and either GGBFS or finely divided pozzolan; or by a combination of intergrinding and blending.

In addition, Type II portland cement and Type V portland cement shall conform to the following requirements:

A. The cement shall not contain more than 0.60-percent by mass of alkalies, calculated as the percentage of Na_2O plus 0.658 times the percentage of K_2O, when determined by methods as required in AASHTO Designation: T 105; and
B. The autoclave expansion shall not exceed 0.50-percent

Type III portland cement shall be used only as specified or with the approval of the Engineer. Type III portland cement shall conform to the additional requirements listed above for Type II portland cement. The Contractor may use Type III portland cement in the manufacturing of precast concrete.

90-2.01B Supplementary Cementitious Materials

Each supplementary cementitious material shall conform to one of the following:

A. Fly ash conforming to the requirements in AASHTO Designation: M 295, Class F, and these specifications. The available alkali, as sodium oxide equivalent, shall not exceed 1.5 percent when determined in conformance with the requirements in ASTM Designation: C 311 or the total alkali, as sodium oxide equivalent, shall not exceed 5.0 percent when determined in conformance with the requirements in AASHTO Designation: T 105.
B. Ultra fine fly ash (UFFA) conforming to the requirements in AASHTO Designation: M 295, Class F, and the following chemical and physical requirements:

Chemical Requirements	Percent
Sulfur Trioxide (SO_3)	1.5 max.
Loss on ignition	1.2 max.
Available Alkalies (as Na_2O) equivalent	1.5 max.

Physical Requirements	Percent
Particle size distribution	
Less than 3.5 microns	50
Less than 9.0 microns	90
Strength Activity Index with portland cement	
7 days	95 (minimum % of control)
28 days	110 (minimum % of control)
Expansion at 16 days when testing job materials in conformance with ASTM C 1567*	0.10 max.

* In the test mix, Type II or Type V portland cement shall be replaced with at least 12% UFFA by weight.

C. Raw or calcined natural pozzolans conforming to the requirements in AASHTO Designation: M 295, Class N. and the following requirements and these specifications. The available alkali, as sodium oxide equivalent, shall not exceed 1.5 percent when determined in conformance with the requirements in ASTM Designation: C 311 or the total alkali, as sodium oxide equivalent, shall not exceed 5.0 percent when determined in conformance with the requirements in AASHTO Designation: T 105.
D. Metakaolin conforming to the requirements in AASHTO Designation: M 295, Class N, and the following chemical and physical requirements:

Chemical Requirements	Percent
Silicon Dioxide (SiO_2) + Aluminum Oxide (Al_2O_3)	92.0 min.
Calcium Oxide (CaO)	1.0 max
Sulfur Trioxide (SO_3)	1.0 max.
Loss on ignition	1.2 max.
Available Alkalies (as Na_2O) equivalent	1.0 max.

Physical Requirements	Percent
Particle size distribution Less than 45 microns	95
Strength Activity Index with portland cement 7 days 28 days	 100 (minimum % of control) 100 (minimum % of control)

E. Ground Granulated Blast Furnace Slag (GGBFS) conforming to the requirements in AASHTO Designation: M 302, Grade 100 or Grade 120.
F. Silica Fume conforming to the requirements of AASHTO Designation: M 307, with reduction in mortar expansion of 80 percent, minimum, using the cement from the proposed mix design.

Commingling of fly ash from different sources at uncontrolled ratios is permissible only if the following criteria are satisfied:

A. Sources of fly ash to be commingled shall each produce fly ash that conforms to the requirements in AASHTO Designation: M 295, Class F.
B. Testing of the commingled product is the responsibility of the fly ash supplier.
C. Each fly ash's running average of relative density shall not differ from any other by more than 0.25 at the time of commingling.
D. Each fly ash's running average of loss on ignition shall not differ from any other by more than one percent at the time of commingling.
E. The final product of commingled fly ash shall conform to the requirements in AASHTO Designation: M 295, Class F.

90-2.01C Required Use Of Supplementary Cementitious Materials

General

The amount of portland cement and SCM used in portland cement concrete shall conform to the minimum cementitious material content provisions in Section 90-1.01, "Description," or Section 90-4.05, "Optional Use of Chemical Admixtures," and these specifications.

The SCM content in portland cement concrete shall conform to one of the following:

A. Any combination of portland cement and at least one SCM, satisfying Equations (1) and (2):

Equation (1)

$$\frac{(25 \times UF) + (12 \times FA) + (10 \times FB) + (6 \times SL)}{MC} \geq X$$

Where:

UF = Silica fume, metakaolin, or UFFA, including the amount in blended cement, pounds per cubic yard.
FA = Fly ash or natural pozzolan conforming to the requirements in AASHTO Designation: M 295, Class F or N with a CaO content up to 10 percent, including the amount in blended cement, pounds per cubic yard.
FB = Fly ash or natural pozzolan conforming to the requirements in AASHTO Designation: M 295, Class F or N with a CaO content greater than 10 percent and up to 15 percent, including the amount in blended cement, pounds per cubic yard.
SL = GGBFS, including the amount in blended cement, pounds per cubic yard.
MC = Minimum amount of cementitious material specified, pounds per cubic yard.
X = 1.8 for innocuous aggregate, 3.0 for all other aggregate.

Equation (2)

$MC - MSCM - PC \geq 0$

Where:

MC = Minimum amount of cementitious material specified, pounds per cubic yard.
MSCM = The minimum sum of SCMs that satisfies Equation (1) above, pounds per cubic yard.
PC = The amount of portland cement, including the amount in blended cement, pounds per cubic yard.

B. 15 percent of Class F fly ash with at least 48 ounces of $LiNO_3$ solution added per 100 pounds of portland cement. CaO content of the fly ash shall not exceed 15 percent.

Precast Concrete

The SCM content in precast portland cement concrete shall conform to one of the following:

A. Any combination of portland cement and SCM, satisfying the following equation:

Equation (3)

$$\frac{(25 \times UF) + (12 \times FA) + (10 \times FB) + (6 \times SL)}{TC} \geq X$$

Where:

UF = Silica fume, metakaolin, or UFFA, including the amount in blended cement, pounds per cubic yard.
FA = Fly ash or natural pozzolan conforming to the requirements in AASHTO Designation: M 295, Class F or N with a CaO content up to 10 percent, including the amount in blended cement, pounds per cubic yard.
FB = Fly ash or natural pozzolan conforming to the requirements in AASHTO Designation: M 295, Class F or N with a CaO content greater than 10 percent and up to 15 percent, including the amount in blended cement, pounds per cubic yard.
SL = GGBFS, including the amount in blended cement, pounds per cubic yard.
TC = Total amount of cementitious material used in the mix, pounds per cubic yard.
X = 0.0 if precast members are constructed with portland cement concrete using aggregate that is "innocuous" in conformance with the provisions in Section 90-2.02, "Aggregates."
X = 3.0 for all other aggregate.

B. 15 percent of Class F fly ash with at least 48 ounces of $LiNO_3$ solution added per 100 pounds of portland cement. CaO content of the fly ash shall not exceed 15 percent.
C. Any combination of supplementary cementitious material and portland cement may be used if the expansion of cementitious material and aggregate does not exceed 0.10 percent when tested in conformance with the requirements in ASTM C 1567. Test data shall be submitted with each mix design. Test data accepted by the Engineer no more than 3 years prior to the first working day of this contract will be acceptable for this entire contract, provided the data was for the same concrete mix and the same materials and material sources to be used on this contract.

90-2.02 AGGREGATES

To be considered innocuous, aggregate must be on the Department's approved list, "Innocuous Aggregates for use in Concrete." Information regarding aggregate qualification and placement on the Department's approved list can be obtained at the Transportation Laboratory.

Both coarse and fine aggregate must be on the approved list for the aggregate used in concrete to be considered innocuous.

Aggregates shall be free from deleterious coatings, clay balls, roots, bark, sticks, rags, and other extraneous material.

The Contractor shall provide safe and suitable facilities, including necessary splitting devices for obtaining samples of aggregates, in conformance with California Test 125.

Aggregates shall be of such character that it will be possible to produce workable concrete within the limits of water content provided in Section 90-6.06, "Amount of Water and Penetration."

Aggregates shall have not more than 10 percent loss when tested for soundness in conformance with the requirements in California Test 214. The soundness requirement for fine aggregate will be waived, provided that the durability index, D_f, of the fine aggregate is 60 or greater when tested for durability in conformance with California Test 229.

If the results of any one or more of the Cleanness Value, Sand Equivalent, or aggregate grading tests do not meet the requirements specified for "Operating Range" but all meet the "Contract Compliance" requirements, the placement of concrete shall be suspended at the completion of the current pour until tests or other information indicate that the next material to be used in the work will comply with the requirements specified for "Operating Range."

If the results of either or both the Cleanness Value and coarse aggregate grading tests do not meet the requirements specified for "Contract Compliance," the concrete that is represented by the tests shall be removed. However, if the Engineer determines that the concrete is structurally adequate, the concrete may remain in place, and the Contractor shall pay to the State $3.50 per cubic yard for paving concrete and $5.50 per cubic yard for all other concrete for the concrete represented by these tests and left in place. The Department may deduct the amount from any moneys due, or that may become due, the Contractor under the contract.

If the results of either or both the Sand Equivalent and fine aggregate grading tests do not meet the requirements specified for "Contract Compliance," the concrete which is represented by the tests shall be removed. However, if the Engineer determines that the concrete is structurally adequate, the concrete may remain in place, and the Contractor shall pay to the State $3.50 per cubic yard for paving concrete and $5.50 per cubic yard for all other concrete for the concrete represented by these tests and left in place. The Department may deduct the amount from any moneys due, or that may become due, the Contractor under the contract.

The 2 preceding paragraphs apply individually to the "Contract Compliance" requirements for coarse aggregate and fine aggregate. When both coarse aggregate and fine aggregate do not conform to the "Contract Compliance" requirements, both paragraphs shall apply. The payments specified in those paragraphs are in addition to any payments made in conformance with the provisions in Section 90-1.01, "Description."

No single Cleanness Value, Sand Equivalent, or aggregate grading test shall represent more than 300 cubic yards of concrete or one day's pour, whichever is smaller.

When the source of an aggregate is changed, the Contractor shall adjust the mix proportions and submit in writing to the Engineer a copy of the mix design before using the aggregates.

90-2.02A Coarse Aggregate

Coarse aggregate shall consist of gravel, crushed gravel, crushed rock, reclaimed aggregate, crushed air-cooled iron blast furnace slag or combinations thereof. Crushed air-cooled blast furnace slag shall not be used in reinforced or prestressed concrete.

Reclaimed aggregate is aggregate that has been recovered from plastic concrete by washing away the cementitious material. Reclaimed aggregate shall conform to all aggregate requirements.

Coarse aggregate shall conform to the following quality requirements:

Tests	California Test	Requirements
Loss in Los Angeles Rattler (after 500 revolutions)	211	45% max.
Cleanness Value		
Operating Range	227	75 min.
Contract Compliance	227	71 min.

In lieu of the above Cleanness Value requirements, a Cleanness Value "Operating Range" limit of 71, minimum, and a Cleanness Value "Contract Compliance" limit of 68, minimum, will be used to determine the acceptability of the coarse aggregate if the Contractor furnishes a Certificate of Compliance, as provided in Section 6-1.07, "Certificates of Compliance," certifying that:

A. Coarse aggregate sampled at the completion of processing at the aggregate production plant had a Cleanness Value of not less than 82 when tested in conformance with the requirements in California Test 227; and

B. Prequalification tests performed in conformance with the requirements in California Test 549 indicated that the aggregate would develop a relative strength of not less than 95 percent and would have a relative shrinkage not greater than 105 percent, based on concrete.

90-2.02B Fine Aggregate

Fine aggregate shall consist of natural sand, manufactured sand produced from larger aggregate or a combination thereof. Manufactured sand shall be well graded.

Fine aggregate shall conform to the following quality requirements:

Test	California Test	Requirements
Organic Impurities	213	Satisfactory[a]
Sand Equivalent:		
Operating Range	217	75, min.
Contract Compliance	217	71, min.

[a] Fine aggregate developing a color darker than the reference standard color may be accepted if 95% relative mortar strength is achieved when tested in conformance with ASTM C87.

In lieu of the above Sand Equivalent requirements, a Sand Equivalent "Operating Range" limit of 71, minimum, and a Sand Equivalent "Contract Compliance" limit of 68, minimum, will be used to determine the acceptability of the fine aggregate if the Contractor furnishes a Certificate of Compliance, as provided in Section 6-1.07, "Certificates of Compliance," certifying that:

A. Fine aggregate sampled at the completion of processing at the aggregate production plant had a Sand Equivalent value of not less than 82 when tested by California Test 217; and
B. Prequalification tests performed in conformance with California Test 549 indicated that the aggregate would develop a relative strength of not less than 95 percent and would have a relative shrinkage not greater than 105 percent, based on concrete.

90-2.03 WATER

In conventionally reinforced concrete work, the water for curing, for washing aggregates, and for mixing shall be free from oil and shall not contain more than 1,000 parts per million of chlorides as Cl, when tested in conformance with California Test 422, nor more than 1,300 parts per million of sulfates as SO_4, when tested in conformance with California Test 417. In prestressed concrete work, the water for curing, for washing aggregates, and for mixing shall be free from oil and shall not contain more than 650 parts per million of chlorides as Cl, when tested in conformance with California Test 422, nor more than 1,300 parts per million of sulfates as SO_4, when tested in conformance with California Test 417. In no case shall the water contain an amount of impurities that will cause either of the following results when compared to the same test using distilled or deionized water: 1) a change in the setting time of cement of more than 25 percent when tested in conformance with the requirements in ASTM Designation: C 191 or ASTM Designation: C 266 or 2) a reduction in the compressive strength of mortar at 14 days of more than 5 percent, when tested in conformance with the requirements in ASTM Designation: C 109.

In nonreinforced concrete work, the water for curing, for washing aggregates and for mixing shall be free from oil and shall not contain more than 2,000 parts per million of chlorides as Cl, when tested in conformance with California Test 422, or more than 1,500 parts per million of sulfates as SO_4, when tested in conformance with California Test 417.

In addition to the above provisions, water for curing concrete shall not contain impurities in a sufficient amount to cause discoloration of the concrete or produce etching of the surface.

Water reclaimed from mixer wash-out operations may be used in mixing concrete. The water shall not contain coloring agents or more than 300 parts per million of alkalis ($Na_2O + 0.658\ K_2O$) as determined on the filtrate. The specific gravity of the water shall not exceed 1.03 and shall not vary more than ±0.010 during a day's operations.

90-2.04 Admixture Materials

Admixture materials shall be stored and dispensed in liquid form and conform to the following requirements:

A. Chemical Admixtures—ASTM Designation: C 494.
B. Air-entraining Admixtures—ASTM Designation: C 260.
C. Lithium Nitrate shall be in an aqueous solution conforming to the following:

1. Lithium Nitrate ($LiNO_3$) must be 30 percent +/- 0.5 percent by weight
2. Sulfate (SO_4) must be less than 1000 ppm
3. Chloride (Cl) must be less than 1000 ppm
4. Alkalis ($Na_2O + 0.658\ K_2O$) must be less than 1000 ppm

90-3 AGGREGATE GRADINGS

90-3.01 GENERAL

Before beginning concrete work, the Contractor shall submit in writing to the Engineer the gradation of the primary aggregate nominal sizes that the Contractor proposes to furnish. If a primary coarse aggregate or the fine aggregate is separated into 2 or more sizes, the proposed gradation shall consist of the gradation for each individual size, and the proposed proportions of each individual size, combined mathematically to indicate one proposed gradation. The proposed gradation shall meet the grading requirements shown in the table in this section, and shall show the percentage passing each of the sieve sizes used in determining the end result.

The Engineer may waive, in writing, the gradation requirements in this Section 90-3.01 and in Sections 90-3.02, "Coarse Aggregate Grading," 90-3.03, "Fine Aggregate Grading," and 90-3.04, "Combined Aggregate Gradings," if, in the Engineer's opinion, furnishing the gradation is not necessary for the type or amount of concrete work to be constructed.

Gradations proposed by the Contractor shall be within the following percentage passing limits:

Primary Aggregate Nominal Size	Sieve Size	Limits of Proposed Gradation
1-1/2" x 3/4"	1"	19 - 41
1" x No. 4	3/4"	52 - 85
1" x No. 4	3/8"	15 - 38
1/2" x No. 4	3/8"	40 - 78
3/8" x No. 8	3/8"	50 - 85
Fine Aggregate	No. 16	55 - 75
Fine Aggregate	No. 30	34 - 46
Fine Aggregate	No. 50	16 - 29

Should the Contractor change the source of supply, the Contractor shall submit in writing to the Engineer the new gradations before their intended use.

90-3.02 COARSE AGGREGATE GRADING

The grading requirements for coarse aggregates are shown in the following table for each size of coarse aggregate:

	Percentage Passing Primary Aggregate Nominal Sizes							
	1-1/2" x 3/4"		1" x No. 4		1/2" x No. 4		3/8" x No. 8	
Sieve Sizes	Operating Range	Contract Compliance	Operating Range	Contract Compliance	Operating Range	Contract Compliance	Operating Range	Contract Compliance
2"	100	100	—	—	—	—	—	—
1-1/2"	88 - 100	85 - 100	100	100	—	—	—	—
1"	X ±18	X ±25	88 - 100	86 - 100	—	—	—	—
3/4"	0 - 17	0 - 20	X ±15	X ±22	100	100	—	—
1/2"	—	—	—	—	82 - 100	80 - 100	100	100
3/8"	0 - 7	0 - 9	X ±15	X ±22	X ±15	X ±22	X ±15	X ±20
No. 4	—	—	0 - 16	0 - 18	0 - 15	0 - 18	0 - 25	0 - 28
No. 8	—	—	0 - 6	0 - 7	0 - 6	0 - 7	0 - 6	0 - 7

In the above table, the symbol X is the gradation that the Contractor proposes to furnish for the specific sieve size as provided in Section 90-3.01, "General."

Coarse aggregate for the 1-1/2 inch, maximum, combined aggregate grading as provided in Section 90-3.04, "Combined Aggregate Gradings," shall be furnished in 2 or more primary aggregate nominal sizes. Each primary aggregate nominal size may be separated into 2 sizes and stored separately, provided that the combined material conforms to the grading requirements for that particular primary aggregate nominal size.

When the one inch, maximum, combined aggregate grading as provided in Section 90-3.04, "Combined Aggregate Gradings," is to be used, the coarse aggregate may be separated into 2 sizes and stored separately, provided that the combined material shall conform to the grading requirements for the 1" x No. 4 primary aggregate nominal size.

90-3.03 FINE AGGREGATE GRADING

Fine aggregate shall be graded within the following limits:

Sieve Sizes	Percentage Passing	
	Operating Range	Contract Compliance
3/8"	100	100
No. 4	95 - 100	93 - 100
No. 8	65 - 95	61 - 99
No. 16	X ±10	X ±13
No. 30	X ±9	X ±12
No. 50	X ±6	X ±9
No. 100	2 - 12	1 - 15
No. 200	0 - 8	0 - 10

In the above table, the symbol X is the gradation that the Contractor proposes to furnish for the specific sieve size as provided in Section 90-3.01, "General."

In addition to the above required grading analysis, the distribution of the fine aggregate sizes shall be such that the difference between the total percentage passing the No. 16 sieve and the total percentage passing the No. 30 sieve shall be between 10 and 40, and the difference between the percentage passing the No. 30 and No. 50 sieves shall be between 10 and 40.

Fine aggregate may be separated into 2 or more sizes and stored separately, provided that the combined material conforms to the grading requirements specified in this Section 90-3.03.

90-3.04 COMBINED AGGREGATE GRADINGS

Combined aggregate grading limits shall be used only for the design of concrete mixes. Concrete mixes shall be designed so that aggregates are combined in proportions that shall produce a mixture within the grading limits for combined aggregates as specified herein.

The combined aggregate grading, except when otherwise specified in these specifications or the special provisions, shall be either the 1-1/2 inch, maximum grading, or the 1 inch, maximum grading, at the option of the Contractor.

Grading Limits of Combined Aggregates

Sieve Sizes	Percentage Passing			
	1-1/2" Max.	1" Max.	1/2" Max.	3/8" Max.
2"	100	—	—	—
1-1/2"	90 - 100	100	—	—
1"	50 - 86	90 - 100	—	—
3/4"	45 - 75	55 - 100	100	—
1/2"	—	—	90 - 100	100
3/8"	38 - 55	45 - 75	55 - 86	50 - 100
No. 4	30 - 45	35 - 60	45 - 63	45 - 63
No. 8	23 - 38	27 - 45	35 - 49	35 - 49
No. 16	17 - 33	20 - 35	25 - 37	25 - 37
No. 30	10 - 22	12 - 25	15 - 25	15 - 25
No. 50	4 - 10	5 - 15	5 - 15	5 - 15
No. 100	1 - 6	1 - 8	1 - 8	1 - 8
No. 200	0 - 3	0 - 4	0 - 4	0 - 4

Changes from one grading to another shall not be made during the progress of the work unless permitted by the Engineer.

90-4 ADMIXTURES

90-4.01 GENERAL

Admixtures used in portland cement concrete shall conform to and be used in conformance with the provisions in this Section 90-4 and the special provisions. Admixtures shall be used when specified or ordered by the Engineer and may be used at the Contractor's option as provided herein.

Chemical admixtures and air-entraining admixtures containing chlorides as Cl in excess of one percent by weight of admixture, as determined by California Test 415, shall not be used.

Admixtures shall be uniform in properties throughout their use in the work. Should it be found that an admixture as furnished is not uniform in properties, its use shall be discontinued.

If more than one admixture is used, the admixtures shall be compatible with each other so that the desirable effects of all admixtures used will be realized.

Chemical admixtures shall be used in conformance with the manufacturer's written recommendations. The manufacturer's written recommendations shall include a statement that the admixtures are compatible with the types and amounts of SCMs used.

90-4.02 MATERIALS

Admixture materials shall conform to the provisions in Section 90-2.04, "Admixture Materials."

90-4.03 ADMIXTURE APPROVAL

No admixture brand shall be used in the work unless it is on the Department's current list of approved brands for the type of admixture involved. Information regarding admixture qualification and placement on the Department's list can be obtained at the Transportation Laboratory.

If the Contractor proposes to use an admixture of a brand and type on the current list of approved admixture brands, the Contractor shall furnish a Certificate of Compliance from the manufacturer, as provided in Section 6-1.07, "Certificates of Compliance," certifying that the admixture furnished is the same as that previously approved. If a previously approved admixture is not accompanied by a Certificate of Compliance, the admixture shall not be used in the work until the Engineer has had sufficient time to make the appropriate tests and has approved the admixture for use. The Engineer may take samples for testing at any time, whether or not the admixture has been accompanied by a Certificate of Compliance.

90-4.04 REQUIRED USE OF CHEMICAL ADMIXTURES

If the use of a chemical admixture is specified, the admixture shall be used at the dosage specified, except that if no dosage is specified, the admixture shall be used at the dosage normally recommended by the manufacturer of the admixture.

90-4.05 OPTIONAL USE OF CHEMICAL ADMIXTURES

The Contractor may use Type A or F, water-reducing; Type B, retarding; or Type D or G, water-reducing and retarding admixtures as described in ASTM Designation: C 494 to conserve cementitious material or to facilitate any concrete construction application subject to the following conditions:

A. If a water-reducing admixture or a water-reducing and retarding admixture is used, the cementitious material content specified or ordered may be reduced by a maximum of 5 percent by weight, except that the resultant cementitious material content shall be not less than 505 pounds per cubic yard; and
B. When a reduction in cementitious material content is made, the dosage of admixture used shall be no less than the dosage used in determining approval of the admixture.

The Contractor may use Type S admixtures conforming to the requirements in ASTM Designation: C 494.

Unless otherwise specified, a Type C accelerating chemical admixture conforming to the requirements in ASTM Designation: C 494, may be used in portland cement concrete. Inclusion in the mix design submitted for approval will not be required provided that the admixture is added to counteract changing conditions that contribute to delayed setting of the portland cement concrete, and the use or change in dosage of the admixture is approved in writing by the Engineer.

90-4.06 REQUIRED USE OF AIR-ENTRAINING ADMIXTURES

When air-entrainment is specified or ordered by the Engineer, the air-entraining admixture shall be used in amounts to produce a concrete having the specified air content as determined by California Test 504.

90-4.07 OPTIONAL USE OF AIR-ENTRAINING ADMIXTURES

When air-entrainment has not been specified or ordered by the Engineer, the Contractor will be permitted to use an air-entraining admixture to facilitate the use of any construction procedure or equipment provided that the average air content, as determined by California Test 504, of 3 successive tests does not exceed 4 percent, and no single test value exceeds 5.5 percent. If the Contractor elects to use an air-entraining admixture in concrete for pavement, the Contractor shall so indicate at the time the Contractor designates the source of aggregate.

90-4.08 BLANK

90-4.09 BLANK

90-4.10 PROPORTIONING AND DISPENSING LIQUID ADMIXTURES

Chemical admixtures and air-entraining admixtures shall be dispensed in liquid form. Dispensers for liquid admixtures shall have sufficient capacity to measure at one time the prescribed quantity required for each batch of concrete. Each dispenser shall include a graduated measuring unit into which liquid admixtures are measured to within ±5 percent of the prescribed quantity for each batch. Dispensers shall be located and maintained so that the graduations can be accurately read from the point at which proportioning operations are controlled to permit a visual check of batching accuracy prior to discharge. Each measuring unit shall be clearly marked for the type and quantity of admixture.

Each liquid admixture dispensing system shall be equipped with a sampling device consisting of a valve located in a safe and readily accessible position such that a sample of the admixture may be withdrawn slowly by the Engineer.

If more than one liquid admixture is used in the concrete mix, each liquid admixture shall have a separate measuring unit and shall be dispensed by injecting equipment located in such a manner that the admixtures are not mixed at high concentrations and do not interfere with the effectiveness of each other. When air-entraining admixtures are used in conjunction with other liquid admixtures, the air-entraining admixture shall be the first to be incorporated into the mix, unless it is demonstrated that a different sequence improves performance.

When automatic proportioning devices are used, dispensers for liquid admixtures shall operate automatically with the batching control equipment. The dispensers shall be equipped with an automatic warning system in good operating condition that will provide a visible or audible signal at the point at which proportioning operations are controlled when the quantity of admixture measured for each batch of concrete varies from the preselected dosage by more than 5 percent, or when the entire contents of the measuring unit are not emptied from the dispenser into each batch of concrete.

Unless liquid admixtures are added to premeasured water for the batch, their discharge into the batch shall be arranged to flow into the stream of water so that the admixtures are well dispersed throughout the batch, except that air-entraining admixtures may be dispensed directly into moist sand in the batching bins provided that adequate control of the air content of the concrete can be maintained.

Liquid admixtures requiring dosages greater than one-half gallon per cubic yard shall be considered to be water when determining the total amount of free water as specified in Section 90-6.06, "Amount of Water and Penetration."

90-4.11 BLANK

90-5 PROPORTIONING

90-5.01 STORAGE OF AGGREGATES

Aggregates shall be stored or stockpiled in such a manner that separation of coarse and fine particles of each size shall be avoided and the various sizes shall not become intermixed before proportioning.

Aggregates shall be stored or stockpiled and handled in a manner that prevent contamination by foreign materials. In addition, storage of aggregates at batching or mixing facilities that are erected subsequent to the award of the contract and that furnish concrete to the project shall conform to the following:

A. Intermingling of the different sizes of aggregates shall be positively prevented. The Contractor shall take the necessary measures to prevent intermingling. The preventive measures may include, but are not necessarily limited to, physical separation of stockpiles or construction of bulkheads of adequate length and height; and
B. Contamination of aggregates by contact with the ground shall be positively prevented. The Contractor shall take the necessary measures to prevent contamination. The preventive measures shall include, but are

not necessarily limited to, placing aggregates on wooden platforms or on hardened surfaces consisting of portland cement concrete, asphalt concrete, or cement treated material.

In placing aggregates in storage or in moving the aggregates from storage to the weigh hopper of the batching plant, any method that may cause segregation, degradation, or the combining of materials of different gradings that will result in any size of aggregate at the weigh hopper failing to meet the grading requirements, shall be discontinued. Any method of handling aggregates that results in excessive breakage of particles shall be discontinued. The use of suitable devices to reduce impact of falling aggregates may be required by the Engineer.

90-5.02 PROPORTIONING DEVICES

Weighing, measuring, or metering devices used for proportioning materials shall conform to the requirements in Section 9-1.01, "Measurement of Quantities," and this Section 90-5.02. In addition, automatic weighing systems shall comply with the requirements for automatic proportioning devices in Section 90-5.03A, "Automatic Proportioning." Automatic devices shall be automatic to the extent that the only manual operation required for proportioning the aggregates, cement, and SCM for one batch of concrete is a single operation of a switch or starter.

For concrete pavement, aggregate and bulk cementitious material must be proportioned by weight by means of automatic proportioning devices.

Proportioning devices shall be tested as frequently as the Engineer may deem necessary to ensure their accuracy.

Weighing equipment shall be insulated against vibration or movement of other operating equipment in the plant. When the plant is in operation, the weight of each batch of material shall not vary from the weight designated by the Engineer by more than the tolerances specified herein.

Equipment for cumulative weighing of aggregate shall have a zero tolerance of ±0.5 percent of the designated total batch weight of the aggregate. For systems with individual weigh hoppers for the various sizes of aggregate, the zero tolerance shall be ±0.5 percent of the individual batch weight designated for each size of aggregate. Equipment for cumulative weighing of cement and SCM shall have a zero tolerance of ±0.5 percent of the designated total batch weight of the cement and SCM. Equipment for weighing cement or SCM separately shall have a zero tolerance of ±0.5 percent of their designated individual batch weights. Equipment for measuring water shall have a zero tolerance of ±0.5 percent of its designated weight or volume.

The weight indicated for any batch of material shall not vary from the preselected scale setting by more than the following:

A. Aggregate weighed cumulatively shall be within 1.0 percent of the designated total batch weight of the aggregate. Aggregates weighed individually shall be within 1.5 percent of their respective designated batch weights; and
B. Cement shall be 99 to 102 percent of its designated batch weight. When weighed individually, SCM shall be 99 to 102 percent of its designated batch weight. When SCM and cement are permitted to be weighed cumulatively, cement shall be weighed first to 99 to 102 percent of its designated batch weight, and the total for cement and SCM shall be 99 to 102 percent of the sum of their designated batch weights When a blended cement is used, the percentages of cement and SCM used for calculating batch weights shall be based on the percentage of SCM indicated in the Certificate of Compliance from the blended cement supplier; and
C. Water shall be within 1.5 percent of its designated weight or volume.

Each scale graduation shall be approximately 0.001 of the total capacity of the scale. The capacity of scales for weighing cement, SCM, or cement plus SCM and aggregates shall not exceed that of commercially available scales having single graduations indicating a weight not exceeding the maximum permissible weight variation above, except that no scale shall be required having a capacity of less than 1,000 pounds, with one pound graduations.

90-5.03 PROPORTIONING

Proportioning shall consist of dividing the aggregates into the specified sizes, each stored in a separate bin, and combining them with cementitious material and water as provided in these specifications. Aggregates shall be proportioned by weight.

At the time of batching, aggregates shall have been dried or drained sufficiently to result in a stable moisture content such that no visible separation of water from aggregate will take place during transportation from the proportioning plant to the point of mixing. In no event shall the free moisture content of the fine aggregate at the time of batching exceed 8 percent of its saturated, surface-dry weight.

Should separate supplies of aggregate material of the same size group, but of different moisture content or specific gravity or surface characteristics affecting workability, be available at the proportioning plant, withdrawals shall be made from one supply exclusively and the materials therein completely exhausted before starting upon another.

Bulk Type IP (MS) or Type IS (MS) cement shall be weighed in an individual hopper and shall be kept separate from the aggregates until the ingredients are released for discharge into the mixer.

Bulk cement and SCM may be weighed in separate, individual weigh hoppers or may be weighed in the same weigh hopper and shall be kept separate from the aggregates until the ingredients are released for discharge into the mixer. If the cement and SCM are weighed cumulatively, the cement shall be weighed first.

If cement and SCM are weighed in separate weigh hoppers, the weigh systems for the proportioning of the aggregate, the cement, and the SCM shall be individual and distinct from all other weigh systems. Each weigh system shall be equipped with a hopper, a lever system, and an indicator to constitute an individual and independent material-weighing device. The cement and the SCM shall be discharged into the mixer simultaneously with the aggregate.

The scales and weigh hoppers for bulk weighing cement, SCM, or cement plus SCM shall be separate and distinct from the aggregate weighing equipment.

For batches of one cubic yard or more, the batching equipment shall conform to one of the following combinations:

A. Separate boxes and separate scale and indicator for weighing each size of aggregate.
B. Single box and scale indicator for all aggregates.
C. Single box or separate boxes and automatic weighing mechanism for all aggregates.

In order to check the accuracy of batch weights, the gross weight and tare weight of batch trucks, truck mixers, truck agitators, and non-agitating hauling equipment shall be determined when ordered by the Engineer. The equipment shall be weighed on scales designated by the Engineer.

90-5.03A Automatic Proportioning

Automatic proportioning devices shall be authorized by the Department.

For concrete pavement, the Contractor shall install and maintain in operating condition an electronically actuated moisture meter that will indicate, on a readily visible scale, changes in the moisture content of the fine aggregate as it is batched within a sensitivity of 0.5 percent by weight of the fine aggregate.

The batching of cement, SCM, or cement plus SCM and aggregate shall be interlocked so that a new batch cannot be started until all weigh hoppers are empty, the proportioning devices are within zero tolerance, and the discharge gates are closed. The interlock shall permit no part of the batch to be discharged until all aggregate hoppers and the cement and SCM hoppers or the cement plus SCM hopper are charged with weights that are within the tolerances specified in Section 90-5.02, "Proportioning Devices."

If interlocks are required for cement and SCM charging mechanisms and cement and SCM are weighed cumulatively, their charging mechanisms shall be interlocked to prevent the introduction of SCM until the weight of cement in the cement weigh hopper is within the tolerances specified in Section 90-5.02, "Proportioning Devices."

If concrete is completely mixed in stationary mixers, the SCMs shall be weighed in a separate weigh hopper and the SCM and cement shall be introduced simultaneously into the mixer proportionately with the aggregate. If the Contractor provides certification that the stationary mixer is capable of mixing the cement, SCM, aggregates, and water uniformly before discharge, weighing the SCM cumulatively with the cement is permitted. Certification shall contain the following:

A. Test results for 2 compressive strength test cylinders of concrete taken within the first one-third and 2 compressive strength test cylinders of concrete taken within the last one-third of the concrete discharged from a single batch from the stationary mixer. Strength tests and cylinder preparation will be in conformance with the provisions of Section 90-9, "Compressive Strength";
B. Calculations demonstrating that the difference in the averages of 2 compressive strengths taken in the first one-third is no greater than 7.5 percent different than the averages of 2 compressive strengths taken in the last one-third of the concrete discharged from a single batch from the stationary mixer. Strength tests and cylinder preparation will be in conformance with the provisions of Section 90-9, "Compressive Strength;" and
C. The mixer rotation speed and time of mixing before discharge that are required to produce a mix that meets the requirements above.

The discharge gate on the cement and SCM hoppers or the cement plus SCM hopper shall be designed to permit regulating the flow of cement, SCM, or cement plus SCM into the aggregate as directed by the Engineer.

If separate weigh boxes are used for each size of aggregate, the discharge gates shall permit regulating the flow of each size of aggregate as directed by the Engineer.

Material discharged from the several bins shall be controlled by gates or by mechanical conveyors. The means of withdrawal from the several bins, and of discharge from the weigh box, shall be interlocked so that not more than one bin can discharge at a time, and so that the weigh box cannot be tripped until the required quantity from each of the several bins has been deposited therein. Should a separate weigh box be used for each size of aggregate, all may be operated and discharged simultaneously.

If the discharge from the several bins is controlled by gates, each gate shall be actuated automatically so that the required weight is discharged into the weigh box, after which the gate shall automatically close and lock.

The automatic weighing system shall be designed so that all proportions required may be set on the weighing controller at the same time.

90-6 MIXING AND TRANSPORTING

90-6.01 GENERAL

Concrete shall be mixed in mechanically operated mixers, except that when permitted by the Engineer, batches not exceeding 1/3 cubic yard may be mixed by hand methods in conformance with the provisions in Section 90-6.05, "Hand-Mixing."

Equipment having components made of aluminum or magnesium alloys that would have contact with plastic concrete during mixing, transporting, or pumping of portland cement concrete shall not be used.

Concrete shall be homogeneous and thoroughly mixed, and there shall be no lumps or evidence of undispersed cementitious material.

Uniformity of concrete mixtures will be determined by differences in penetration as determined by California Test 533, or slump as determined by ASTM Designation: C 143, and by variations in the proportion of coarse aggregate as determined by California Test 529.

When the mix design specifies a penetration value, the difference in penetration, determined by comparing penetration tests on 2 samples of mixed concrete from the same batch or truck mixer load, shall not exceed 1/2 inch. When the mix design specifies a slump value, the difference in slump, determined by comparing slump tests on 2 samples of mixed concrete from the same batch or truck mixer load, shall not exceed the values given in the table below. Variation in the proportion of coarse aggregate will be determined by comparing the results of tests of 2 samples of mixed concrete from the same batch or truck mixer load and the difference between the 2 results shall not exceed 170 pounds per cubic yard of concrete.

Average Slump	Maximum Permissible Difference
Less than 4"	1"
4" to 6"	1-1/2"
Greater than 6" to 9"	2"

The Contractor shall furnish samples of the freshly mixed concrete and provide satisfactory facilities for obtaining the samples.

90-6.02 MACHINE MIXING

Concrete mixers may be of the revolving drum or the revolving blade type, and the mixing drum or blades shall be operated uniformly at the mixing speed recommended by the manufacturer. Mixers and agitators that have an accumulation of hard concrete or mortar shall not be used.

The temperature of mixed concrete, immediately before placing, shall be not less than 50 °F or more than 90 °F. Aggregates and water shall be heated or cooled as necessary to produce concrete within these temperature limits. Neither aggregates nor mixing water shall be heated to exceed 150 °F. If ice is used to cool the concrete, discharge of the mixer will not be permitted until all ice is melted.

The batch shall be so charged into the mixer that some water will enter in advance of cementitious materials and aggregates. All water shall be in the drum by the end of the first one-fourth of the specified mixing time. When concrete is delivered in a truck mixer, a portion of the mixing water may be withheld and, if allowed by the Engineer, may be added at the point of delivery as specified under Section 90-6.03, "Transporting Mixed Concrete."

Cementitious materials shall be batched and charged into the mixer by means that will not result either in loss of cementitious materials due to the effect of wind, in accumulation of cementitious materials on surfaces of conveyors

or hoppers, or in other conditions that reduce or vary the required quantity of cementitious material in the concrete mixture.

Stationary mixers shall be operated with an automatic timing device. The timing device and discharge mechanism shall be interlocked so that during normal operation no part of the batch will be discharged until the specified mixing time has elapsed.

The total elapsed time between the intermingling of damp aggregates and all cementitious materials and the start of mixing shall not exceed 30 minutes.

The size of batch shall not exceed the manufacturer's guaranteed capacity.

When producing concrete for pavement or base, suitable batch counters shall be installed and maintained in good operating condition at job site batching plants and stationary mixers. The batch counters shall indicate the exact number of batches proportioned and mixed.

Concrete shall be mixed and delivered to the job site by means of one of the following combinations of operations:

A. Mixed completely in a stationary mixer and the mixed concrete transported to the point of delivery in truck agitators or in nonagitating hauling equipment (central-mixed concrete).
B. Mixed partially in a stationary mixer, and the mixing completed in a truck mixer (shrink-mixed concrete).
C. Mixed completely in a truck mixer (transit-mixed concrete).

Agitators may be truck mixers operating at agitating speed or truck agitators. Each mixer and agitator shall have attached thereto in a prominent place a metal plate or plates on which is plainly marked the various uses for which the equipment is designed, the manufacturer's guaranteed capacity of the drum or container in terms of the volume of mixed concrete and the speed of rotation of the mixing drum or blades.

Truck mixers shall be equipped with electrically or mechanically actuated revolution counters by which the number of revolutions of the drum or blades may readily be verified.

When shrink-mixed concrete is furnished, concrete that has been partially mixed at a central plant shall be transferred to a truck mixer and all requirements for transit-mixed concrete shall apply. No credit in the number of revolutions at mixing speed will be allowed for partial mixing in a central plant.

90-6.03 TRANSPORTING MIXED CONCRETE

Mixed concrete may be transported to the delivery point in truck agitators or truck mixers operating at the speed designated by the manufacturer of the equipment as agitating speed, or in non-agitating hauling equipment, provided the consistency and workability of the mixed concrete upon discharge at the delivery point is suitable for adequate placement and consolidation in place, and provided the mixed concrete after hauling to the delivery point conforms to the provisions in Section 90-6.01, "General."

Truck agitators shall be loaded not to exceed the manufacturer's guaranteed capacity and shall maintain the mixed concrete in a thoroughly mixed and uniform mass during hauling.

Bodies of nonagitating hauling equipment shall be constructed so that leakage of the concrete mix, or any part thereof, will not occur at any time.

Concrete hauled in open-top vehicles shall be protected during hauling against rain or against exposure to the sun for more than 20 minutes when the ambient temperature exceeds 75 °F.

No water in excess of that in the approved mix design shall be incorporated into the concrete. If approved by the Engineer, water withheld during batching may be added to the concrete at the delivery point in one operation before the discharge of more than 1/4 cubic yard. Equipment for supplying the water shall conform to Section 90-6.06, "Amount of Water and Penetration." When water is added at the point of delivery, the drum shall be revolved not less than 30 revolutions at mixing speed after the water is added and before discharged is commenced.

The rate of discharge of mixed concrete from a truck mixer or agitator shall be controlled by the speed of rotation of the drum in the discharge direction with the discharge gate fully open.

If a truck mixer or agitator is used for transporting concrete to the delivery point, discharge shall be completed within 1.5 hours or before 250 revolutions of the drum or blades, whichever occurs first, after the introduction of the cementitious materials to the aggregates. Under conditions contributing to quick stiffening of the concrete, or if the temperature of the concrete is 85 °F or above, the time allowed may be less than 1.5 hours. If an admixture is used to retard the set time, the temperature of the concrete shall not exceed 85 °F, the time limit shall be 2 hours, and the revolution limitation shall be 300.

If nonagitating hauling equipment is used for transporting concrete to the delivery point, discharge shall be completed within one hour after the addition of the cementitious materials to the aggregates. Under conditions contributing to quick stiffening of the concrete, or when the temperature of the concrete is 85 °F or above, the time between the introduction of cementitious materials to the aggregates and discharge shall not exceed 45 minutes.

Each load of concrete delivered at the job site shall be accompanied by a weighmaster certificate showing the mix identification number, nonrepeating load number, date and time at which the materials were batched, the total amount of water added to the load, and for transit-mixed concrete, the reading of the revolution counter at the time the truck mixer is charged with cement. This weighmaster certificate shall also show the actual scale weights (pounds) for the ingredients batched. Theoretical or target batch weights shall not be used as a substitute for actual scale weights.

Weighmaster certificates shall be provided in printed form, or if approved by the Engineer, the data may be submitted in electronic media. Electronic media shall be presented in a tab-delimited format on a CD or DVD. Captured data, for the ingredients represented by each batch shall be "line feed, carriage return" (LFCR) and "one line, separate record" with allowances for sufficient fields to satisfy the amount of data required by these specifications.

The Contractor may furnish a weighmaster certificate accompanied by a separate certificate that lists the actual batch weights or measurements for a load of concrete provided that both certificates are imprinted with the same nonrepeating load number that is unique to the contract and delivered to the jobsite with the load.

Weighmaster certificates furnished by the Contractor shall conform to the provisions in Section 9-1.01, "Measurement of Quantities."

90-6.04 TIME OR AMOUNT OF MIXING

Mixing of concrete in stationary mixers shall continue for the required mixing time after all ingredients, except water and admixture, if added with the water, are in the mixing compartment of the mixer before any part of the batch is released. Transfer time in multiple drum mixers shall not be counted as part of the required mixing time.

The required mixing time, in stationary mixers, of concrete used for concrete structures, except minor structures, shall be not less than 90 seconds or more than 5 minutes, except that when directed by the Engineer in writing, the requirements of the following paragraph shall apply.

The required mixing time in stationary mixers, except as provided in the preceding paragraph, shall be not less than 50 seconds or more than 5 minutes.

The minimum required revolutions at the mixing speed for transit-mixed concrete shall not be less than that recommended by the mixer manufacturer, but in no case shall the number of revolutions be less than that required to consistently produce concrete conforming to the provisions for uniformity in Section 90-6.01, "General."

When a high range water-reducing admixture is added to the concrete at the job site, the total number of revolutions shall not exceed 300.

90-6.05 HAND-MIXING

Hand-mixed concrete shall be made in batches of not more than 1/3 cubic yard and shall be mixed on a watertight, level platform. The proper amount of coarse aggregate shall be measured in measuring boxes and spread on the platform and the fine aggregate shall be spread on this layer, the 2 layers being not more than one foot in total depth. On this mixture shall be spread the dry cementitious materials and the whole mass turned no fewer than 2 times dry; then sufficient clean water shall be added, evenly distributed, and the whole mass again turned no fewer than 3 times, not including placing in the carriers or forms.

90-6.06 AMOUNT OF WATER AND PENETRATION

The amount of water used in concrete mixes shall be regulated so that the penetration of the concrete as determined by California Test 533 or the slump of the concrete as determined by ASTM Designation: C 143 is within the nominal values shown in the following table. When the penetration or slump of the concrete is found to exceed the nominal values listed, the mixture of subsequent batches shall be adjusted to reduce the penetration or slump to a value within the nominal range shown. Batches of concrete with a penetration or slump exceeding the maximum values listed shall not be used in the work. If Type F or Type G chemical admixtures are added to the mix, the penetration requirements shall not apply and the slump shall not exceed 9 inches after the chemical admixtures are added.

Type of Work	Nominal		Maximum	
	Penetration (inches)	Slump (inches)	Penetration (inches)	Slump (inches)
Concrete Pavement	0 - 1	—	1-1/2	—
Non-reinforced concrete facilities	0 – 1-1/2	—	2	—
Reinforced concrete structures				
Sections over 12 inches thick	0 – 1-1/2	—	2-1/2	—
Sections 12 inches thick or less	0 - 2	—	3	—
Concrete placed under water	—	6 - 8	—	9
Cast-in-place concrete piles	2-1/2 – 3-1/2	5 - 7	4	8

The amount of free water used in concrete shall not exceed 310 pounds per cubic yard, plus 20 pounds for each required 100 pounds of cementitious material in excess of 550 pounds per cubic yard.

The term free water is defined as the total water in the mixture minus the water absorbed by the aggregates in reaching a saturated surface-dry condition.

If there are adverse or difficult conditions that affect the placing of concrete, the above specified penetration and free water content limitations may be exceeded providing the Contractor is granted permission by the Engineer in writing to increase the cementitious material content per cubic yard of concrete. The increase in water and cementitious material shall be at a ratio not to exceed 30 pounds of water per added 100 pounds of cementitious material per cubic yard. Full compensation for additional cementitious material and water added under these conditions shall be considered as included in the contract price paid for the concrete work involved and no additional compensation will be allowed therefor.

The equipment for supplying water to the mixer shall be constructed and arranged so that the amount of water added can be measured accurately. Any method of discharging water into the mixer for a batch shall be accurate within 1.5 percent of the quantity of water required to be added to the mix for any position of the mixer. Tanks used to measure water shall be designed so that water cannot enter while water is being discharged into the mixer and discharge into the mixer shall be made rapidly in one operation without dribbling. All equipment shall be arranged so as to permit checking the amount of water delivered by discharging into measured containers.

90-7 CURING CONCRETE

90-7.01 METHODS OF CURING

Newly placed concrete shall be cured by the methods specified in this Section 90-7.01 and the special provisions.

90-7.01A Water Method

The concrete shall be kept continuously wet by the application of water for a minimum curing period of 7 days after the concrete has been placed.

Cotton mats, rugs, carpets, or earth or sand blankets may be used as a curing medium to retain the moisture during the curing period.

If a curing medium consisting of cotton mats, rugs, carpets, polyethylene sheeting, polyethylene sheeting on burlap, or earth or sand blankets is to be used to retain the moisture, the entire surface of the concrete shall be kept damp by applying water with a nozzle that so atomizes the flow that a mist and not a spray is formed, until the surface of the concrete is covered with the curing medium. The moisture from the nozzle shall not be applied under pressure directly upon the concrete and shall not be allowed to accumulate on the concrete in a quantity sufficient to cause a flow or wash the surface. At the expiration of the curing period, the concrete surfaces shall be cleared of all curing media.

At the option of the Contractor, a curing medium consisting of white opaque polyethylene sheeting extruded onto burlap may be used to cure concrete structures. The polyethylene sheeting shall have a minimum thickness of 4-mil, and shall be extruded onto 10-ounce burlap.

At the option of the Contractor, a curing medium consisting of polyethylene sheeting may be used to cure concrete columns. The polyethylene sheeting shall have a minimum thickness of 10-mil achieved in a single layer of material.

If the Contractor chooses to use polyethylene sheeting or polyethylene sheeting on burlap as a curing medium, these media and any joints therein shall be secured as necessary to provide moisture retention and shall be within 3 inches of the concrete at all points along the surface being cured. When these media are used, the temperature of the concrete shall be monitored during curing. If the temperature of the concrete cannot be maintained below 140° F, use of these curing media shall be disallowed.

When concrete bridge decks and flat slabs are to be cured without the use of a curing medium, the entire surface of the bridge deck or slab shall be kept damp by the application of water with an atomizing nozzle as specified above, until the concrete has set, after which the entire surface of the concrete shall be sprinkled continuously with water for a period of not less than 7 days.

90-7.01B Curing Compound Method

Surfaces of the concrete that are exposed to the air shall be sprayed uniformly with a curing compound.

Curing compounds to be used shall be as follows:

1. Pigmented curing compound conforming to the requirements in ASTM Designation: C 309, Type 2, Class B, except the resin type shall be poly-alpha-methylstyrene.
2. Pigmented curing compound conforming to the requirements in ASTM Designation: C 309, Type 2, Class B.
3. Pigmented curing compound conforming to the requirements in ASTM Designation: C 309, Type 2, Class A.
4. Nonpigmented curing compound conforming to the requirements in ASTM Designation: C 309, Type 1, Class B.
5. Nonpigmented curing compound conforming to the requirements in ASTM Designation: C 309, Type 1, Class A.
6. Nonpigmented curing compound with fugitive dye conforming to the requirements in ASTM Designation: C 309, Type 1-D, Class A.

The infrared scan for the dried vehicle from curing compound (1) shall match the infrared scan on file at the Transportation Laboratory.

The loss of water for each type of curing compound, when tested in conformance with the requirements in California Test 534, shall not be more than 0.28 pounds per square yard in 24 hours.

The curing compound to be used will be specified elsewhere in these specifications or in the special provisions.

If the use of curing compound is required or permitted elsewhere in these specifications or in the special provisions and no specific kind is specified, any of the curing compounds listed above may be used.

Curing compound shall be applied at a nominal rate of one gallon per 150 square feet, unless otherwise specified.

At any point, the application rate shall be within ±50 square feet per gallon of the nominal rate specified, and the average application rate shall be within ±25 square feet per gallon of the nominal rate specified when tested in conformance with the requirements in California Test 535. Runs, sags, thin areas, skips, or holidays in the applied curing compound shall be evidence that the application is not satisfactory.

Curing compounds shall be applied using power operated spray equipment. The power operated spraying equipment shall be equipped with an operational pressure gage and a means of controlling the pressure. Hand spraying of small and irregular areas that are not reasonably accessible to mechanical spraying equipment, in the opinion of the Engineer, may be permitted.

The curing compound shall be applied to the concrete following the surface finishing operation, immediately before the moisture sheen disappears from the surface, but before any drying shrinkage or craze cracks begin to appear. In the event of any drying or cracking of the surface, application of water with an atomizing nozzle as specified in Section 90-7.01A, "Water Method," shall be started immediately and shall be continued until application of the compound is resumed or started; however, the compound shall not be applied over any resulting freestanding water. Should the film of compound be damaged from any cause before the expiration of 7 days after the concrete is placed in the case of structures and 72 hours in the case of pavement, the damaged portion shall be repaired immediately with additional compound.

At the time of use, compounds containing pigments shall be in a thoroughly mixed condition with the pigment uniformly dispersed throughout the vehicle. A paddle shall be used to loosen all settled pigment from the bottom of the container, and a power driven agitator shall be used to disperse the pigment uniformly throughout the vehicle.

Agitation shall not introduce air or other foreign substance into the curing compound.

The manufacturer shall include in the curing compound the necessary additives for control of sagging, pigment settling, leveling, de-emulsification, or other requisite qualities of a satisfactory working material. Pigmented curing compounds shall be manufactured so that the pigment does not settle badly, does not cake or thicken in the container, and does not become granular or curdled. Settlement of pigment shall be a thoroughly wetted, soft, mushy mass permitting the complete and easy vertical penetration of a paddle. Settled pigment shall be easily

redispersed, with minimum resistance to the sideways manual motion of the paddle across the bottom of the container, to form a smooth uniform product of the proper consistency.

Curing compounds shall remain sprayable at temperatures above 40 °F and shall not be diluted or altered after manufacture.

The curing compound shall be packaged in clean 274-gallon totes, 55-gallon barrels or 5-gallon pails shall be supplied from a suitable storage tank located at the jobsite. The containers shall comply with "Title 49, Code of Federal Regulations, Hazardous Materials Regulations." The 274-gallon totes and the 55-gallon barrels shall have removable lids and airtight fasteners. The 5-gallon pails shall be round and have standard full open head and bail. Lids with bungholes will not be permitted. Settling or separation of solids in containers, except tanks, must be completely redispersed with low speed mixing prior to use, in conformance with these specifications and the manufacturer's recommendations. Mixing shall be accomplished either manually by use of a paddle or by use of a mixing blade driven by a drill motor, at low speed. Mixing blades shall be the type used for mixing paint. On-site storage tanks shall be kept clean and free of contaminants. Each tank shall have a permanent system designed to completely redisperse settled material without introducing air or other foreign substances.

Steel containers and lids shall be lined with a coating that will prevent destructive action by the compound or chemical agents in the air space above the compound. The coating shall not come off the container or lid as skins. Containers shall be filled in a manner that will prevent skinning. Plastic containers shall not react with the compound.

Each container shall be labeled with the manufacturer's name, kind of curing compound, batch number, volume, date of manufacture, and volatile organic compound (VOC) content. The label shall also warn that the curing compound containing pigment shall be well stirred before use. Precautions concerning the handling and the application of curing compound shall be shown on the label of the curing compound containers in conformance with the Construction Safety Orders and General Industry Safety Orders of the State.

Containers of curing compound shall be labeled to indicate that the contents fully comply with the rules and regulations concerning air pollution control in the State.

When the curing compound is shipped in tanks or tank trucks, a shipping invoice shall accompany each load. The invoice shall contain the same information as that required herein for container labels.

Curing compound will be sampled by the Engineer at the source of supply, at the job site, or at both locations.

Curing compound shall be formulated so as to maintain the specified properties for a minimum of one year. The Engineer may require additional testing before use to determine compliance with these specifications if the compound has not been used within one year or whenever the Engineer has reason to believe the compound is no longer satisfactory.

Tests will be conducted in conformance with the latest ASTM test methods and methods in use by the Transportation Laboratory.

90-7.01C Waterproof Membrane Method

The exposed finished surfaces of concrete shall be sprayed with water, using a nozzle that so atomizes the flow that a mist and not a spray is formed, until the concrete has set, after which the curing membrane, shall be placed. The curing membrane shall remain in place for a period of not less than 72 hours.

Sheeting material for curing concrete shall conform to the requirements in AASHTO Designation: M 171 for white reflective materials.

The sheeting material shall be fabricated into sheets of such width as to provide a complete cover for the entire concrete surface. Joints in the sheets shall be securely cemented together in such a manner as to provide a waterproof joint. The joint seams shall have a minimum lap of 0.33 foot.

The sheets shall be securely weighted down by placing a bank of earth on the edges of the sheets or by other means satisfactory to the Engineer.

Should any portion of the sheets be broken or damaged before the expiration of 72 hours after being placed, the broken or damaged portions shall be immediately repaired with new sheets properly cemented into place.

Sections of membrane that have lost their waterproof qualities or have been damaged to such an extent as to render them unfit for curing the concrete shall not be used.

90-7.01D Forms-In-Place Method

Formed surfaces of concrete may be cured by retaining the forms in place. The forms shall remain in place for a minimum period of 7 days after the concrete has been placed, except that for members over 20 inches in least dimension the forms shall remain in place for a minimum period of 5 days.

Joints in the forms and the joints between the end of forms and concrete shall be kept moisture tight during the curing period. Cracks in the forms and cracks between the forms and the concrete shall be resealed by methods subject to the approval of the Engineer.

90-7.02 BLANK

90-7.03 CURING STRUCTURES

Newly placed concrete for cast-in-place structures, other than highway bridge decks, shall be cured by the water method, the forms-in-place method, or, as permitted herein, by the curing compound method, in conformance with the provisions in Section 90-7.01, "Methods of Curing."

The curing compound method using a pigmented curing compound may be used on concrete surfaces of construction joints, surfaces that are to be buried underground, and surfaces where only ordinary surface finish is to be applied and on which a uniform color is not required and that will not be visible from a public traveled way. If the Contractor elects to use the curing compound method on the bottom slab of box girder spans, the curing compound shall be curing compound (1).

The top surface of highway bridge decks shall be cured by both the curing compound method and the water method. The curing compound shall be curing compound (1).

Concrete surfaces of minor structures, as defined in Section 51-1.02, "Minor Structures," shall be cured by the water method, the forms-in-place method or the curing compound method.

When deemed necessary by the Engineer during periods of hot weather, water shall be applied to concrete surfaces being cured by the curing compound method or by the forms-in-place method, until the Engineer determines that a cooling effect is no longer required. Application of water for this purpose will be paid for as extra work as provided in Section 4-1.03D, "Extra Work."

90-7.04 CURING PRECAST CONCRETE MEMBERS

Precast concrete members shall be cured in conformance with any of the methods specified in Section 90-7.01, "Methods of Curing." Curing shall be provided for the minimum time specified for each method or until the concrete reaches its design strength, whichever is less. Steam curing may also be used for precast members and shall conform to the following provisions:

A. After placement of the concrete, members shall be held for a minimum 4-hour presteaming period. If the ambient air temperature is below 50 °F, steam shall be applied during the presteaming period to hold the air surrounding the member at a temperature between 50 °F and 90 °F.
B. To prevent moisture loss on exposed surfaces during the presteaming period, members shall be covered as soon as possible after casting or the exposed surfaces shall be kept wet by fog spray or wet blankets.
C. Enclosures for steam curing shall allow free circulation of steam about the member and shall be constructed to contain the live steam with a minimum moisture loss. The use of tarpaulins or similar flexible covers will be permitted, provided they are kept in good repair and secured in such a manner as to prevent the loss of steam and moisture.
D. Steam at the jets shall be at low pressure and in a saturated condition. Steam jets shall not impinge directly on the concrete, test cylinders, or forms. During application of the steam, the temperature rise within the enclosure shall not exceed 40 °F per hour. The curing temperature throughout the enclosure shall not exceed 150 °F and shall be maintained at a constant level for a sufficient time necessary to develop the required transfer strength. Control cylinders shall be covered to prevent moisture loss and shall be placed in a location where temperature is representative of the average temperature of the enclosure.
E. Temperature recording devices that will provide an accurate, continuous, permanent record of the curing temperature shall be provided. A minimum of one temperature recording device per 200 feet of continuous bed length will be required for checking temperature.
F. Members in pretension beds shall be detensioned immediately after the termination of steam curing while the concrete and forms are still warm, or the temperature under the enclosure shall be maintained above 60 °F until the stress is transferred to the concrete.
G. Curing of precast concrete will be considered completed after termination of the steam curing cycle.

90-7.05 CURING PRECAST PRESTRESSED CONCRETE PILES

Newly placed concrete for precast prestressed concrete piles shall be cured in conformance with the provisions in Section 90-7.04, "Curing Precast Concrete Members," except that piles in a corrosive environment shall be cured as follows:

A. Piles shall be either steam cured or water cured. If water curing is used, the piles shall be kept continuously wet by the application of water in conformance with the provisions in Section 90-7.01A, "Water Method."

B. If steam curing is used, the steam curing provisions in Section 90-7.04, "Curing Precast Concrete Members," shall apply except that the piles shall be kept continuously wet for their entire length for a period of not less than 3 days, including the holding and steam curing periods.

90-7.06 CURING SLOPE PROTECTION

Concrete slope protection shall be cured in conformance with any of the methods specified in Section 90-7.01, "Methods of Curing."

Concreted-rock slope protection shall be cured in conformance with any of the methods specified in Section 90-7.01, "Methods of Curing," with a blanket of earth kept wet for 72 hours, or by sprinkling with a fine spray of water every 2 hours during the daytime for a period of 3 days.

90-7.07 CURING MISCELLANEOUS CONCRETE WORK

Exposed surfaces of curbs shall be cured by pigmented curing compounds as specified in Section 90-7.01B, "Curing Compound Method."

Concrete sidewalks, gutter depressions, island paving, curb ramps, driveways, and other miscellaneous concrete areas shall be cured in conformance with any of the methods specified in Section 90-7.01, "Methods of Curing."

Shotcrete shall be cured for at least 72 hours by spraying with water, by a moist earth blanket, or by any of the methods provided in Section 90-7.01, "Methods of Curing."

Mortar and grout shall be cured by keeping the surface damp for 3 days.

After placing, the exposed surfaces of sign structure foundations, including pedestal portions, if constructed, shall be cured for at least 72 hours by spraying with water, by a moist earth blanket, or by any of the methods provided in Section 90-7.01, "Methods of Curing."

90-8 PROTECTING CONCRETE

90-8.01 GENERAL

In addition to the provisions in Section 7-1.16, "Contractor's Responsibility for the Work and Materials," the Contractor shall protect concrete as provided in this Section 90-8. If required by the Engineer, the Contractor shall submit a written outline of the proposed methods for protecting the concrete.

The Contractor shall protect concrete from damage from any cause, which shall include, but not be limited to: rain, heat, cold, wind, Contractor's actions, and actions of others.

Concrete shall not be placed on frozen or ice-coated ground or subgrade nor on ice-coated forms, reinforcing steel, structural steel, conduits, precast members, or construction joints.

Under rainy conditions, placing of concrete shall be stopped before the quantity of surface water is sufficient to damage surface mortar or cause a flow or wash of the concrete surface, unless the Contractor provides adequate protection against damage.

Concrete that has been frozen or damaged by other causes, as determined by the Engineer, shall be removed and replaced by the Contractor at the Contractor's expense.

90-8.02 PROTECTING CONCRETE STRUCTURES

Structure concrete and shotcrete used as structure concrete shall be maintained at a temperature of not less than 45 °F for 72 hours after placing and at not less than 40 °F for an additional 4 days.

90-9 COMPRESSIVE STRENGTH

90-9.01 GENERAL

Concrete compressive strength requirements consist of a minimum strength that shall be attained before various loads or stresses are applied to the concrete and, for concrete designated by compressive strength, a minimum strength at the age of 28 days or at the age otherwise allowed in Section 90-1.01, "Description." The various strengths required are specified in these specifications or the special provisions or are shown on the plans.

The compressive strength of concrete will be determined from test cylinders that have been fabricated from concrete sampled in conformance with the requirements of California Test 539. Test cylinders will be molded and initially field cured in conformance with California Test 540. Test cylinders will be cured and tested after receipt at the testing laboratory in conformance with the requirements of California Test 521. A strength test shall consist of the average strength of 2 cylinders fabricated from material taken from a single load of concrete, except that, if any cylinder should show evidence of improper sampling, molding, or testing, that cylinder shall be discarded and the strength test shall consist of the strength of the remaining cylinder.

When concrete compressive strength is specified as a prerequisite to applying loads or stresses to a concrete structure or member, test cylinders for other than steam cured concrete will be cured in conformance with Method 1

of California Test 540. The compressive strength of concrete determined for these purposes will be evaluated on the basis of individual tests.

When concrete is designated by compressive strength rather than by cementitious material content, the concrete strength to be used as a basis for acceptance of other than steam cured concrete will be determined from cylinders cured in conformance with Method 1 of California Test 540. If the result of a single compressive strength test at the maximum age specified or allowed is below the specified strength but is 95 percent or more of the specified strength, the Contractor shall make corrective changes, subject to approval of the Engineer, in the mix proportions or in the concrete fabrication procedures, before placing additional concrete, and shall pay to the State $10 for each in-place cubic yard of concrete represented by the deficient test. If the result of a single compressive strength test at the maximum age specified or allowed is below 95 percent of the specified strength, but is 85 percent or more of the specified strength, the Contractor shall make the corrective changes specified above, and shall pay to the State $15 for each in-place cubic yard of concrete represented by the deficient test. In addition, such corrective changes shall be made when the compressive strength of concrete tested at 7 days indicates, in the judgment of the Engineer, that the concrete will not attain the required compressive strength at the maximum age specified or allowed. Concrete represented by a single test that indicates a compressive strength of less than 85 percent of the specified 28-day compressive strength will be rejected in conformance with the provisions in Section 6-1.04, "Defective Materials."

If the test result indicates that the compressive strength at the maximum age specified or allowed is below the specified strength, but is 85 percent or more of the specified strength, payments to the State as required above shall be made, unless the Contractor, at the Contractor's expense, obtains and submits evidence acceptable to the Engineer that the strength of the concrete placed in the work meets or exceeds the specified 28-day compressive strength. If the test result indicates a compressive strength at the maximum age specified or allowed below 85 percent, the concrete represented by that test will be rejected, unless the Contractor, at the Contractor's expense, obtains and submits evidence acceptable to the Engineer that the strength of the concrete placed in the work is at least 85 percent of the specified strength. If the evidence consists of tests made on cores taken from the work, the cores shall be obtained and tested in conformance with the requirements in ASTM Designation: C 42.

No single compressive strength test shall represent more than 320 cubic yards.

If a precast concrete member is steam cured, the compressive strength of the concrete will be determined from test cylinders that have been handled and stored in conformance with Method 3 of California Test 540. The compressive strength of steam cured concrete will be evaluated on the basis of individual tests representing specific portions of production. If the concrete is designated by 28-day compressive strength rather than by cementitious material content, the concrete shall be considered to be acceptable whenever its compressive strength reaches the specified 28-day compressive strength provided that strength is reached in not more than the maximum number of days specified or allowed after the member is cast.

When concrete has a specified 28-day compressive strength greater than 3,600 pounds per square inch or when prequalification is specified, prequalification of materials, mix proportions, mixing equipment, and procedures proposed for use will be required prior to placement of the concrete. Prequalification shall be accomplished by the submission of acceptable certified test data or trial batch reports by the Contractor. Prequalification data shall be based on the use of materials, mix proportions, mixing equipment, procedures, and size of batch proposed for use in the work.

Certified test data, in order to be acceptable, shall indicate that not less than 90 percent of at least 20 consecutive tests exceed the specified strength at the maximum number of days specified or allowed, and none of those tests are less than 95 percent of specified strength. Strength tests included in the data shall be the most recent tests made on concrete of the proposed mix design and all shall have been made within one year of the proposed use of the concrete.

Trial batch test reports, in order to be acceptable, shall indicate that the average compressive strength of 5 consecutive concrete cylinders, taken from a single batch, at not more than 28 days (or the maximum age allowed) after molding shall be at least 600 pounds per square inch greater than the specified 28-day compressive strength, and no individual cylinder shall have a strength less than the specified strength at the maximum age specified or allowed. Data contained in the report shall be from trial batches that were produced within one year of the proposed use of specified strength concrete in the project. Whenever air-entrainment is required, the air content of trial batches shall be equal to or greater than the air content specified for the concrete without reduction due to tolerances.

Tests shall be performed in conformance with either the appropriate California Test methods or the comparable ASTM test methods. Equipment employed in testing shall be in good condition and shall be properly calibrated. If the tests are performed during the life of the contract, the Engineer shall be notified sufficiently in advance of performing the tests in order to witness the test procedures.

The certified test data and trial batch test reports shall include the following information:

A. Date of mixing.
B. Mixing equipment and procedures used.
C. The size of batch in cubic yards and the weight, type, and source of all ingredients used.
D. Penetration or slump (if the concrete will be placed under water or placed in cast-in-place concrete piles) of the concrete.
E. The air content of the concrete if an air-entraining admixture is used.
F. The age at time of testing and strength of all concrete cylinders tested.

Certified test data and trial batch test reports shall be signed by an official of the firm that performed the tests.

When approved by the Engineer, concrete from trial batches may be used in the work at locations where concrete of a lower quality is required and the concrete will be paid for as the type of concrete required at that location.

After materials, mix proportions, mixing equipment, and procedures for concrete have been prequalified for use, additional prequalification by testing of trial batches will be required prior to making changes that, in the judgment of the Engineer, could result in a strength of concrete below that specified.

The Contractor's attention is directed to the time required to test trial batches and the Contractor shall be responsible for production of trial batches at a sufficiently early date so that the progress of the work is not delayed.

When precast concrete members are manufactured at the plant of an established manufacturer of precast concrete members, the mix proportions of the concrete shall be determined by the Contractor, and a trial batch and prequalification of the materials, mix proportions, mixing equipment, and procedures will not be required.

90-10 MINOR CONCRETE

90-10.01 GENERAL

Concrete for minor structures, slope paving, curbs, sidewalks and other concrete work, when designated as minor concrete on the plans, in the specifications, or in the contract item, shall conform to the provisions specified herein.

The Engineer, at the Engineer's discretion, will inspect and test the facilities, materials and methods for producing the concrete to ensure that minor concrete of the quality suitable for use in the work is obtained.

Before using minor concrete or in advance of revising the mix proportions, the Contractor shall submit in writing to the Engineer a copy of the mix design. When required by the following table, the Contractor shall include compressive strength test results verifying the minimum specified compressive strength:

SCM	Test Submittal Required
Fly Ash used alone	When portland cement content<350 lbs/cy
GGBFS used alone	When portland cement content <250 lbs/cy
Natural Pozzolan used alone	When portland cement content <350 lbs/cy
More than 1 SCM	Always

Tests shall be performed by an ACI certified technician.

90-10.02 MATERIALS

Minor concrete shall conform to the following requirements:

90-10.02A Cementitious Material

Cementitious material shall conform to the provisions in Section 90-1.01, "Description," and 90-2, "Materials."

90-10.02B Aggregate

Aggregate shall be clean and free from deleterious coatings, clay balls, roots, and other extraneous materials.

Use of crushed concrete or reclaimed aggregate is acceptable only if the aggregate satisfies all aggregate requirements.

The Contractor shall submit to the Engineer for approval, a grading of the combined aggregate proposed for use in the minor concrete. After acceptance of the grading, aggregate furnished for minor concrete shall conform to that grading, unless a change is authorized in writing by the Engineer.

The Engineer may require the Contractor to furnish periodic test reports of the aggregate grading furnished. The maximum size of aggregate used shall be at the option of the Contractor, but in no case shall the maximum size be larger than 1-1/2-inch or smaller than 3/4 inch.

The Engineer may waive, in writing, the gradation requirements in this Section 90-10.02B, if, in the Engineer's opinion, the furnishing of the gradation is not necessary for the type or amount of concrete work to be constructed.

90-10.02C Water

Water used for washing, mixing, and curing shall be free from oil, salts, and other impurities that would discolor or etch the surface or have an adverse affect on the quality of the concrete.

90-10.02D Admixtures

The use of admixtures shall conform to the provisions in Section 90-4, "Admixtures."

90-10.03 PRODUCTION

Cementitious material, water, aggregate, and admixtures shall be stored, proportioned, mixed, transported, and discharged in conformance with recognized standards of good practice that will result in concrete that is thoroughly and uniformly mixed, that is suitable for the use intended, and that conforms to requirements specified herein. Recognized standards of good practice are outlined in various industry publications such as are issued by American Concrete Institute, AASHTO, or the Department.

The cementitious material content of minor concrete shall conform to the provisions in Section 90-1.01, "Description."

The amount of water used shall result in a consistency of concrete conforming to the provisions in Section 90-6.06, "Amount of Water and Penetration." Additional mixing water shall not be incorporated into the concrete during hauling or after arrival at the delivery point, unless allowed by the Engineer.

Discharge of ready-mixed concrete from the transporting vehicle shall be made while the concrete is still plastic and before stiffening occurs. An elapsed time of 1.5 hours (one hour in non-agitating hauling equipment), or more than 250 revolutions of the drum or blades, after the introduction of the cementitious material to the aggregates, or a temperature of concrete of more than 90 °F will be considered conditions contributing to the quick stiffening of concrete. The Contractor shall take whatever action is necessary to eliminate quick stiffening, except that the addition of water will not be permitted.

The required mixing time in stationary mixers shall be not less than 50 seconds or more than 5 minutes.

The minimum required revolutions at mixing speed for transit-mixed concrete shall be not less than that recommended by the mixer manufacturer, and shall be increased, if necessary, to produce thoroughly and uniformly mixed concrete.

When a high range water-reducing admixture is added to the concrete at the job site, the total number of revolutions shall not exceed 300.

Each load of ready-mixed concrete shall be accompanied by a weighmaster certificate that shall be delivered to the Engineer at the discharge location of the concrete, unless otherwise directed by the Engineer. The weighmaster certificate shall be clearly marked with the date and time of day when the load left the batching plant and, if hauled in truck mixers or agitators, the time the mixing cycle started.

A Certificate of Compliance conforming to the provisions in Section 6-1.07, "Certificates of Compliance," shall be furnished to the Engineer, prior to placing minor concrete from a source not previously used on the contract, stating that minor concrete to be furnished meets contract requirements, including minimum cementitious material content specified.

90-10.04 CURING MINOR CONCRETE

Curing minor concrete shall conform to the provisions in Section 90-7, "Curing Concrete."

90-10.05 PROTECTING MINOR CONCRETE

Protecting minor concrete shall conform to the provisions in Section 90-8, "Protecting Concrete," except the concrete shall be maintained at a temperature of not less than 40 °F for 72 hours after placing.

90-10.06 MEASUREMENT AND PAYMENT

Minor concrete will be measured and paid for in conformance with the provisions specified in the various sections of these specifications covering concrete construction when minor concrete is specified in the specifications, shown on the plans, or indicated by contract item in the Engineer's Estimate.

90-11 MEASUREMENT AND PAYMENT

90-11.01 MEASUREMENT

Portland cement concrete will be measured in conformance with the provisions specified in the various sections of these specifications covering construction requiring concrete.

For concrete measured at the mixer, the volume in cubic feet shall be computed as the total weight of the batch in pounds divided by the density of the concrete in pounds per cubic foot. The total weight of the batch shall be calculated as the sum of all materials, including water, entering the batch. The density of the concrete will be determined in conformance with the requirements in California Test 518.

90-11.02 PAYMENT

Portland cement concrete will be paid for in conformance with the provisions specified in the various sections of these specifications covering construction requiring concrete.

Full compensation for furnishing and incorporating admixtures required by these specifications or the special provisions will be considered as included in the contract prices paid for the concrete involved and no additional compensation will be allowed therefor.

Should the Engineer order the Contractor to incorporate any admixtures in the concrete when their use is not required by these specifications or the special provisions, furnishing the admixtures and adding them to the concrete will be paid for as extra work as provided in Section 4-1.03D, "Extra Work."

Should the Contractor use admixtures in conformance with the provisions in Section 90-4.05, "Optional Use of Chemical Admixtures," or Section 90-4.07, "Optional Use of Air-entraining Admixtures," or should the Contractor request and obtain permission to use other admixtures for the Contractor's benefit, the Contractor shall furnish those admixtures and incorporate them into the concrete at the Contractor's expense and no additional compensation will be allowed therefor.

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SECTION 91 PAINT

(Issued 05-1-06)

Replace Section 91-3 with:

91-3 PAINTS FOR TIMBER

91-3.01 WOOD PRIMER, LATEX-BASE

Classification:

This specification covers a ready-mixed priming paint for use on unpainted wood or exterior woodwork. It shall conform with the requirements in the Detailed Performance Standards of the Master Painters Institute (MPI) for exterior wood primers, and be listed on the Exterior Latex Wood Primer MPI List Number 6.

91-3.02 PAINT; LATEX-BASE FOR EXTERIOR WOOD, WHITE AND TINTS

Classification:

This specification covers a ready-mixed paint for use on wood surfaces subject to outside exposures. This paint shall conform to the requirements in the Detailed Performance Standards of the Master Painters Institute (MPI) for Paint, Latex, Exterior, and shall be listed on the following MPI Approved Products List:

A. Exterior Latex, Flat MPI Gloss Level 1, MPI List Number 10.
B. Exterior Latex, Semi-Gloss, MPI Gloss Level 5, MPI List Number 11.
C. Exterior Latex, Gloss, MPI Gloss Level 6, MPI List Number 119.

Unpainted wood shall first be primed with wood primer conforming to the provisions in Section 91-3.01, "Wood Primer, Latex-Base."

Replace Section 91-4 with:

91-4 MISCELLANEOUS PAINTS

91-4.01 THROUGH 91-4.04 (BLANK)

91-4.05 PAINT; ACRYLIC EMULSION, EXTERIOR WHITE AND LIGHT AND MEDIUM TINTS

Classification:

This specification covers an acrylic emulsion paint designed for use on exterior masonry. This paint shall conform to the requirements in the Detailed Performance Standards of the Master Painters Institute (MPI) for Paint, Latex, Exterior, and shall be listed on the following MPI Approved Products Lists:

A. Exterior Latex, Flat MPI Gloss Level 1, MPI List Number 10.
B. Exterior Latex, Semi-Gloss, MPI Gloss Level 5, MPI List Number 11.
C. Exterior Latex, Gloss, MPI Gloss Level 6, MPI List Number 119.

This paint may be tinted by using "universal" or "all purpose" concentrates.

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SECTION 92 ASPHALTS
(Issued 01-20-12)

Replace Section 92 with:

SECTION 92 ASPHALTS

92-1.01 DESCRIPTION

Asphalt is refined petroleum or a mixture of refined liquid asphalt and refined solid asphalt that are prepared from crude petroleum. Asphalt is:

1. Free from residues caused by the artificial distillation of coal, coal tar, or paraffin
2. Free from water
3. Homogeneous

92-1.02 MATERIALS

GENERAL

Furnish asphalt under the Department's "Certification Program for Suppliers of Asphalt." The Department maintains the program requirements, procedures, and a list of approved suppliers at:

http://www.dot.ca.gov/hq/esc/Translab/fpm/fpmcoc.htm

Transport, store, use, and dispose of asphalt safely.

Prevent the formation of carbonized particles caused by overheating asphalt during manufacturing or construction.

GRADES

Performance graded (PG) asphalt binder is:

Performance Graded Asphalt Binder

Property	AASHTO Test Method	Specification Grade PG 58-22 [a]	PG 64-10	PG 64-16	PG 64-28	PG 70-10
Original Binder						
Flash Point, Minimum °C	T 48	230	230	230	230	230
Solubility, Minimum % [b]	T 44	99	99	99	99	99
Viscosity at 135°C, [c]	T 316					
Maximum, Pa·s		3.0	3.0	3.0	3.0	3.0
Dynamic Shear,	T 315					
Test Temp. at 10 rad/s, °C		58	64	64	64	70
Minimum G*/sin(delta), kPa		1.00	1.00	1.00	1.00	1.00
Maximum G*/sin(delta), kPa		2.00	2.00	2.00	2.00	2.00
RTFO Test, [e]	T 240					
Mass Loss, Maximum, %		1.00	1.00	1.00	1.00	1.00
RTFO Test Aged Binder						
Dynamic Shear,	T 315					
Test Temp. at 10 rad/s, °C		58	64	64	64	70
Minimum G*/sin(delta), kPa		2.20	2.20	2.20	2.20	2.20
Ductility at 25°C	T 51					
Minimum, cm		75	75	75	75	75
PAV [f] Aging,	R 28					
Temperature, °C		100	100	100	100	110
RTFO Test and PAV Aged Binder						
Dynamic Shear,	T 315					
Test Temp. at 10 rad/s, °C		22 [d]	31 [d]	28 [d]	22 [d]	34 [d]
Maximum G*sin(delta), kPa		5000	5000	5000	5000	5000
Creep Stiffness,	T 313					
Test Temperature, °C		-12	0	-6	-18	0
Maximum S-value, Mpa		300	300	300	300	300
Minimum M-value		0.300	0.300	0.300	0.300	0.300

Notes:

a. Use as asphalt rubber base stock for high mountain and high desert area.

b. The Engineer waives this specification if the supplier is a Quality Supplier as defined by the Department's "Certification Program for Suppliers of Asphalt."

c. The Engineer waives this specification if the supplier certifies the asphalt binder can be adequately pumped and mixed at temperatures meeting applicable safety standards.

d. Test the sample at 3°C higher if it fails at the specified test temperature. G*sin(delta) remains 5000 kPa maximum.

e. "RTFO Test" means the asphaltic residue obtained using the Rolling Thin Film Oven Test, AASHTO Test Method T 240 or ASTM Designation: D 2872. The residue from mass change determination may be used for other tests.

f. "PAV" means Pressurized Aging Vessel.

Performance graded polymer modified asphalt binder (PG Polymer Modified) is:

Performance Graded Polymer Modified Asphalt Binder [a]

Property	AASHTO Test Method	Specification Grade		
		PG 58-34 PM	PG 64-28 PM	PG 76-22 PM
Original Binder				
Flash Point, Minimum °C	T 48	230	230	230
Solubility, Minimum % [b]	T 44[c]	98.5	98.5	98.5
Viscosity at 135°C, [d]	T 316			
Maximum, Pa·s		3.0	3.0	3.0
Dynamic Shear,	T 315			
Test Temp. at 10 rad/s, °C		58	64	76
Minimum G*/sin(delta), kPa		1.00	1.00	1.00
RTFO Test ,	T 240			
Mass Loss, Maximum, %		1.00	1.00	1.00
RTFO Test Aged Binder				
Dynamic Shear,	T 315			
Test Temp. at 10 rad/s, °C		58	64	76
Minimum G*/sin(delta), kPa		2.20	2.20	2.20
Dynamic Shear,	T 315			
Test Temp. at 10 rad/s, °C		Note e	Note e	Note e
Maximum (delta), %		80	80	80
Elastic Recovery[f],	T 301			
Test Temp., °C		25	25	25
Minimum recovery, %		75	75	65
PAV[g] Aging,	R 28			
Temperature, °C		100	100	110
RTFO Test and PAV Aged Binder				
Dynamic Shear,	T 315			
Test Temp. at 10 rad/s, °C		16	22	31
Maximum G*sin(delta), kPa		5000	5000	5000
Creep Stiffness,	T 313			
Test Temperature, °C		-24	-18	-12
Maximum S-value, MPa		300	300	300
Minimum M-value		0.300	0.300	0.300

Notes:

a. Do not modify PG Polymer Modified using acid modification.

b. The Engineer waives this specification if the supplier is a Quality Supplier as defined by the Department's "Certification Program for Suppliers of Asphalt."

c. The Department allows ASTM D 5546 instead of AASHTO T 44

d. The Engineer waives this specification if the supplier certifies the asphalt binder can be adequately pumped and mixed at temperatures meeting applicable safety standards.

e. Test temperature is the temperature at which G*/sin(delta) is 2.2 kPa. A graph of log G*/sin(delta) plotted against temperature may be used to determine the test temperature when G*/sin(delta) is 2.2 kPa. A graph of (delta) versus temperature may be used to determine delta at the temperature when G*/sin(delta) is 2.2 kPa. The Engineer also accepts direct measurement of (delta) at the temperature when G*/sin(delta) is 2.2 kPa.

f. Tests without a force ductility clamp may be performed.

g. "PAV" means Pressurized Aging Vessel.

SAMPLING

Provide a sampling device in the asphalt feed line connecting the plant storage tanks to the asphalt weighing system or spray bar. Make the sampling device accessible between 24 and 30 inches above the platform. Provide a receptacle for flushing the sampling device.

Include with the sampling device a valve:

1. Between 1/2 and 3/4 inch in diameter
2. Manufactured in a manner that a one-quart sample may be taken slowly at any time during plant operations
3. Maintained in good condition

Replace failed valves.

In the Engineer's presence, take 2 one-quart samples per operating day. Provide round, friction top, one-quart containers for storing samples.

92-1.03 EXECUTION

If asphalt is applied, you must comply with the heating and application specifications for liquid asphalt in Section 93, "Liquid Asphalts."

92-1.04 MEASUREMENT

If the contract work item for asphalt is paid by weight, the Department measures asphalt tons by complying with the specifications for weight determination of liquid asphalt in Section 93, "Liquid Asphalts."

The Engineer determines the asphalt weight from volumetric measurements if you:

1. Use a partial asphalt load
2. Use asphalt at a location other than a mixing plant and no scales within 20 miles are available and suitable
3. Deliver asphalt in either of the following:

    3.1. A calibrated truck with each tank accompanied by its measuring stick and calibration card
    3.2. A truck equipped with a calibrated thermometer that determines the asphalt temperature at the delivery time and with a vehicle tank meter complying with the specifications for weighing, measuring, and metering devices in Section 9-1.01, "Measurement of Quantities"

If you furnish hot mix asphalt from a mixing plant producing material for only one project, the Engineer determines the asphalt quantity by measuring the volume in the tank at the project's start and end provided the tank is calibrated and equipped with its measuring stick and calibration card.

The Engineer determines pay quantities from volumetric measurements as follows:

1. Before converting the volume to weight, the Engineer reduces the measured volume to that which the asphalt would occupy at 60 °F.
2. The Engineer uses 235 gallons per ton and 8.51 pounds per gallon for the average weight and volume for PG and PG Polymer Modified asphalt grades at 60 °F.
3. The Engineer uses the Conversion Table in Section 93, "Liquid Asphalts."

^^

SECTION 93 LIQUID ASPHALTS
(Issued 11-03-06)

In Section 93-1.04 replace the 9th paragraph with:

The following Legend and Conversion Table is to be used for converting volumes of liquid asphalt products, Grades 70 to 3000, inclusive, and paving asphalt Grades PG 58-22, PG 64-10, PG 64-16, PG 64-28, and PG 70-10, and Grades PG 58-34 PM, PG 64-28 PM, and PG 76-22 PM.

^^

SECTION 95 EPOXY
(Issued 06-05-09)

Replace the table in Section 95-2.11 with:

Characteristics of Adhesive:

Test[a]	California Test	Requirement
Brookfield Viscosity, No. 3 Spindle at 20 rpm, Poise at 77°F	434, Part 4	0.9 max.
Gel time, minutes	434, Part 1	2 to 15
Slant Shear Strength on Dry Concrete, psi, after 4 days of cure in air at 77° F ±2° F	434, Part 5[b]	3,000 min.
Slant Shear Strength on Wet Concrete, psi, after 4 days of cure in air at 77° F ±2° F	434, Part 5[b]	1,700 min.
Tensile Strength, psi	434, Part 7, except test after 4 days of cure at 77° F ±2° F	4,500 min.
Elongation, %	434, Part 7, except test after 4 days of cure at 77° F ±2° F	10 max.

[a] The mixing ratio used will be that recommended by the manufacturer.

[b] For slant shear strength on concrete, delete Sections B-1 and B-5 of California Test 434, Part 5. For dry concrete, use Step "2" below only. For wet concrete, use both Steps "1" & "2":

1. Soak blocks in water for 24 hours at 77° F ±2° F. Remove and wipe off excess water.
2. Mix epoxy as described in California Test 434, Part 1, and apply a coat approximately 0.010-inch thick to each diagonal surface. Place four 0.125-inch square pieces of shim stock 0.012-inch thick on one block to control final film thickness. Before pressing the coated surfaces together, leave the blocks so that the coated surfaces are horizontal until the epoxy reacts slightly to prevent excessive flow.

W.M. Lyles. Co.
Proposal

BID BOOK

Waterworks District 38
Wastewater Treatment Facility Improvements

CLEAN WATER STATE REVOLVING FUND PROJECT NUMBER: C-06-7109-110

BUDGET / ACCOUNT: 0890 / 8400

Department of Public Works and Planning

CONTRACT NUMBER: 18-08-C
COPY NUMBER:

BID BOOK TABLE OF CONTENTS

Waterworks District 38
Wastewater Treatment Facility Improvements

CONTRACT NUMBER: 18-08-C

PROPOSAL NUMBER	TITLE
NOT APPLICABLE	INSTRUCTIONS FOR COMPLETING THE BID BOOK
1	PROPOSAL TO THE BOARD OF SUPERVISORS OF THE COUNTY OF FRESNO
2	BID ITEM LIST/BID SHEET
3	EVALUATION OF BID PROPOSAL SHEETS
4	BID SECURITY
5	NONCOLLUSION AFFIDAVIT
6	PUBLIC CONTRACT CODE SECTION 10285.1 STATEMENT
7	PUBLIC CONTRACT CODE SECTION 10162 QUESTIONNAIRE AND PUBLIC CONTRACT CODE 10232 STATEMENT
8(A) – 8(D)	SUBCONTRACTORS
9	CERTIFICATION WITH REGARD TO THE PERFORMANCE OF PREVIOUS CONTRACTS OR SUBCONTRACTS SUBJECT TO THE EQUAL OPPORTUNITY CLAUSE AND THE FILING OF REQUIRED REPORTS
10	TITLE 40, CODE OF FEDERAL REGULATIONS, PART 32 DEBARMENT AND SUSPENSION CERTIFICATION
11	NONLOBBYING CERTIFICATION FOR FEDERAL-AID CONTRACTS
12(A) – 12(B)	DISCLOSURE OF LOBBYING ACTIVITIES
13(A) – 13(B)	EXHIBIT 15-G LOCAL AGENCY BIDDER DBE COMMITMENT (CONSTRUCTION CONTRACTS)
14(A) – 14(C)	EXHIBIT 15-H DBE INFORMATION — GOOD FAITH EFFORTS
15	OPT OUT OF PAYMENT ADJUSTMENTS FOR PRICE INDEX FLUCTUATIONS
16	GUARANTY
17	GUIDELINES FOR MEETING THE CALIFORNIA STATE REVOLVING FUND PROGRAMS DISADVANTAGED BUSINESS ENTERPRISE REQUIREMENTS

INSTRUCTIONS FOR COMPLETING THE BID BOOK FOR FEDERAL AID PROJECTS

General

Complete forms in the *Bid* book.

Submit your bid:

1. Under sealed cover
2. Marked as a bid
3. Identifying the contract number and the bid opening date

Certain bid forms must be submitted with the bid and properly executed.

Certain other forms and information must be submitted either with the bid or within the prescribed period after bid opening as specified elsewhere in these special provisions.

Failure to submit the forms and information as specified results in a nonresponsive bid.

If an agent other than the authorized corporation officer or a partnership member signs the bid, file a Power of Attorney with the Department either before opening bids or with the bid. Otherwise, the bid may be nonresponsive.

Bid Item List and Bid Comparison

Submit a bid based on the bid item quantities the Department shows on the Bid Item List. Bids will be evaluated and the low bidder determined as indicated in the *Notice to Bidders*.

Bid Document Completion

Proposal sheets are identified by title and by the letter "P" followed by the number assigned to the proposal sheet in question. Proposal sheets are included in the *Bid Book*.

Proposal 1 - Proposal to the Board of Supervisors of Fresno County

Provided for information.

Proposal 2 - Bid Proposal Sheet

One or more sheet(s) upon which the bidder completes the bid.

Fill out completely including a unit price and total for each unit price-based item and a total for each lump sum item.

Do not make any additions such as "plus tax", "plus freight", or conditions such as "less 2% if paid by 15th".

Use ink or typewriter.

Proposal 3 - Evaluation of Bid Proposal Sheet

Describes how inconsistences and irregularities are evaluated and corrected when Design Services reviews the Bid Item List.

Proposal 4 - Bid Security and Signature

Submit one of the following forms of bidder's security equal to at least 10 percent of the bid:

- Cash
- Cashier's check
- Certified check
- Signed bidder's bond by an admitted surety insurer

Indicate type of bid security provided.

- Cash – Acceptable but not recommended. Cash is deposited in a clearing account and is returned to bidders by County warrant. This process may take several weeks.
- Cashier's or Certified Checks. This type of security is held until the bid is no longer under consideration. If submitted by a potential awardee, they will be returned when the contract is fully executed by the bidder and bonds and insurance have been approved.
- Bid Bonds - Must be signed by the bidder and by the attorney-in-fact for the bonding company. Provide notarized signature of attorney-in-fact accompanied by bonding company's affidavit authorizing attorney-in-fact to execute bonds. An unsigned bid bond will be cause for rejection.

Acknowledge Addenda

Provide contractor's license information.

State business name and if business is a:

- Corporation - list officers
- Partnership - list partners
- Joint Venture - list members; if members are corporations or partnerships, list their officers or partners.
- Individual - list Owner's name and firm name style

Signature of Bidder - the following lists types of companies and corresponding authorized signers.

- Corporation - by an officer
- Partnership - by a partner
- Joint Venture - by a member
- Individual - by the Owner

If signature is by a Branch Manager, Estimator, Agent, etc., the bid must be accompanied by a power of attorney authorizing the individual to sign the bid in question or to sign bids more generally, otherwise the bid may be rejected.

- Business Address - Firm's Street Address
- Mailing Address - P.O. Box or Street Address
- Complete, sign, and return with bid.

Proposal 5 - Noncollusion Affidavit

Must be completed, signed, and returned with bid.

Proposal 6 - Public Contract Code Section 10285.1 Statement

Check "has" or "has not" in accordance with instructions on form, return with completed for with bid. Note that signing the bid constitutes signing this statement.

Proposal 7 - Public Contract Code Section 10162 Questionnaire And Public Contract Code 10232 Statement

Check: "yes" or "no" accordance with instructions on form, include explanation if "yes" is checked. Return completed form with bid. Note that signing the bid constitutes signing this questionnaire and statement.

Proposal 8(a) through Proposal 8(f) - Subcontractors

Sheet(s) upon which bidders list subcontractors. List each subcontractor to perform work in an amount in excess of 1/2 of 1 percent of the total bid or $10,000, whichever is greater (Pub Cont Code § 4100 et seq.).

The *Subcontractor List* submitted with the bid must show the name, location of business, work portions to be performed, and the contractor's license number for each subcontractor listed.

- Use subcontractor's business name style as registered with the License Board.
- Specify the city in which the subcontractor's business is located and the state if other than California.

- Description of the work to be performed by the subcontractor. Indicate with bid item numbers from the bid sheet and/or work descriptions similar to those on bid sheet.
- List license number for each subcontractror.

Upon request from Design Services, provide the following additional information within 24 hours of bid opening if not included on the *Subcontractor List* submitted with the bid:

- Complete physical address for each subcontractor listed.
- Percentage of the total bid or dollar amount associated with each subcontractor listed.
- Department of Industrial Relations registration number

Proposal 9 - *Certification With Regard To The Performance Of Previous Contracts Or Subcontracts Subject To The Equal Opportunity Clause And The Filing Of Required Reports*

For a Federal-aid contract, complete, sign, and return with bid.

Proposal 10 - *Title 49, Code Of Federal Regulations, Part 29 Debarment And Suspension Certification*

For a Federal-aid contract, complete, sign, and return with bid.

Proposal 11 - *Nonlobbying Certification For Federal-Aid Contracts*

For a Federal-aid contract, complete, sign, and return with bid.

Proposal 12(a) through Proposal 12(b) - *Disclosure Of Lobbying Activities*

For a Federal-aid contract, complete, sign, and return with bid.

Proposal 13 - *Not used*

Proposal 14(a) through propsoal 14(c) - *Exhibit 15-H DBE Information — Good Faith Efforts*

For a Federal-aid contract, the apparent low, second-low, and third-low bidders must complete and submit so that it is received by Design Services no later than 4:00 PM on the fourth business day after the bid opening if not submitted with the bid.

Proposal 15 - *Not used*

Proposal 16 - *Guaranty*

Does not need to be signed with the bid. Part of the contract which must be signed by the contractor when contract is executed.

Proposal 17 - Guidelines for Meeting the California State Revolving Fund Programs Disadvantaged Business Enterprise Requirements

Instructions and Forms required by the Federal and State agencies financing the project, together with instructions for their completion. To be completed and submitted per the instructions.

PROPOSAL TO THE BOARD OF SUPERVISORS OF THE COUNTY OF FRESNO

hereinafter called the Owner

WATERWORKS DISTRICT 38
Wastewater Treatment Facility Improvements

Clean Water State Revolving Fund
Project No. C-06-7109-110

The work embraced herein shall be done in accordance with the 2006 Standard Specifications and with the 2006 Standard Plans, of the State of California, Department of Transportation insofar as the same may apply and in accordance with these special provisions.

Except to the extent that they may conflict with these special provisions, revised Standard Specifications apply to the extent included in the section entitled "Project Details" of the book entitled "Specifications."

The work to be done is shown on a set of Plans, Department File No. 11267, entitled: "WATERWORKS DISTRICT 38 – SKY HARBOR-MILLERTON LAKE WASTEWATER TREATMENT FACILTY IMPROVEMENTS."

The undersigned, as bidder, declares that the only persons, or parties interested in this proposal as principals are those named herein, that this proposal is made without collusion with any other person, firm or corporation; that he has carefully examined the location of the proposed work, the annexed proposed form of contract, and the plans therein referred to; and he proposes and agrees if this proposal is accepted, that he will contract with the Owner to provide all necessary machinery, tools, apparatus and other means of construction, and to do all the work and furnish all the materials specified in the contract in the manner and time therein prescribed, and according to the requirements of the Engineer as therein set forth, and that he will take in full payment therefor the following unit prices, to-wit:

W.M. Lyles Co.
#1-low bidder

COUNTY OF FRESNO
DEPARTMENT OF PUBLIC WORKS AND PLANNING
PROJECT: WWD 38 - WASTEWATER TREATMENT FACILITY IMPROVEMENTS
CWSRF PROJECT NUMBER: C-06-7109-110

ITEM No.	QUANTITY	F/P/S	UNIT OF	ITEM	ITEM PRICE	TOTAL PRICE
1	1		EA	CONSTRUCTION PROJECT INFORMATION SIGN	2,050.00	2,050.00
2	1		LS	PREPARE WATER POLLUTION CONTROL PROGRAM	LS	1,080.00
3	1		LS	WATER POLLUTION CONTROL	LS	6,950.00
4	1		LS	CONSTRUCTION SITE MANAGEMENT	LS	21,690.00
5	1	S	LS	TRAFFIC CONTROL SYSTEM	LS	2,160.00
6	1		LS	CLEARING AND GRUBBING	LS	3,170.00
7	1		LS	MOBILIZATION	LS	16,200.00
8	1		LS	MISCELLANEOUS FACILITIES AND OPERATIONS	LS	21,530.00
9	1		LS	SUBMERSIBLE JET AERATOR	LS	20,900.00
10	1		LS	SUBMERSIBLE MIXER	LS	30,680.00
11	1		LS	CHAIN AND SCRAPER SLUDGE COLLECTOR UNIT	LS	127,390.00
12	1		LS	EFFLUENT PUMPS	LS	80,630.00
13	1		LS	AERATION BASIN EQUIPMENT REMOVAL AND CLEANING	LS	18,110.00
14	60		LF	CRACK REPAIR UNIT COST	160.00	9,600.00
15	1		LS	SEPTIC WASTE REMOVAL	LS	28,080.00
16	1	S	LS	ELECTRICAL	LS	223,280.00
17	1		LS	FINISH PROJECT SITE	LS	3,570.00
TOTAL						617,070.00

EVALUATION OF BID PROPOSAL SHEETS

Abbreviations used in the bid proposal sheet are identified in Section 1-1.06, "Abbreviations," of these special provisions.

Bids are required for the entire work. Bids will be compared on the basis indicated in the Notice to Bidders. The bidder shall set forth for each unit basis item of work a unit price and a total for the item, and for each lump sum item a total for the item, all in clearly legible figures in the respective spaces provided for that purpose. In the case of unit basis items, the amount set forth under the "Item Total" column shall be the product of the unit price bid and the estimated quantity for the item.

In case of discrepancy between the unit price and the total set forth for a unit basis item, the unit price shall prevail, except as provided in (a) or (b), as follows:

(a) If the amount set forth as a unit price is unreadable or otherwise unclear, or is omitted, or is the same as the amount as the entry in the item total column, then the amount set forth in the item total column for the item shall prevail and shall be divided by the estimated quantity for the item and the price thus obtained shall be the unit price;

(b) (Decimal Errors) If the product of the entered unit price and the estimated quantity is exactly off by a factor of ten, one hundred, etc., or one-tenth, or one-hundredth, etc. from the entered total, the discrepancy will be resolved by using the entered unit price or item total, whichever most closely approximates percentage-wise the unit price or item total in the Owner's Final Estimate of cost.

If both the unit price and the item total are unreadable or otherwise unclear, or are omitted, the bid may be deemed irregular. Likewise if the item total for a lump sum item is unreadable or otherwise unclear, or is omitted, the bid may be deemed irregular unless the project being bid has only a single item and a clear, readable total bid is provided.

Symbols such as commas and dollar signs will be ignored and have no mathematical significance in establishing any unit price or item total or lump sums. Written unit prices, item totals and lump sums will be interpreted according to the number of digits and, if applicable, decimal placement. Cents symbols also have no significance in establishing any unit price or item total since all figures are assumed to be expressed in dollars and/or decimal fractions of a dollar. Bids on lump sum items shall be item totals only; if any unit price for a lump sum item is included in a bid and it differs from the item total, the items total shall prevail.

The foregoing provisions for the resolution of specific irregularities cannot be so comprehensive as to cover every omission, inconsistency, error or other irregularity which may occur in a bid. Any situation not specifically provided for will be determined in the discretion of the Owner , and that discretion will be exercised in the manner deemed by the Owner to best protect the public interest in the prompt and economical completion of the work. The decision of the Owner respecting the amount of a bid, or the existence or treatment of an irregularity in a bid, shall be final.

If this proposal shall be accepted and the undersigned shall fail to contract, as aforesaid, and to give the two bonds in the sums to be determined as aforesaid, with surety satisfactory to the Owner, within eight (8) days not including Saturdays, Sundays and legal holidays, after the bidder has received notice of award of the contract, the Owner, at its option, may determine that the bidder has abandoned the contract, and thereupon this proposal and the acceptance thereof shall be null and void, and the forfeiture of such security accompanying this proposal shall operate and the same shall be the property of the Owner.

Accompanying this proposal is security (check one only) in amount equal to at least ten percent (10%) of the total amount of the bid:

Bid Bond (X); Certified Check ( ); Cashier's Check ( ); Cash ($)

Bidder has and acknowledges the following addenda: 1, 2

The names of all persons interested in the foregoing proposal as principals are as follows:

IMPORTANT NOTICE: If bidder or other interested person is a corporation, state legal name of corporation, also names of the president, secretary, treasurer and manager thereof; if a co-partnership, state true name of firm, also names of all individual co-partners composing firm; if bidder or other interested person is an individual, state first and last name in full.

FIRM NAME W. M. Lyles Co., a California Corporation

David B. Dawson - President/Treasurer/Manager

Kevin R. Shigematsu - Asst. Vice President

Ruben Moreno, Jr. - Secretary

Licensed in accordance with an act providing for the registration of Contractors,
Class A, B License No. 422390 Expires 5/31/2020

(Furnishing Contractor License information as part of this proposal is optional and is requested to facilitate verification of licensure)

W. M. Lyles Co.

Signature of Bidder — Dated 8/1/18

Kevin R. Shigematsu, Asst. Vice President

NOTE: If bidder is a corporation, the legal name of the corporation shall be set forth above together with the signature of the officer or officers authorized to sign contracts on behalf of the corporation; if bidder is a co-partnership, the true name of the firm shall be set forth above together with the signature of the partner or partners authorized to sign contracts on behalf of the co-partnership; and if bidder is an individual, his signature shall be placed above. If signature is by an agent, other than an officer of a corporation or a member of a partnership, a Power of Attorney must be on file with the Owner prior to opening bids or submitted with the bid; otherwise, the bid will be disregarded as irregular and unauthorized.

BUSINESS ADDRESS: 1210 W. Olive Avenue, Fresno, CA 93728
Zip Code

MAILING ADDRESS: P.O. Box 4377, Fresno, CA 93744
Zip Code

BUSINESS PHONE: (559) 441-1900 FAX NUMBER: (559) 487-7949

EMAIL ADDRESS kshigematsu@wmlylesco.com

Proposal 4
Contract Number 18-08-C

CWSRF PROJECT NUMBER C-06-7109-110

To the Board of Supervisors, County of Fresno:

NONCOLLUSION AFFIDAVIT

TO BE EXECUTED BY BIDDER AND SUBMITTED WITH BID *

Kevin R. Shigematsu
(Printed or Typed Name)

being first duly sworn, deposes and says that he or she is

Asst. Vice President
(Owner, Partner, Corporate Officer (list title), Co-Venturer)

of W. M. Lyles Co.
(Bidding Entity)

In accordance with Title 23 United States Code Section 112 and Public Contract Code 7106 the bidder declares that the bid is not made in the interest of, or on behalf of, any undisclosed person, partnership, company, association, organization, or corporation; that the bid is genuine and not collusive or sham; that the bidder has not directly or indirectly induced or solicited any other bidder to put in a false or sham bid, and has not directly or indirectly colluded, conspired, connived, or agreed with any bidder or anyone else to put in a sham bid, or that anyone shall refrain from bidding; that the bidder has not in any manner, directly or indirectly, sought by agreement, communication, or conference with anyone to fix the bid price of the bidder or any other bidder, or to fix any overhead, profit, or cost element of the bid price, or of that of any other bidder, or to secure any advantage against the public body awarding the contract of anyone interested in the proposed contract; that all statements contained in the bid are true; and, further, that the bidder has not, directly or indirectly, submitted his or her bid price or any breakdown thereof, or the contents thereof, or divulged information or data relative thereto, or paid, and will not pay, any fee to any corporation, partnership, company association, organization, bid depository, or to any member or agent thereof to effectuate a collusive or sham bid.

(Signature) Kevin R. Shigematsu, Asst. Vice President

8/1/18
(Dated)

(Title 23 United States Code Section 112)

(Calif Public Contract Code Section 7106; Stats.1988, c. 1548, Section 1.)

* NOTE: Completing, signing, and returning the Noncollusion Affidavit is a required part of the Proposal. Bidders are cautioned that making a false certification may subject the certifier to criminal prosecution.

Proposal 5
Contract Number 18-08-C

CALIFORNIA JURAT WITH AFFIANT STATEMENT **GOVERNMENT CODE § 8202**

☒ See Attached Document (Notary to cross out lines 1–6 below)
☐ See Statement Below (Lines 1–6 to be completed only by document signer[s], *not* Notary)

1
2
3
4
5
6

Signature of Document Signer No. 1 *Signature of Document Signer No. 2 (if any)*

A notary public or other officer completing this certificate verifies only the identity of the individual who signed the document to which this certificate is attached, and not the truthfulness, accuracy, or validity of that document.

State of California
County of Kern

Subscribed and sworn to (or affirmed) before me on this 1st day of August, 2018,
Date *Month* *Year*
by
(1) Kevin R. Shigematsu
~~(and (2)~~),
Name(s) of Signer(s)

proved to me on the basis of satisfactory evidence to be the person(s) who appeared before me.

CHANEL L.A. PRINCE
Commission # 2081062
Notary Public - California
Kern County
My Comm. Expires Sep 8, 2018

Signature Chanel Prince
Signature of Notary Public

Seal
Place Notary Seal Above

OPTIONAL

Though this section is optional, completing this information can deter alteration of the document or fraudulent reattachment of this form to an unintended document.

Description of Attached Document
Title or Type of Document: Non-Collusion Affidavit / Declaration: The County of Fresno - Department of Public Works & Planning: Waterworks District 38 Wastewater Treatment Facility Improvements **Document Date:** 08/01/18
Number of Pages: One **Signer(s) Other Than Named Above:** None

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PUBLIC CONTRACT CODE

Public Contract Code Section 10285.1 Statement

In conformance with Public Contract Code Section 10285.1 (Chapter 376, Stats. 1985), the bidder hereby declares under penalty of perjury under the laws of the State of California that the bidder has ___ , has not X___been convicted within the preceding three years of any offenses referred to in that section, including any charge of fraud, bribery, collusion, conspiracy, or any other act in violation of any state or Federal antitrust law in connection with the bidding upon, award of, or performance of, any public works contract, as defined in Public Contract Code Section 1101, with any public entity, as defined in Public Contract Code Section 1100, including the Regents of the University of California or the Trustees of the California State University. The term "bidder" is understood to include any partner, member, officer, director, responsible managing officer, or responsible managing employee thereof, as referred to in Section 10285.1.

Note: The bidder must place a check mark after "has" or "has not" in one of the blank spaces provided. The above Statement is part of the Bid. Signing this Bid on the signature portion thereof shall also constitute signature of this Statement. Bidders are cautioned that making a false certification may subject the certifier to criminal prosecution.

Public Contract Code Section 10162 Questionnaire

In conformance with Public Contract Code Section 10162, the Bidder shall complete, under penalty of perjury, the following questionnaire:

Has the bidder, any officer of the bidder, or any employee of the bidder who has a proprietary interest in the bidder, ever been disqualified, removed, or otherwise prevented from bidding on, or completing a federal, state, or local government project because of a violation of law or a safety regulation?

Yes _____ No X

If the answer is yes, explain the circumstances in the following space.

Public Contract Code 10232 Statement

In conformance with Public Contract Code Section 10232, the Contractor, hereby states under penalty of perjury, that no more than one final unappealable finding of contempt of court by a federal court has been issued against the Contractor within the immediately preceding two year period because of the Contractor's failure to comply with an order of a federal court which orders the Contractor to comply with an order of the National Labor Relations Board.

Note: The above Statement and Questionnaire are part of the Bid. Signing this Bid on the signature portion thereof shall also constitute signature of this Statement and Questionnaire.

Bidders are cautioned that making a false certification may subject the certifier to criminal prosecution.

BIDDER: W. M. Lyles Co.

SUBCONTRACTORS:

The following named subcontractor(s) will perform with labor, or otherwise render services to the general contractor in or about the construction of the work or improvement. Please fill out as completely as possible when submitting your bid. Use subcontractor's business name style as registered with the License Board. Submission of subcontractor's name, location of business and description of work, and their contractor's license number is REQUIRED, by Section 4104 of the California Public Contract Code, to be submitted prior to bid opening. (The "location of business" must specify the city in which the subcontractor's business is located, and the state if other than California.) All other requested information shall be submitted, either with the bid or within 24 hours after bid opening.

Please fill out as completely as possible when submitting your bid. Use subcontractor's business name style as registered with the License Board.

FAILURE TO LIST SUBCONTRACTORS AS DIRECTED MAY RENDER THE BID NON-RESPONSIVE, OR MAY RESULT IN ASSESSMENT OF A PENALTY AGAINST THE BIDDER IN ACCORDANCE WITH SECTION 4110 OF THE CALIFORNIA PUBLIC CONTRACT CODE.

SUBCONTRACTOR: A-C Electric

Business Address: 2560 S. East Ave., Fresno, CA 93706

Class C 10 License No. 99849 DIR Registration No. 1000000365

Item No. or Description of Work: Electrical

Dollar Amount or Percentage of Total Bid 30%

Email Address mikewolfe@a-celectric.com

SUBCONTRACTOR: _____

Business Address: _____

Class _____ License No. _____ DIR Registration No. _____

Item No. or Description of Work: _____

Dollar Amount or Percentage of Total Bid _____

Email Address _____

BIDDER: W. M. Lyles Co.

SUBCONTRACTOR: _____

Business Address: _____

Class _____ License No. _____ DIR Registration No. _____

Item No. or Description of Work: _____

Dollar Amount or Percentage of Total Bid _____

Email Address _____

SUBCONTRACTOR: _____

Business Address: _____

Class _____ License No. _____ DIR Registration No. _____

Item No. or Description of Work: _____

Dollar Amount or Percentage of Total Bid _____

Email Address _____

SUBCONTRACTOR: _____

Business Address: _____

Class _____ License No. _____ DIR Registration No. _____

Item No. or Description of Work: _____

Dollar Amount or Percentage of Total Bid _____

Email Address _____

SUBCONTRACTOR: _____

Business Address: _____

Class _____ License No. _____ DIR Registration No. _____

Item No. or Description of Work: _____

Dollar Amount or Percentage of Total Bid _____

Email Address _____

BIDDER: W. M. Lyles Co.

SUBCONTRACTOR: _____

Business Address: _____

Class _____ License No. _____ DIR Registration No. _____

Item No. or Description of Work: _____

Dollar Amount or Percentage of Total Bid _____

Email Address _____

SUBCONTRACTOR: _____

Business Address: _____

Class _____ License No. _____ DIR Registration No. _____

Item No. or Description of Work: _____

Dollar Amount or Percentage of Total Bid _____

Email Address _____

SUBCONTRACTOR: _____

Business Address: _____

Class _____ License No. _____ DIR Registration No. _____

Item No. or Description of Work: _____

Dollar Amount or Percentage of Total Bid _____

Email Address _____

SUBCONTRACTOR: _____

Business Address: _____

Class _____ License No. _____ DIR Registration No. _____

Item No. or Description of Work: _____

Dollar Amount or Percentage of Total Bid _____

Email Address _____

SUBCONTRACTOR: _____

Business Address: _____

Class _____ License No. _____ DIR Registration No. _____

Item No. or Description of Work: _____

Dollar Amount or Percentage of Total Bid _____

Email Address _____

BIDDER: W. M. Lyles Co.

SUBCONTRACTOR: _____

Business Address: _____

Class _____ License No. _____ DIR Registration No. _____

Item No. or Description of Work: _____

Dollar Amount or Percentage of Total Bid _____

Email Address _____

SUBCONTRACTOR: _____

Business Address: _____

Class _____ License No. _____ DIR Registration No. _____

Item No. or Description of Work: _____

Dollar Amount or Percentage of Total Bid _____

Email Address _____

SUBCONTRACTOR: _____

Business Address: _____

Class _____ License No. _____ DIR Registration No. _____

Item No. or Description of Work: _____

Dollar Amount or Percentage of Total Bid _____

Email Address _____

SUBCONTRACTOR: _____

Business Address: _____

Class _____ License No. _____ DIR Registration No. _____

Item No. or Description of Work: _____

Dollar Amount or Percentage of Total Bid _____

Email Address _____

SUBCONTRACTOR: _____

Business Address: _____

Class _____ License No. _____ DIR Registration No. _____

Item No. or Description of Work: _____

Dollar Amount or Percentage of Total Bid _____

Email Address _____

BIDDER: W. M. Lyles Co.

SUBCONTRACTOR: _____

Business Address: _____

Class _____ License No. _____ DIR Registration No. _____

Item No. or Description of Work: _____

Dollar Amount or Percentage of Total Bid _____

Email Address _____

SUBCONTRACTOR: _____

Business Address: _____

Class _____ License No. _____ DIR Registration No. _____

Item No. or Description of Work: _____

Dollar Amount or Percentage of Total Bid _____

Email Address _____

SUBCONTRACTOR: _____

Business Address: _____

Class _____ License No. _____ DIR Registration No. _____

Item No. or Description of Work: _____

Dollar Amount or Percentage of Total Bid _____

Email Address _____

SUBCONTRACTOR: _____

Business Address: _____

Class _____ License No. _____ DIR Registration No. _____

Item No. or Description of Work: _____

Dollar Amount or Percentage of Total Bid _____

Email Address _____

BIDDER: W. M. Lyles Co.

SUBCONTRACTOR: _____

Business Address: _____

Class _____ License No. _____ DIR Registration No. _____

Item No. or Description of Work: _____

Dollar Amount or Percentage of Total Bid _____

Email Address _____

SUBCONTRACTOR: _____

Business Address: _____

Class _____ License No. _____ DIR Registration No. _____

Item No. or Description of Work: _____

Dollar Amount or Percentage of Total Bid _____

Email Address _____

SUBCONTRACTOR: _____

Business Address: _____

Class _____ License No. _____ DIR Registration No. _____

Item No. or Description of Work: _____

Dollar Amount or Percentage of Total Bid _____

Email Address _____

SUBCONTRACTOR: _____

Business Address: _____

Class _____ License No. _____ DIR Registration No. _____

Item No. or Description of Work: _____

Dollar Amount or Percentage of Total Bid _____

Email Address _____

CERTIFICATION WITH REGARD TO THE PERFORMANCE OF PREVIOUS CONTRACTS OR SUBCONTRACTS SUBJECT TO THE EQUAL OPPORTUNITY CLAUSE AND THE FILING OF REQUIRED REPORTS.

The bidder X, proposed subcontractor __, hereby certifies that he has X, has not __, participated in a previous contract or subcontract subject to the equal opportunity clause, as required by Executive Orders 10925, 11114, or 11246, and that he has X, has not __, filed with the Joint Reporting Committee, the Director of the Office of Federal Contract Compliance, a Federal Government contracting or administering agency, or the former President's Committee on Equal Employment Opportunity, all reports due under the applicable filing requirements.

W. M. Lyles Co.
(Company)

By: K Shig
Kevin R. Shigematsu

Asst. Vice President
(Title)

Date: 8/1/18

NOTE: The above certification is required by the Equal Employment Opportunity Regulations of the Secretary of Labor (41 CFR 60-1.7(b) (1), and must be submitted by bidders and proposed subcontractors only in connection with contracts and subcontracts which are subject to the equal opportunity clause. Contracts and subcontracts which are exempt from the equal opportunity clause are set forth in 41 CFR 60-1.5. (Generally only contracts or subcontracts of $10,000 or under are exempt.)

Currently, Standard Form 100 (EEO-1) is the only report required by the Executive Orders or their implementing regulations.

Proposed prime contractors and subcontractors who have participated in a previous contract or subcontract subject to the Executive Orders and have not filed the required reports should note that 41 CFR 60-1.7(b) (1) prevents the award of contracts and subcontracts unless such contractor submits a report covering the delinquent period or such other period specified by the Director, Office of Federal Contract Compliance, U. S. Department of Labor.

TITLE 40, CODE OF FEDERAL REGULATIONS, PART 32
DEBARMENT AND SUSPENSION CERTIFICATION

Certification Regarding Debarment, Suspension, and Other Responsibility Matters

CLEAN WATER STATE REVOLVING FUND PROJECT NUMBER: C-06-7109-110

The prospective participant certifies to the best of its knowledge and belief that it and its principals:

(a) Are not presently debarred, suspended, proposed for debarment, declared ineligible, or voluntarily excluded from covered transactions by any Federal department or agency;

(b) Have not within a three year period preceding this proposal been convicted of or had a civil judgement rendered against them for commission of fraud or a criminal offense in connection with obtaining, attempting to obtain, or performing a public (Federal, State, or local) transaction or contract under a public transaction; violation of Federal or State antitrust statutes or commission of embezzlement, theft, forgery, falsification or destruction of records, making false statements, or receiving stolen property;

(c) Are not presently indicted for or otherwise criminally or civilly charged by a government entity (Federal, State, or local) with commission of any of the offenses enumerated in paragraph (1)(b) of this certification; and

(d) Have not within a three-year period preceding this application/proposal had one or more public transactions (Federal, State, or local) terminated for cause or default.

I understand that a false statement on this certification may be grounds for rejection of this proposal or termination of the award. In addition, under 18 USC Sec. 1001, a false statement may result in a fine of up to $10,000 or imprisonment for up to 5 years, or both.

W. M. Lyles Co.

Kevin R. Shigematsu, Asst. Vice President — 6/1/18

Name & Title of Authorized Representative — Date

Signature of Authorized Representative

☐ I am unable to certify to the above statements. My explanation is attached.

Proposal 10
Contract Number 18-08-C

NONLOBBYING CERTIFICATION FOR FEDERAL-AID CONTRACTS

The prospective participant certifies, by signing and submitting this bid or proposal, to the best of his or her knowledge and belief, that:

(1) No Federal appropriated funds have been paid or will be paid, by or on behalf of the undersigned, to any person for influencing or attempting to influence an officer or employee of any Federal agency, a Member of Congress, an officer or employee of Congress, or an employee of a Member of Congress in connection with awarding of any cooperative agreement, and the extension, continuation, renewal, amendment, or modification of any Federal contract, grant, loan, or cooperative agreement.

(2) If any funds other than Federal appropriated funds have been paid or will be paid to any person for influencing or attempting to influence an officer of any Federal agency, a Member of Congress, an officer or employee of Congress, or an employee of a Member of Congress in connection with this Federal contract, grant, loan, or cooperative agreement, the undersigned shall complete and submit Standard Form-LLL, "Disclosure of Lobbying Activities," in accordance with its instructions.

(3) The undersigned shall require that the language of this certification shall be included in the award documents for all subawards at all tiers (including subcontracts, subgrants, and contract under grants, loans, and cooperative agreements) and that all subrecipients shall certify and disclose accordingly.

This certification is a material representation of fact upon which reliance was placed when this transaction was made or entered into. Submission of this certification is a prerequisite for making or entering into this transaction imposed by Section 1352, Title 31, U.S. Code. Any person who fails to file the required certification shall be subject to a civil penalty of not less than $10,000 and not more than $100,000 for each such failure.

The prospective participant also agrees by submitting his or her bid or proposal that he or she shall require that the language of this certification be included in all lower tier subcontracts, which exceed $100,000 and that all such subrecipients shall certify and disclose accordingly.

Bidder: W. M. Lyles Co.

By: _____
Kevin R. Shigematsu

Date: 8/1/18

Title: Asst. Vice President

Proposal 11
Contract Number 18-08-C

approved by OMB
0348-0046

Disclosure of Lobbying Activities

Complete this form to disclose lobbying activities pursuant to 31 U.S.C. 1352
(See reverse for public burden disclosure)

1. **Type of Federal Action:** a. contract a b. grant c. cooperative agreement d. loan e. loan guarantee f. loan insurance	2. **Status of Federal Action:** a. bid/offer/application a b. initial award c. post-award	3. **Report Type:** N/A a. initial filing _____ b. material change **For material change only:** Year _____ quarter _____ Date of last report_____

4. **Name and Address of Reporting Entity:** X Prime _____ Subawardee Tier_____, if Known: W. M. Lyles Co. P.O. Box 4377 Fresno, CA 93744 **Congressional District,** *if known*:	5. **If Reporting Entity in No. 4 is Subawardee,** Enter Name and Address of Prime: N/A **Congressional District,** *if known*:
6. **Federal Department/Agency:** N/A	7. **Federal Program Name/Description:** N/A CFDA Number, *if applicable*: _____
8. **Federal Action Number,** *if known:* N/A	9. **Award Amount,** *if known:* $ N/A
10. a. **Name and Address of Lobbying Registrant** *(if individual, last name, first name, MI):* N/A	b. **Individuals Performing Services** *(including address if different from No. 10a)* *(last name, first name, MI):* N/A
11. Information requested through this form is authorized by title 31 U.S.C. section 1352. This disclosure of lobbying activities is a material representation of fact upon which reliance was placed by the tier above when this transaction was made or entered into. This disclosure is required pursuant to 31 U.S.C. 1352. This information will be reported to the Congress semi-annually and will be available for public inspection. Any person who fails to file the required disclosure shall be subject to a civil penalty of not less than $10,000 and not more than $100,000 for each such failure.	W. M. Lyles Co. **Signature:** K R Shigematsu **Print Name:** Kevin R. Shigematsu **Title:** Asst. Vice President **Telephone No.:** (559) 441-1900 **Date:** 8/1/18
Federal Use Only	**Authorized for Local Reproduction** **Standard Form - LLL (Rev. 7-97)**

Proposal 12(a)
Contract Number: 18-08-C

INSTRUCTIONS FOR COMPLETION OF SF-LLL, DISCLOSURE OF LOBBYING ACTIVITIES

This disclosure form shall be completed by the reporting entity, whether subawardee or prime Federal recipient, at the initiation or receipt of a covered Federal action, or a material change to a previous filing, pursuant to title 31 U.S.C. section 1352. The filing of a form is required for each payment or agreement to make payment to any lobbying entity for influencing or attempting to influence an officer or employee of any agency, a Member of Congress, an officer or employee of Congress, or an employee of a Member of Congress in connection with a covered Federal action. Complete all items that apply for both the initial filing and material change report. Refer to the implementing guidance published by the Office of Management and Budget for additional information.

1. Identify the type of covered Federal action for which lobbying activity is and/or has been secured to influence the outcome of a covered Federal action.

2. Identify the status of the covered Federal action.

3. Identify the appropriate classification of this report. If this is a followup report caused by a material change to the information previously reported, enter the year and quarter in which the change occurred. Enter the date of the last previously submitted report by this reporting entity for this covered Federal action.

4. Enter the full name, address, city, State and zip code of the reporting entity. Include Congressional District, if known. Check the appropriate classification of the reporting entity that designates if it is, or expects to be, a prime or subaward recipient. Identify the tier of the subawardee, e.g., the first subawardee of the prime is the 1st tier. Subawards include but are not limited to subcontracts, subgrants and contract awards under grants.

5. If the organization filing the report in item 4 checks "Subawardee," then enter the full name, address, city, State and zip code of the prime Federal recipient. Include Congressional District, if known.

6. Enter the name of the federal agency making the award or loan commitment. Include at least one organizational level below agency name, if known. For example, Department of Transportation, United States Coast Guard.

7. Enter the Federal program name or description for the covered Federal action (item 1). If known, enter the full Catalog of Federal Domestic Assistance (CFDA) number for grants, cooperative agreements, loans, and loan commitments.

8. Enter the most appropriate Federal identifying number available for the Federal action identified in item 1 (e.g., Request for Proposal (RFP) number; Invitations for Bid (IFB) number; grant announcement number; the contract, grant, or loan award number; the application/proposal control number assigned by the Federal agency). Included prefixes, e.g., "RFP-DE-90-001."

9. For a covered Federal action where there has been an award or loan commitment by the Federal agency, enter the Federal amount of the award/loan commitment for the prime entity identified in item 4 or 5.

10. (a) Enter the full name, address, city, State and zip code of the lobbying registrant under the Lobbying Disclosure Act of 1995 engaged by the reporting entity identified in item 4 to influence the covered Federal action.

    (b) Enter the full names of the individual(s) performing services, and include full address if different from 10(a). Enter Last Name, First Name, and Middle Initial (MI).

11. The certifying official shall sign and date the form, print his/her name, title, and telephone number.

According to the Paperwork Reduction Act, as amended, no persons are required to respond to a collection of information unless it displays a valid OMB control Number. The valid OMB control number for this information collection is OMB No. 0348-0046. Public reporting burden for this collection of information is estimated to average 10 minutes per response, including time for reviewing instructions, searching existing data sources, gathering and maintaining the data needed, and completing and reviewing the collection of information. Send comments regarding the burden estimate or any other aspect of this collection of information, including suggestions for reducing this burden, to the Office of Management and Budget, Paperwork Reduction Project (0348-0046), Washington, DC 20503

DBE INFORMATION - GOOD FAITH EFFORTS

Federal-aid Project No. _____ Bid Opening Date _____

The _____(City/County of)_____established a Disadvantaged Business Enterprise (DBE) goal of _____% for this project. The information provided herein shows that a good faith effort was made.

Lowest, second lowest and third lowest bidders shall submit the following information to document adequate good faith efforts. Bidders should submit the following information even if the "Local Agency Bidder DBE Commitment" form indicates that the bidder has met the DBE goal. This will protect the bidder's eligibility for award of the contract if the administering agency determines that the bidder failed to meet the goal for various reasons, e.g., a DBE firm was not certified at bid opening, or the bidder made a mathematical error.

The following items are listed in the Section entitled "Submission of DBE Commitment" of the Special Provisions:

A. The names and dates of each publication in which a request for DBE participation for this project was placed by the bidder (please attach copies of advertisements or proofs of publication):

Publications	Dates of Advertisement

B. The names and dates of written notices sent to certified DBEs soliciting bids for this project and the dates and methods used for following up initial solicitations to determine with certainty whether the DBEs were interested (please attach copies of solicitations, telephone records, fax confirmations, etc.):

Names of DBEs Solicited	Date of Initial Solicitation	Follow Up Methods and Dates

C. The items of work which the bidder made available to DBE firms including, where appropriate, any breaking down of the contract work items (including those items normally performed by the bidder with its own forces) into economically feasible units to facilitate DBE participation. It is the bidder's responsibility to demonstrate that sufficient work to facilitate DBE participation was made available to DBE firms.

Items of Work	Bidder Normally Performs Item (Y/N)	Breakdown of Items	Amount ($)	Percentage Of Contract

D. The names, addresses and phone numbers of rejected DBE firms, the reasons for the bidder's rejection of the DBEs, the firms selected for that work (please attach copies of quotes from the firms involved), and the price difference for each DBE if the selected firm is not a DBE:

Names, addresses and phone numbers of rejected DBEs and the reasons for the bidder's rejection of the DBEs:

_____
_____
_____
_____

Names, addresses and phone numbers of firms selected for the work above:

_____
_____
_____
_____

E. Efforts made to assist interested DBEs in obtaining bonding, lines of credit or insurance, and any technical assistance or information related to the plans, specifications and requirements for the work which was provided to DBEs:

_____
_____
_____
_____

F. Efforts made to assist interested DBEs in obtaining necessary equipment, supplies, materials or related assistance or services, excluding supplies and equipment the DBE subcontractor purchases or leases from the prime contractor or its affiliate:

_____

_____

_____

_____

_____

G. The names of agencies, organizations or groups contacted to provide assistance in contacting, recruiting and using DBE firms (please attach copies of requests to agencies and any responses received, i.e., lists, Internet page download, etc.):

Name of Agency/Organization	Method/Date of Contact	Results

H. Any additional data to support a demonstration of good faith efforts (use additional sheets if necessary):

_____

_____

NOTE: USE ADDITIONAL SHEETS OF PAPER IF NECESSARY.

(This guaranty shall be executed by the successful bidder in accordance with instructions in the special provisions. The bidder may execute the guaranty on this page at the time of submitting his bid.)

GUARANTY

To the Owner: County of Fresno

Waterworks District 38
Wastewater Treatment Facility Improvements

CONTRACT NUMBER: 18-08-C

The undersigned guarantees the construction and installation of the following work included in this project:

ALL WORK

Should any of the materials or equipment prove defective or should the work as a whole prove defective, due to faulty workmanship, material furnished or methods of installation, or should the work or any part thereof fail to operate properly as originally intended and in accordance with the plans and specifications, due to any of the above causes, all within twelve (12) months after date on which this contract is accepted by the Owner, the undersigned agrees to reimburse the Owner, upon demand, for its expenses incurred in restoring said work to the condition contemplated in said project, including the cost of any such equipment or materials replaced and the cost of removing and replacing any other work necessary to make such replacement or repairs, or, upon demand by the Owner, to replace any such material and to repair said work completely without cost to the Owner so that said work will function successfully as originally contemplated.

The Owner shall have the unqualified option to make any needed replacement or repairs itself or to have such replacements or repairs done by the undersigned. In the event the Owner elects to have said work performed by the undersigned, the undersigned agrees that the repairs shall be made and such materials as are necessary shall be furnished and installed within a reasonable time after the receipt of demand from the Owner.

Name (Printed): Kevin R. Shigematsu

Signature: _____

Title: Asst. Vice President

Date: 1/8/19

Contractor: W. M. Lyles Co.

California State Water Resources Control Board
Division of Financial Assistance
1001 I Street • Sacramento, California 95814 • (916) 341-5700 FAX (916) 341-5707
Mailing Address: P. O. Box 944212 • Sacramento, California • 94244-2120
Internet Address: http://www.waterboards.ca.gov

Guidelines for Meeting the California State Revolving Fund (CASRF) Programs (Clean Water and Drinking Water SRF) Disadvantaged Business Enterprise Requirements

The Disadvantaged Business Enterprise (DBE) Program is an outreach, education, and objectives program designed to increase the participation of DBEs in the Clean Water State Revolving Fund (CWSRF) and Drinking Water State Revolving Fund (DWSRF) Programs.

How to Achieve the Purpose of the Program

Recipients of CWSRF/DWSRF financing that are subject to the DBE requirements (recipients) are required to seek, and are encouraged to use, DBEs for their procurement needs. Recipients should award a "fair share" of sub-agreements to DBEs. This applies to all sub-agreements for equipment, supplies, construction, and services.

The key functional components of the DBE Program are as follows:

- Fair Share Objectives
- DBE Certification
- Six Good Faith Efforts
- Contract Administration Requirements
- DBE Reporting

Disadvantaged Business Enterprises are:

- Entities owned and/or controlled by socially and economically disadvantaged individuals as described by Title X of the Clean Air Act Amendments of 1990 (42 U.S.C. 7601 note) (10% statute), and Public Law 102-389 (42 U.S.C. 4370d) (8% statute), respectively;
- Minority Business Enterprise (MBE) - entities that are at least 51% owned and/or controlled by a socially and economically disadvantaged individual as described by Title X of the Clean Air Act Amendments of 1990 (42 U.S.C. 7601 note), and Public Law 102-389 (42 U.S.C. 4370d), respectively;
- Women Business Enterprise (WBE) - entities that are at least 51% owned and/or controlled by women;
- Small Business Enterprise (SBE);
- Small Business in a Rural Area (SBRA);
- Labor Surplus Area Firm (LSAF); or
- Historically Underutilized Business (HUB) Zone Small Business Concern or a concern under a successor program.

Certifying DBE Firms:

Under the DBE Program, entities can no longer self-certify and contractors and sub-contractors must be certified at bid opening. Contractors and sub-contractors must provide to the CASRF recipient proof of DBE certification. Certifications will be accepted from the following:

- The U.S. Environmental Protection Agency (USEPA)
- The Small Business Administration(SBA)
- The Department of Transportation's State implemented DBE Certification Program (with U.S. citizenship)
- Tribal, State and Local governments
- Independent private organization certifications

If an entity holds one of these certifications, it is considered acceptable for establishing status under the DBE Program.

Six Good Faith Efforts (GFE)

All CWSRF/DWSRF financing recipients are required to complete and ensure that the prime contractor complies with the GFE below to ensure that DBEs have the opportunity to compete for financial assistance dollars.

1. Ensure DBEs are made aware of contracting opportunities to the fullest extent practical through outreach and recruitment activities. For Tribal, State and Local Government Recipients, this will include placing DBEs on solicitation lists and soliciting them whenever they are potential sources.
2. Make information on forthcoming opportunities available to DBEs. Posting solicitations for bids or proposals for a minimum of 30 calendar days in a local newspaper, before the bid opening date.
3. Consider in the contracting process whether firms competing for large contracts could subcontract with DBEs.
4. Encourage contracting with a group of DBEs when a contract is too large for one firm to handle individually.
5. Use the services of the SBA **and/or** Minority Business Development Agency (MBDA) of the US Department of Commerce.
6. If the prime contractor awards subcontracts, require the prime contractor to take the above steps.

The forms listed in the table below and attached to these guidelines; must be completed and submitted with the GFE:

FORM NUMBER	FORM NAME	REQUIREMENT	PROVIDED BY	COMPLETED BY	SUBMITTED TO
SWRCB Form 4500-2 or EPA Form	DBE Sub-Contractor Participation Form	As Needed to Report Issues	Recipient	Sub-contractor	EPA DBE Coordinator
SWRCB Form 4500-3 or EPA Form	DBE Sub-Contractor Performance Form	Include with Bid or Proposal Package	Prime Contractor	Sub-Contractor	SWRCB by Recipient
SWRCB Form 4500-4 or EPA Form	DBE Sub-Contractor Utilization Form	Include with Bid or Proposal Package	Recipient	Prime Contractor	SWRCB by Recipient

The completed forms must be submitted with each Bid or Proposal. The recipient shall review the bidder's documents closely to determine that the GFE was performed **prior** to bid or proposal opening date. Failure to complete the GFE and to substantiate completion of the GFE before the bid opening date could jeopardize CWSRF/DWSRF financing for the project. The following situations and circumstances require action as indicated:

1. If the apparent successful low bidder was rejected, a complete explanation must be provided.
2. Failure of the apparent low bidder to **perform** the GFE **prior** to bid opening constitutes a non-responsive bid. The construction contract may then be awarded to the next low, responsive, and responsible bidder that meets the requirements or the Recipient may re-advertise the project.
3. If there is a bid dispute, all disputes shall be settled **prior** to submission of the Final Budget Approval Form.

Administration Requirements

- A recipient of CWSRF/DWSRF financing must require entities receiving funds to create and maintain a Bidders List if the recipient of the financing agreement is subject to, or chooses to follow, competitive bidding requirements.
- The Bidders list must include all firms that bid or quote on prime contracts, or bid or quote on subcontracts, including both DBEs and non-DBEs.

- Information retained on the Bidder's List must include the following:
    1. Entity's name with point of contact;
    2. Entity's mailing address and telephone number;
    3. The project description on which the entity bid or quoted and when;
    4. Amount of bid/quote; and
    5. Entity's status as a DBE or non-DBE.
- The Bidders List must be kept until the recipient is no longer receiving funding under the agreement.
- The recipient shall include Bidders List as part of the Final Budget Approval Form.
- A recipient must require its prime contractor to pay its subcontractor for satisfactory performance no more than 30 days from the prime contractor's receipt of payment from the Recipient.
- A recipient must be notified in writing by its prime contractor prior to any termination of a DBE subcontractor by the prime contractor.
- If a DBE subcontractor fails to complete work under the subcontract for any reason, the recipient must require the prime contractor to employ the six GFEs if soliciting a replacement subcontractor.
- A recipient must require its prime contractor to employ the six GFEs even if the prime contractor has achieved its fair share objectives.

Reporting Requirements

For the duration of the construction contract(s), the recipient is required to submit to the State Water Resources Control Board DBE reports annually by October 10 of each fiscal year on the attached Utilization Report form (UR-334). Failure to provide this information as stipulated in the financial agreement language may be cause for withholding disbursements.

CONTACT FOR MORE INFORMATION

SWRCB, CASRF – Barbara August (916) 341-6952 barbara.august@waterboards.ca.gov

US EPA, Region 9 – Joe Ochab (415) 972-3761 ochab.joe@epa.gov

Disadvantaged Business Enterprise (DBE) Program

DBE Subcontractor Participation Form

A Financial Assistance Agreement Recipient must require its prime contractors to provide this form to its DBE subcontractors. This form gives a DBE[1] subcontractor[2] the opportunity to describe work received and/or report any concerns regarding the funded project (e.g., in areas such as termination by prime contractor, late payments, etc.). The DBE subcontractor can, as an option, complete and submit this form to the DBE Coordinator at any time during the project period of performance.

Subcontractor Name		Project Name
Bid / Proposal No.	Assistance Agreement ID No. (if known)	Point of Contact
Address		
Telephone No.		Email Address
Prime Contractor Name		Issuing/Funding Entity

Contract Item Number	Description of Work Received from the Prime Contractor Involving Construction, Services, Equipment or Supplies	Amount Received by Prime Contractor

[1] A DBE is a Disadvantaged, Minority, or Woman Business Enterprise that has been certified by an entity from which EPA accepts certifications as described in 40 CFR 33.204-33.2015 or certified by EPA. EPA accepts certifications from entities that meet or exceed EPA certification standards as described in 40 CFR 33.202.

[2] Subcontractor is defined as a company, firm, joint venture, or individual who enters into an agreement with a contractor to provide services pursuant to an award of financial assistance.

Please use the space below to report any concerns regarding the above funded project:

Subcontractor Signature	Print Name
Title	Date

The public reporting and record keeping burden for this collection of information is estimated to average three (3) hours per response. Send comments on the Agency's need for this information, the accuracy of the provided burden estimates, and any suggested methods for minimizing respondent burden, including through the use of automated collection techniques to the Director, Collection Strategies Division, U.S. Environmental Protection Agency (2822T), 1200 Pennsylvania Ave., NW, Washington, D.C. 20460. Do not send the completed form to this address.

Send completed Form 4500-2 to:
Mr. Joe Ochab, DBE Coordinator
US EPA, Region 9
75 Hawthorne Street
San Francisco, CA 94105

Disadvantaged Business Enterprise (DBE) Program

DBE Subcontractor Performance Form

This form is intended to capture the DBE[1] subcontractor's[2] description of work to be performed and the price of the work submitted to the prime contractor. A Financial Assistance Agreement Recipient must require its prime contractor to have its DBE subcontractors complete this form and include all completed forms in the prime contractor's bid or proposal package.

Subcontractor Name	Project Name	
Bid / Proposal No.	Assistance Agreement ID No. (if known)	Point of Contact
Address		
Telephone No.	Email Address	
Prime Contractor Name	Issuing/Funding Entity	

Contract Item Number	Description of Work Submitted from the Prime Contractor Involving Construction, Services, Equipment or Supplies	Price of Work Submitted to the Prime Contractor
DBE Certified By: _ DOT _ SBA Other: _____	Meets/exceeds EPA certification standards? YES NO Unknown	

[1] A DBE is a Disadvantaged, Minority, or Woman Business Enterprise that has been certified by an entity from which EPA accepts certifications as described in 40 CFR 33.204-33.2015 or certified by EPA. EPA accepts certifications from entities that meet or exceed EPA certification standards as described in 40 CFR 33.202.

[2] Subcontractor is defined as a company, firm, joint venture, or individual who enters into an agreement with a contractor to provide services pursuant to an award of financial assistance.

I certify under penalty of perjury that the forgoing statements are true and correct. Signing this form does not signify a commitment to utilize the subcontractors above. I am aware that in the event of a replacement of a subcontractor, I will adhere to the replacement requirements set forth in 40 CFR Part 33 Section 33.302 (c).

Prime Contractor Signature	Print Name
Title	Date

Subcontractor Signature	Print Name
Title	Date

The public reporting and record keeping burden for this collection of information is estimated to average three (3) hours per response. Send comments on the Agency's need for this information, the accuracy of the provided burden estimates, and any suggested methods for minimizing respondent burden, including through the use of automated collection techniques to the Director, Collection Strategies Division, U.S. Environmental Protection Agency (2822T), 1200 Pennsylvania Ave., NW, Washington, D.C. 20460. Do not send the completed form to this address.

California Water Boards

Disadvantaged Business Enterprise (DBE) Program

DBE Subcontractor Utilization Form

This form is intended to capture the prime contractor's actual and/or anticipated use of identified certified DBE[1] subcontractor's[2] and the estimated dollar amount of each subcontract. A Financial Assistance Agreement Recipient must require its prime contractors to complete this form and include it in the bid or proposal package. Prime contractors should also maintain a copy of this form on file.

Prime Contractor Name W. M. Lyles Co.		**Project Name** Waterworks District 38 Wastewater Treatment Facility Improvements
Bid / Proposal No.	**Assistance Agreement ID No. (if known)**	**Point of Contact**
Address P.O. Box 4377, Fresno, CA 93744		
Telephone No. (559) 441-1900		**Email Address** kshigematsu@wmlylesco.com
Issuing/Funding Entity		

I have identified potential DBE certified subcontractors. YES (NO)

If *yes*, please complete the table below. If *no*, please explain:

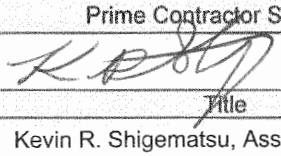
Subcontractor Name/ Company Name	Company Address / Phone / Email	Estimated Dollar Amount	Currently DBE Certified?

--Continue on back if needed--

[1] A DBE is a Disadvantaged, Minority, or Woman Business Enterprise that has been certified by an entity from which EPA accepts certifications as described in 40 CFR 33.204-33.2015 or certified by EPA. EPA accepts certifications from entities that meet or exceed EPA certification standards as described in 40 CFR 33.202.

[2] Subcontractor is defined as a company, firm, joint venture, or individual who enters into an agreement with a contractor to provide services pursuant to an award of financial assistance.

I certify under penalty of perjury that the forgoing statements are true and correct. Signing this form does not signify a commitment to utilize the subcontractors above. I am aware that in the event of a replacement of a subcontractor, I will adhere to the replacement requirements set forth in 40 CFR Part 33 Section 33.302 (c).

Prime Contractor Signature	Print Name
	W. M. Lyles Co.
Title	Date
Kevin R. Shigematsu, Asst. Vice President	8/2/18

The public reporting and record keeping burden for this collection of information is estimated to average three (3) hours per response. Send comments on the Agency's need for this information, the accuracy of the provided burden estimates, and any suggested methods for minimizing respondent burden, including through the use of automated collection techniques to the Director, Collection Strategies Division, U.S. Environmental Protection Agency (2822T), 1200 Pennsylvania Ave., NW, Washington, D.C. 20460. Do not send the completed form to this address.

W.M. LYLES CO.

CONTRACTOR

Since 1943

Progress Through Performance

DBE - Good Faith Effort

OWNER: County of Fresno
PROJECT: Waterworks District 38 WWTF Improv.
BID DATE: 8/2/18 @ 2:00 PM
ESTIMATOR: Michael Wise
CLERK: N/A



DBE INFORMATION - GOOD FAITH EFFORTS

Federal-aid Project No. C-06-7109-110 Bid Opening Date August 2, 2018

The (City/County of) established a Disadvantaged Business Enterprise (DBE) goal of ____% for this project. The information provided herein shows that a good faith effort was made.

Lowest, second lowest and third lowest bidders shall submit the following information to document adequate good faith efforts. Bidders should submit the following information even if the "Local Agency Bidder DBE Commitment" form indicates that the bidder has met the DBE goal. This will protect the bidder's eligibility for award of the contract if the administering agency determines that the bidder failed to meet the goal for various reasons, e.g., a DBE firm was not certified at bid opening, or the bidder made a mathematical error.

The following items are listed in the Section entitled "Submission of DBE Commitment" of the Special Provisions:

A. The names and dates of each publication in which a request for DBE participation for this project was placed by the bidder (please attach copies of advertisements or proofs of publication):

Publications	Dates of Advertisement

B. The names and dates of written notices sent to certified DBEs soliciting bids for this project and the dates and methods used for following up initial solicitations to determine with certainty whether the DBEs were interested (please attach copies of solicitations, telephone records, fax confirmations, etc.):

Names of DBEs Solicited	Date of Initial Solicitation	Follow Up Methods and Dates

C. The items of work which the bidder made available to DBE firms including, where appropriate, any breaking down of the contract work items (including those items normally performed by the bidder with its own forces) into economically feasible units to facilitate DBE participation. It is the bidder's responsibility to demonstrate that sufficient work to facilitate DBE participation was made available to DBE firms.

Items of Work	Bidder Normally Performs Item (Y/N)	Breakdown of Items	Amount ($)	Percentage Of Contract

D. The names, addresses and phone numbers of rejected DBE firms, the reasons for the bidder's rejection of the DBEs, the firms selected for that work (please attach copies of quotes from the firms involved), and the price difference for each DBE if the selected firm is not a DBE:

Names, addresses and phone numbers of rejected DBEs and the reasons for the bidder's rejection of the DBEs:

Names, addresses and phone numbers of firms selected for the work above:

E. Efforts made to assist interested DBEs in obtaining bonding, lines of credit or insurance, and any technical assistance or information related to the plans, specifications and requirements for the work which was provided to DBEs:

F. Efforts made to assist interested DBEs in obtaining necessary equipment, supplies, materials or related assistance or services, excluding supplies and equipment the DBE subcontractor purchases or leases from the prime contractor or its affiliate:

G. The names of agencies, organizations or groups contacted to provide assistance in contacting, recruiting and using DBE firms (please attach copies of requests to agencies and any responses received, i.e., lists, Internet page download, etc.):

Name of Agency/Organization	Method/Date of Contact	Results

H. Any additional data to support a demonstration of good faith efforts (use additional sheets if necessary):

NOTE: USE ADDITIONAL SHEETS OF PAPER IF NECESSARY.

W. M. Lyles Co.
Table of Contents

1	Advertisement LOG & Advertisements
2	Search LOG & Search Lists
3	Solicitation LOG & Solicitations
4	Responce LOG & Company Responses
5	Bid Day Analysis LOG "Bidders List"
6	Bid Day Documents (4500-3 & 4500-4)
7	Miscellaneous (Specs & Notes)
8	

1

W. M. LYLES CO.

Good Faith Effort - Advertisement LOG

Owner: County of Fresno
Project: Waterworks District 38 WWTF Improv.
Bid Date: 8/2/18 @ 2:00 PM

Advertisement Postings							
WML Employee	Posting Agency (Organization)	Posting Source	Website (or) Paper AD	Date of Posing	Posting Time	Type of AD	Notes
Michael	DBE Good Faith	DBE Good Faith	www.dbegoodfaith.com	07/02/18	9:24 AM	Placed Focus Ad, and Trade Journal Ad	
Michael	Minority Business Development Agency	Emailed MBDA Contact	dmendoza@fresnombdacenter.com	07/02/18	9:18 AM	Email	David Mendoza - Project Director
Michael	Small Business Administration	SBA Website	https://eweb1.sba.gov/subnet	07/05/18	9:35 AM	Placed Ad / Solicitation Record on Site	Tried on 7/2, but their site wasn't working
Michael	The Fresno Bee	Local Newspaper	Paper Advertisement	7/2/2018		Public Notice	

Print Date and Time:
7/27/2018 1:35 PM

DBEGoodFaith
your bid outreach solution

P.O. Box 14912 • Oakland, CA 94614
T. (877) 802-3394 • **F.** (510) 751-0780

THANK YOU!

Transaction Date
07/02/2018 09:24 AM

Order No.
1154-41903

Billed to
W.M. Lyles Co.
2810 Unicorn Road
Bakersfield, CA 93308
T. (661) 387-1600 ext.
F. (661) 387-1620
mwise@wmlylesco.com

Project Name
Waterworks District 38 Wastewater Treatment Facility Improvements

Project/Contract #
C-06-7109-110

Transaction Summary

Bronze Package	$30.00
▪ Focus Journal Notice ▪ Trade Journal Notice	
	TOTAL: $30.00

W.M. Lyles Co.
2810 Unicorn Road
Bakersfield, CA 93308
Tel: (661) 387-1600
Fax: (661) 387-1620

Ad Proofs

Project Name: Waterworks District 38 Wastewater Treatment Facility Improvements

Contract/Bid #: C-06-7109-110

Awarding Agency: County of Fresno

Focus Journal Ad

Publication: DBE GoodFaith (DBEGoodFaith.com)
Published On: 07/02/2018 @ 09:24:15 AM PST
Expired On: 08/02/2018 @ 11:59:59 PM PST
Messages Notifications Sent To: mwise@wmlylesco.com
Published At: https://www.dbegoodfaith.com/good-faith-ad.php?ad_adid=41903&co_name=W.M.+Lyles+Co.

W. M. LYLES CO.
CONTRACTOR
Progress Through Performance

W.M. Lyles Co.

Is seeking qualified DBEs, MBEs, WBEs, SBEs, SBRA, LSAF, HUB Zone

Project Name
Waterworks District 38 Wastewater Treatment Facility Improvements

Bid/Contract #
C-06-7109-110

Awarding Agency
County of Fresno

Project Location
Fresno, Fresno County, CA

Bid Date
08/02/2018 at 02:00

Project Details
W. M. Lyles Co. is actively seeking certified subs and suppliers for the County of Fresno - Waterworks District 38 Wastewater Treatment Facility Improvements project to include: Electrical, Rebar, Painting, Bypassing, Pipe & Fittings.

We are an equal opportunity employer. The plans and specs are available for your review at our office.

Get in Touch

Outreach Coordinator
Michael Wise

Telephone
(661) 387-1600

Fax
(661) 387-1620

Address
2810 Unicorn Road
Bakersfield, CA 93308

Send a message

Trade Journal Ad

Publication: DBE Journal (DBEJournal.com)
Published On: 07/02/2018 @ 09:24:15 AM PST
Expired On: 08/02/2018 @ 11:59:59 PM PST
Published At:
http://dbejournal.com/index.php?show_ad=41903&ad_project_name=Waterworks+District+38+Wastewater+Treatment+Facility+Improvements&co_name=W.M.+Lyles+Co.



Outreach Coordinator
Michael Wise

Contact Information
2810 Unicorn Road
Bakersfield, CA 93308

Telephone
(661) 387-1600

Fax
(661) 387-1620

W.M. Lyles Co.

is seeking qualified DBEs, MBEs, WBEs, SBEs, SBRA, LSAF, HUB Zone

Project Name
Waterworks District 38 Wastewater Treatment Facility Improvements

Bid/Contract #
C-06-7109-110

Awarding Agency
County of Fresno

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We are an equal opportunity employer. The plans and specs are available for your review at our office.

Tweet

Published On: 07/02/2018 @ 09:24:15 AM PST
Published At: https://twitter.com/dbegoodfaith

DBE GoodFaith Inc.
@dbegoodfaith

W.M. Lyles Co. is seeking DBEs, MBEs, WBEs, SBEs, SBRA, LSAF... dbegoodfaith.com/good-faith-ad....

09:07 AM - 02 Jul 2018

Michael Wise

From: Michael Wise
Sent: Monday, July 2, 2018 9:18 AM
To: 'David Mendoza'
Subject: Fresno Waterworks District 38 - MBDA Solicitations
Attachments: RFQ - Fresno.pdf

David,
W. M. Lyles Co. is bidding on a project in Fresno. Would you please distribute our Request For Quotation so that interested parties can contact us regarding this project. We appreciate your help in this.

Michael Wise
Engineering Assistant
Central Division - Bakersfield
Office: 661.387.1600
Fax: 661.387.1620
Cell: 661.852.1359
E-mail: mwise@wmlylesco.com

W.M. Lyles Co.
"Progress Through Performance"

Please access the hyperlink below for an important electronic communications disclaimer:
http://www.lylesgroup.com/disclaimer_wml.html

Michael Wise

From: David Mendoza <dmendoza@fresnombdacenter.com>
Sent: Monday, July 2, 2018 9:36 AM
To: 'vvilla@westpacificelectriccompany.com'; 'ed@uscsupply.net'; 'phavlicek@gseconstruction.com'; 'jlair@bakersfieldpipe.com'; Lorene Del Bucchia (ldelbucchia@alvaradogroup.net); 'lalvarado@vcs-inc.net'
Cc: SiewYee Lee; Olga Martinez; Michael Wise
Subject: [BULK] FW: Fresno Waterworks District 38 - MBDA Solicitations
Attachments: RFQ - Fresno.pdf

Importance: Low

Fresno County Waterworks project. Please share with interested parties.

Sincerely,

David Mendoza

Project Director

MINORITY BUSINESS DEVELOPMENT AGENCY
BUSINESSCENTER
U.S. DEPARTMENT OF COMMERCE

Minority Business Development Agency Business Center

5067 N Mariposa St., Suite 105. Fresno, CA 93710

C 559.908.7128 I **P** 559.354.6795 I **F** 559.272.3845

Email: dmendoza@fresnombdacenter.com

Website: www.mbda.gov/businesscenters/fresno

Operated by ASIAN, Inc. of San Francisco

CONFIDENTIALITY NOTICE This message (including any attachments) contains information that may be confidential.

Unless you are the intended recipient (or authorized to receive for the intended recipient), you may not read, print, retain, use, copy, distribute or disclose to anyone the message or any information contained in the message.If you have received the message in error, please advise the sender by reply e-mail, and destroy all copies of the original message (including any attachments).

From: Michael Wise <mwise@wmlylesco.com>
Sent: Monday, July 2, 2018 9:18 AM
To: David Mendoza <dmendoza@fresnombdacenter.com>
Subject: Fresno Waterworks District 38 - MBDA Solicitations

David,
W. M. Lyles Co. is bidding on a project in Fresno. Would you please distribute our Request For Quotation so that interested parties can contact us regarding this project. We appreciate your help in this.

Michael Wise
Engineering Assistant
Central Division - Bakersfield
Office: 661.387.1600
Fax: 661.387.1620
Cell: 661.852.1359
E-mail: mwise@wmlylesco.com

W.M. Lyles Co.
"Progress Through Performance"

Please access the hyperlink below for an important electronic communications disclaimer:
http://www.lylesgroup.com/disclaimer_wml.html

W.M. LYLES CO.

BID SOLICITATION

Central Division
2810 Unicorn Road
Bakersfield, CA 93308
Ph. (661) 387-1600 Fx. (661) 387-1620

W.M. Lyles Co. will be bidding as a general contractor on the following project and would appreciate your participation:

Owner:	County of Fresno	Bid Date:	8/2/18 @ 2:00 PM
Project:	Waterworks District 38 WWTF Improv.	Estimated Value:	$600,000
Project Location:	Fresno, CA		

We are actively seeking certified Disadvantage Business Enterprises (DBE) firms for the following scopes of work:
For example: (MBE), (WBE), (SBE), (SBRA), (LSAF), (HUB) Zone, Etc.

SUCONTRACTORS	SUPPLIERS	SERVICES
Electrical	Pipe & Fittings	Bypass
Rebar		
Painting		

Please respond by filling out the information below and return by email or by faxing back to our office at (661) 387-1620

Company: _____ Phone: _____
Contact: _____ Fax: _____
Scope of Work: _____ Email: _____
DBE Agency: _____ Type of DBE: _____
DBE Certification #: _____

☐ We are interested in submitting a bid
☐ We are not interested in submitting a bid

☐ Non-Union ☐ Union Specify: _____
(Laborers, Operators, Carpenters, Etc.)

Plans are available for purchase at:
www.co.fresno.ca.us/planholders

Plans are available for review at:
W.M. Lyles Co. (661) 387-1600

SBA

Edit Solicitation

Note: Fields with asterisk are required fields.

This field can be edited.

***Business Name:** W. M. Lyles Co.

***Solicitation :** SOL-WWTF Improvements

Division/Department: Waterworks Dist. 38

***What Type of Business are you looking for? (Check all that apply.)**

To add, edit and delete Business Types please email Subnet@SBA.gov

- [x] Women-Owned Small Business
- [x] Disadvantaged Business Enterprise (DBE)
- [ ] Small Business with Top Secret Security Clearance/Sensitive Compartmented Information (TS/SCI)
- [ ] Small Business with Top Secret Security Clearance (TS)
- [ ] Small Business with Secret Security Clearance (SC)
- [x] Small Business (SB)
- [ ] SBA Certified HUBZone Small Business (HUBZone SB)
- [ ] SBA Certified 8a Program Participant
- [ ] Small Disadvantaged Business (SDB)
- [ ] Women-Owned Small Business under the SBA Women-Owned Small Business Program
- [ ] Economically Disadvantaged Women Owned Small Business
- [ ] Veteran-Owned Small Business (VOSB)
- [ ] Service-Disabled Veteran-Owned Small Business (SDVOSB)
- [ ] Alaskan Native Corporations (ANC) and Indian Tribe
- [ ] Tribally Owned
- [ ] Native Hawaiian Org (NHO) Owned
- [ ] Economically Disadvantaged Women-Owned Small Business under the Women-Owned Small Business Program
- [ ] Women-Owned Small Business Joint Venture
- [ ] Economically Disadvantaged Women-Owned Small Business Joint Venture

SBA

***NAICS Code:** 238210 Enter or Look up

Electrical Contractors and Other Wiring Installation Contractors

Additional NAICS Code: 23832(Enter or Look up

Please click the "Look Up" link to add and enter an additional NAICS or Cut and Paste the NAICS in the Additional NAICS field below

Additional NAICS List:

238320 Painting and Wall Covering Contractors,326122 Plastics

***Brief Solicitation Description (50 words):**

Brief Description will display in search results. Add an attachment by clicking the Next button below.

<p>W.M. Lyles Co. is actively seeking certified subs and supplie

ParagraphFont FamilyFont Size

Words:47

***Solicitation POC**

*First Name:
Michael

*Last Name:
Wise

***Preferred Means of Communication:**

○ Phone ◉ Email ○ Both

Phone: 661-387-160(

Ext:

Fax:

Email: mwise@wmlylesco.co

SBA

***Place of Performance:**

*State:
Select State/ Territory

Metro Area:
Bakersfield

Note: If you select more than one state,
you can not select a Metropolitan Area.
However, if you select one state you can
add a Metropolitan Area and duplicate the
solicitation to add more states with the
Metropolitan Area.

This is the estimated date when the work will begin

Performance Start Date--> Mandatory for Solicitaion/ Non-Mandatory for NSS

***Performance Start Date:**

07/05/201 (mm/dd/yyyy)

***Closing Date:**

(Not more than a year from today.)

*Date: 08/02/201 (mm/dd/yyyy)

*Time: 2:00 AM PM

*Time Zone:
Pacific Time

Attached Files:

Post

List of Sol/NSS

The Fresno Bee
fresnobee.com
Central Valley
SIERRA STAR
Vida

Payment Receipt

Thank You for Payment

Monday, July 2, 2018

Transaction Type: Payment
Order Number: 0003744728
Payment Method: Credit Card
Bad Debt: -
Credit Card Number: **********9166
Credit Card Expire Date: 8/28/2018
Payment Amount: 592.80
Reference Number: 20343B
Charge to Company: Fresno
Category: Classified
Transaction Number: P1841087
Credit to Transaction Number: P1841087
Invoice Text:
Invoice Notes:

Customer Type: Commercial
Customer Category: Miscellaneous
Customer Status: Active
Customer Group: Local
Customer Trade: None
Account Number: 677153
Phone Number: 6613871600
Company / Individual: Company
Customer Name: W.M. LYLES CO
Customer Address: 2810 UNICORN ROAD
BAKERSFIELD, CA 93308 USA
Check Number:
Routing Number:

Michael Wise

From: Miracle Thomas <mthomas@fresnobee.com>
Sent: Monday, July 2, 2018 12:02 PM
To: FRS SAM Legals Collaborative Group
Cc: Michael Wise; legals@fresnobee.com
Subject: Re: DBE Bid Opportunity
Attachments: REVISED PROOF-3744728.pdf

Hi Michael,

Attached is your revised proof the new cost is $592.80.

Miracle Thomas

On Monday, July 2, 2018 at 11:52:51 AM UTC-7, FRS SAM Legals Collaborative Group wrote:
Hi Michael,

The new cost to publish ad 3744728 in The Fresno Bee on July 5th and 6th will be $661.20 and attached is the proof for your review. This notice will run " as is" unless otherwise instructed. Feel free to give me a call whenever you are ready to make payment.

Miracle Thomas
(559)441-6115

On Monday, July 2, 2018 at 8:50:20 AM UTC-7, Michael Wise wrote:

Hello,

My company would like to place an add in the newspaper for an upcoming project. Can you please help me to complete this process, and let me know the cost for this. Thank you. We would like it to run as soon as possible (which I think is the 5th) until August 2nd.

Project: County of Fresno – Waterworks District 38 Wastewater Treatment Facility Improvements

Bid Date: Thursday, August 2, 2018 @ 2:00 PM

Body of Advertisement:

W. M. Lyles Co. is actively seeking bids from certified DBE subcontractors and suppliers as part of the "Good Faith Effort" program as set forth for the County of Fresno – Waterworks District 38 Wastewater Treatment Facility Improvements project.

Items of work include: Electrical, Rebar, Painting, Bypassing, Pipe & Fittings, etc.

We are an equal opportunity employer. The plans and specifications are available for your review upon request. Call (661) 387-1600 or email at mwise@wmlylesco.com to inquire. Scopes and quotes should be submitted prior to the proposal submittal time at our office by August 2, 2018 at 2:00 PM.

Michael Wise

Engineering Assistant

Central Division - Bakersfield

Office: 661.387.1600

Fax: 661.387.1620

Cell: 661.852.1359

E-mail: mwise@wmlylesco.com

W.M. Lyles Co.

"Progress Through Performance"

Please access the hyperlink below for an important electronic communications disclaimer:

http://www.lylesgroup.com/disclaimer_wml.html

The Fresno Bee
fresnobee.com

Central Valley
The Valley's Lifestyle Magazine

Vida en el valle

Sierra Star
Serving Eastern Madera Since 1957

Order Confirmation

Customer
W.M. LYLES CO

Customer Account
677153

Customer Address
2810 UNICORN ROAD
BAKERSFIELD CA 93308 USA

Customer Phone
661-387-1600

Customer Fax

Sales Rep
mthomas@fresnobee.com

Payor Customer
W.M. LYLES CO

Payor Account
677153

Payor Address
2810 UNICORN ROAD
BAKERSFIELD CA 93308 USA

Payor Phone
661-387-1600

Customer EMail

Order Taker
mthomas@fresnobee.com

PO Number	Payment Method	Blind Box	Tear Sheets	Proofs	Affidavits
	Credit Card		0	0	0

Net Amount	Tax Amount	Total Amount	Payment Amount	Amount Due
$592.80	$0.00	$592.80	$0.00	$592.80

Ad Order Number
0003744728

Order Source
Sales Rep

Ordered By

Special Pricing

Invoice Text

Promo Type

Package Buy

Materials

Ad Order Information

Ad Number	Ad Type	Production Method	Production Notes
0003744728-01	FRS-Legal Liner	AdBooker	

External Ad Number	Ad Attributes	Ad Released	Pick Up
		No	

Ad Size	Color
2 X 25 li	

Product	Placement	Times Run	Schedule Cost
FRS- The Fresno Bee	0300 - Legals Classified	2	$592.80

Run Schedule Invoice Text
#3744728 W. M. Lyles Co. is actively s

Position
0301 - Legals & Public Notices

Run Dates
07/05/2018, 07/06/2018

PUBLIC NOTICE

#3744728

W. M. Lyles Co. is actively seeking bids from certified DBE subcontractors and suppliers as part of the "Good Faith Effort" program as set forth for the County of Fresno – Waterworks District 38 Wastewater Treatment Facility Improvements project.

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We are an equal opportunity employer. The plans and specifications are available for your review upon request. Call (661) 387-1600 or email at mwise@wmlylesco.com to inquire. Scopes and quotes should be submitted prior to the proposal submittal time at our office by August 2, 2018 at 2:00 PM.

W. M. LYLES CO.

Good Faith Effort - Search LOG

Owner: County of Fresno
Project: Waterworks District 38 WWTF Improv.
Bid Date: 8/2/18 @ 2:00 PM

DOT.CA.GOV - Directory List Look-Up's						Search Notes
WML Employee	Organization - Agencies	Website	Trade	Date of List Look-Up	Time of List Look-Up	Search Notes
Michael	DOT.CA.GOV	https://ucp.dot.ca.gov/querySubmit.htm	Searched Electrical	07/05/18	8:35 AM	49 Profiles Found
Michael	DOT.CA.GOV	https://ucp.dot.ca.gov/querySubmit.htm	Searched Rebar	07/05/18	8:43 AM	4 Profiles Found
Michael	DOT.CA.GOV	https://ucp.dot.ca.gov/querySubmit.htm	Searched Painting	07/05/18	8:39 AM	12 Profiles Found
Michael	DOT.CA.GOV	https://ucp.dot.ca.gov/querySubmit.htm	Searched Pipe & Fittings	07/05/18	8:47 AM	1 Profile Found
Michael	DOT.CA.GOV	https://ucp.dot.ca.gov/querySubmit.htm	Searched Bypassing	07/05/18	8:50 AM	Zero Profiles Found

Print Date and Time:
7/27/2018 1:35 PM

W. M. LYLES CO.

Good Faith Effort - Search LOG

Owner: County of Fresno
Project: Waterworks District 38 WWTF Improv.
Bid Date: 8/2/18 @ 2:00 PM

SBA - Directory List Look-Up's						Search Notes
WML Employee	Organization - Agencies	Website	Trade	Date of List Look-Up	Time of List Look-Up	Search Notes
Michael	SBA Search Engine	www.dsbs.sba.gov/search/dsp_profilelist.cfm	Searched Electrical	07/05/18	8:57 AM	1 Profile Found
Michael	SBA Search Engine	www.dsbs.sba.gov/search/dsp_profilelist.cfm	Searched Rebar	07/05/18	9:04 AM	Zero Profiles Found
Michael	SBA Search Engine	www.dsbs.sba.gov/search/dsp_profilelist.cfm	Searched Painting	07/05/18	9:01 AM	2 Profiles Found
Michael	SBA Search Engine	www.dsbs.sba.gov/search/dsp_profilelist.cfm	Searched Pipe & Fittings	07/05/18	9:09 AM	1 Profile Found
Michael	SBA Search Engine	www.dsbs.sba.gov/search/dsp_profilelist.cfm	Searched Bypassing	07/05/18	9:07 AM	Zero Profiles Found

Print Date and Time:
7/27/2018 1:35 PM

W. M. LYLES CO.

Good Faith Effort - Search LOG

Owner: County of Fresno
Project: Waterworks District 38 WWTF Improv.
Bid Date: 8/2/18 @ 2:00 PM

BidSync - Directory List Look-Up's						Search Notes
WML Employee	Organization - Agencies	Website	Trade	Date of List Look-Up	Time of List Look-Up	Search Notes
Michael	CA.GOV - General Services	https://caleprocure.ca.gov/pages/PublicSearch/supplier-search.aspx	Searched Electrical	07/05/18	8:04 AM	160 Profiles Found
Michael	CA.GOV - General Services	https://caleprocure.ca.gov/pages/PublicSearch/supplier-search.aspx	Searched Rebar	07/05/18	8:17 AM	3 Profiles Found
Michael	CA.GOV - General Services	https://caleprocure.ca.gov/pages/PublicSearch/supplier-search.aspx	Searched Painting	07/05/18	8:20 AM	62 Profiles Found
Michael	CA.GOV - General Services	https://caleprocure.ca.gov/pages/PublicSearch/supplier-search.aspx	Searched Pipe & Fittings	07/05/18	8:24 AM	Zero Profiles Found
Michael	CA.GOV - General Services	https://caleprocure.ca.gov/pages/PublicSearch/supplier-search.aspx	Searched Bypassing	07/05/18	8:30 AM	Zero Profiles Found

Print Date and Time:
7/27/2018 1:35 PM

Back To Query Form

Search Returned 49 Records Thu Jul 05 08:35:51 PDT 2018

Query Criteria
District: 06
County: FRESNO
Certification Types: DBE
License Type: C10 Electrical Contractor
Naics Category: 23 Construction
Naics Codes: 238210 Electrical Contractors and Other Wiring Installation Contractors

Firm ID	40771
DBA Name	ACM LIGHTING
Firm Name	ACM ARTISTIC NEON
Address Line1	201 S. MERRILL ST.
Address Line2	
City	CORONA
State	CA
Zip Code1	92882
Zip Code2	
Mailing Address Line1	1411 S. RIMPAU AVE, SUITE 202
Mailing Address Line2	
Mailing City	CORONA
Mailing State	CA
Mailing Zip Code1	92879
Mailing Zip Code2	
Certification Type	DBE
EMail	acmlighting@sbcglobal.net
Contact Name	CARLOS MORALES SR.
Area Code	951
Phone Number	272-4881
Extension	
Alt Area Code	
Alt Phone Number	
Extension	
Fax Area Code	951
Fax Phone Number	272-4838
Agency Name	DEPARTMENT OF TRANSPORTATION
Counties	01; 02; 03; 05; 07; 09; 10; 13; 14; 15; 16; 19; 20; 21; 22; 24; 26; 27; 28; 30; 33; 34; 35; 36; 37; 38; 39; 40; 41; 42; 43; 44; 48; 49; 50; 54; 55; 56; 57; 58;
Districts	03; 04; 05; 06; 07; 08; 09; 10; 11; 12;
DBE NAICS	238210;
ACDBE NAICS	
Work Codes	C8605 MESSAGE SIGNS, LIGHTING & SIGN ILLUMINATION; C9859 Commercial Electrical; C9858 RESIDENTIAL ELECTRICAL;
Licenses	C10 Electrical Contractor;
Trucks	
Gender	M
Ethnicity	HISPANIC
Firm Type	DBE

Firm ID	33975
DBA Name	AJK COMMUNICATIONS
Firm Name	AJK COMMUNICATIONS
Address Line1	10016 PIONEER BLVD, SUITE 104
Address Line2	
City	SANTA FE SPRINGS
State	CA
Zip Code1	90670
Zip Code2	6223
Mailing Address Line1	
Mailing Address Line2	
Mailing City	
Mailing State	
Mailing Zip Code1	
Mailing Zip Code2	
Certification Type	DBE
EMail	kirank@ajkcommunications.com
Contact Name	KIRAN KAUR
Area Code	562
Phone Number	942-1400
Extension	7003
Alt Area Code	714
Alt Phone Number	273-3523
Extension	
Fax Area Code	562
Fax Phone Number	942-1800
Agency Name	DEPARTMENT OF TRANSPORTATION
Counties	00;
Districts	00;
DBE NAICS	238210; 425120;
ACDBE NAICS	
Work Codes	E4890 COMMUNICATIONS SERVICES; C8702 MANAGEMENT INFORMATION SYSTEMS; C9858 RESIDENTIAL ELECTRICAL;

Licenses	C10 Electrical Contractor;
Trucks	
Gender	F
Ethnicity	ASIAN SUBCONTINENT
Firm Type	DBE

Firm ID	43775
DBA Name	ATWOOD HAY INCORPORATED
Firm Name	
Address Line1	17000 30TH STREET
Address Line2	
City	BEALE AFB
State	CA
Zip Code1	95903
Zip Code2	
Mailing Address Line1	P.O. BOX 9196
Mailing Address Line2	
Mailing City	BEALE AFB
Mailing State	CA
Mailing Zip Code1	95903
Mailing Zip Code2	
Certification Type	DBE
EMail	glenda@atwoodhay.com
Contact Name	GLENDA ATWOOD-HAY
Area Code	530
Phone Number	788-7700
Extension	
Alt Area Code	916
Alt Phone Number	257-2747
Extension	
Fax Area Code	530
Fax Phone Number	788-7715
Agency Name	DEPARTMENT OF TRANSPORTATION
Counties	01; 03; 04; 05; 06; 07; 09; 10; 12; 13; 27; 28; 29; 34;
Districts	01; 03; 04; 05; 06; 10; 11;
DBE NAICS	236220; 238210; 425120;
ACDBE NAICS	
Work Codes	G1001 DROP-SHIPPER; G1002 ONLINE SALES MERCHANT; G1003 WHOLESALE TRADE AGENTS AND BROKERS; C8770 CONSTRUCTION MANAGEMENT; C8777 Construction Management - Power and Communication Line and Related Structure Construction;
Licenses	B General Building Contractor; C10 Electrical Contractor;
Trucks	
Gender	F
Ethnicity	CAUCASIAN
Firm Type	DBE

Firm ID	14639
DBA Name	AUTOMATED SWITCHING & CONTROLS, INC - A S C I
Firm Name	AUTOMATED SWITCHING & CONTROLS, INC - A S C I
Address Line1	1191 HUNTINGTON DRIVE #227
Address Line2	
City	DUARTE
State	CA
Zip Code1	91010
Zip Code2	
Mailing Address Line1	1191 HUNTINGTON DRIVE #227
Mailing Address Line2	
Mailing City	DUARTE
Mailing State	CA
Mailing Zip Code1	91010
Mailing Zip Code2	
Certification Type	DBE
EMail	don_455@hotmail.com
Contact Name	JOHNETTA MACCALLA
Area Code	626
Phone Number	969-8441
Extension	
Alt Area Code	
Alt Phone Number	
Extension	
Fax Area Code	626
Fax Phone Number	969-8741
Agency Name	LOS ANGELES COUNTY METRO TRANSPORTATION AUTHORITY (MTA)
Counties	00;
Districts	00;
DBE NAICS	237130; 237310; 238210; 334220; 334310; 334511; 336510; 485111; 485112; 485119; 488111; 488119; 488190; 488210; 488390; 488490; 515111; 517910; 541330; 541690; 541710; 561621; 811213;
ACDBE NAICS	
Work Codes	C8740 ELECTRICAL ENGINEERS; I7382 SECURITY SYSTEMS SERVICES; C8710 ENGINEERING; C8707 FEASIBILITY STUDIES; D3530 CONSTRUCTION & RELATED MACHINERY; C8715 CONSULTANT, ENGINEERING; E4580 AIRPORTS, FLYING FIELDS, & SERVICES; E4830

	RADIO & TELEVISION BROADCASTING; I7371 COMPUTER PROGRAMMING; C8703 TRAFFIC ENGINEER; C8730 SAFETY STUDIES; C8900 RAIL CAR SERVICES;
Licenses	C07 Low Voltage Systems Contractor; C10 Electrical Contractor; EE Electrical Engineer ;
Trucks	
Gender	F
Ethnicity	BLACK
Firm Type	DBE

Firm ID	4922
Suspended	Y
Suspended Date	06/05/2018
DBA Name	BARNES ELECTRIC
Firm Name	BARNES ELECTRIC
Address Line1	501 S. HOWARD STREET
Address Line2	
City	CORONA
State	CA
Zip Code1	92879
Zip Code2	1546
Mailing Address Line1	501 S. HOWARD STREET
Mailing Address Line2	
Mailing City	CORONA
Mailing State	CA
Mailing Zip Code1	92879
Mailing Zip Code2	1546
Certification Type	DBE
EMail	belect@sbcglobal.net
Contact Name	RODNEY BARNES
Area Code	562
Phone Number	833-5372
Extension	
Alt Area Code	
Alt Phone Number	
Extension	
Fax Area Code	951
Fax Phone Number	273-0331
Agency Name	CITY OF LOS ANGELES
Counties	01; 10; 13; 14; 15; 16; 17; 19; 20; 21; 23; 24; 26; 27; 28; 29; 30; 32; 33; 34; 36; 37; 38; 39; 40; 41; 42; 43; 44; 45; 46; 49; 54; 56;
Districts	01; 02; 03; 04; 05; 06; 07; 08; 09; 10; 11; 12;
DBE NAICS	238210;
ACDBE NAICS	
Work Codes	C8903 ELECTRICAL SERVICES FOR RAIL CARS;
Licenses	C10 Electrical Contractor;
Trucks	
Gender	M
Ethnicity	BLACK
Firm Type	DBE

Firm ID	42378
DBA Name	BELLCURVE AND SYNCNETWORKS
Firm Name	
Address Line1	8703 LA TIJERA BLVD
Address Line2	SUITE #211
City	LOS ANGELES
State	CA
Zip Code1	90045
Zip Code2	
Mailing Address Line1	
Mailing Address Line2	
Mailing City	
Mailing State	
Mailing Zip Code1	
Mailing Zip Code2	
Certification Type	DBE
EMail	syncnetworks@gmail.com
Contact Name	ABIYOU ADMASSU
Area Code	310
Phone Number	678-5018
Extension	
Alt Area Code	
Alt Phone Number	
Extension	
Fax Area Code	424
Fax Phone Number	331-5242
Agency Name	CITY OF LOS ANGELES
Counties	00;
Districts	00;
DBE NAICS	238210; 541380; 541512; 541519; 811219;
ACDBE NAICS	
Work Codes	I7378 COMPUTER MAINTENANCE & REPAIR; C8605 MESSAGE SIGNS, LIGHTING & SIGN ILLUMINATION; C8711 COMPUTER;

Licenses	C10 Electrical Contractor;
Trucks	
Gender	M
Ethnicity	BLACK
Firm Type	DBE

Firm ID	36423
DBA Name	BIRDI & ASSOCIATES, INC.
Firm Name	BIRDI & ASSOCIATES, INC.
Address Line1	555 W 5TH STREET,
Address Line2	SUITE 3100
City	LOS ANGELES
State	CA
Zip Code1	90013
Zip Code2	
Mailing Address Line1	723 E GREEN STREET
Mailing Address Line2	
Mailing City	PASADENA
Mailing State	CA
Mailing Zip Code1	91103
Mailing Zip Code2	
Certification Type	DBE
EMail	mbirdi@birdi-inc.com
Contact Name	MONINDER BIRDI
Area Code	213
Phone Number	550-4250
Extension	
Alt Area Code	
Alt Phone Number	
Extension	
Fax Area Code	626
Fax Phone Number	628-1761
Agency Name	CITY OF LOS ANGELES
Counties	00;
Districts	00;
DBE NAICS	238210; 541511; 541512; 541519; 541611; 561621;
ACDBE NAICS	541611;
Work Codes	I7378 COMPUTER MAINTENANCE & REPAIR; I7373 INTEGRATED SYSTEMS & CAD/CAM SYSTEMS; C9857 Low Voltage Electrical Systems; C8700 CONSULTANT, NON ENGINEERING; C8711 COMPUTER; I7371 COMPUTER PROGRAMMING;
Licenses	C07 Low Voltage Systems Contractor; C10 Electrical Contractor;
Trucks	
Gender	M
Ethnicity	ASIAN SUBCONTINENT
Firm Type	DBE/ACDBE

Firm ID	45587
DBA Name	BLESSEDCO ELECTRIC
Firm Name	CHRISTIAN RODRIGUEZ DBA BLESSEDCO ELECTRIC
Address Line1	37451 RUBYRED LN.
Address Line2	
City	PALMDALE
State	CA
Zip Code1	93551
Zip Code2	
Mailing Address Line1	
Mailing Address Line2	
Mailing City	
Mailing State	
Mailing Zip Code1	
Mailing Zip Code2	
Certifieation Type	DBE
EMail	CRodriguez@BlessedCoElectric.com
Contact Name	CHRISTIAN RODRIGUEZ
Area Code	213
Phone Number	503-7432
Extension	
Alt Area Code	
Alt Phone Number	
Extension	
Fax Area Code	661
Fax Phone Number	382-1957
Agency Name	LOS ANGELES COUNTY METRO TRANSPORTATION AUTHORITY (MTA)
Counties	01; 02; 03; 04; 05; 06; 07; 08; 09; 10; 11; 12; 13; 14; 15; 16; 17; 18; 19; 20; 21; 22; 23; 24; 25; 26; 27; 28; 29; 30; 31; 32; 33; 34; 35; 36; 37; 38; 39; 40; 41; 42; 43; 44; 45; 46; 47; 48; 49; 50; 51; 52; 53; 54; 55; 56; 57; 58;
Districts	01; 02; 03; 04; 05; 06; 07; 08; 09; 10; 11; 12;
DBE NAICS	237130; 238210; 517919;
ACDBE NAICS	
Work Codes	E4820 TELEGRAPH & OTHER COMMUNICATIONS; E4890 COMMUNICATIONS SERVICES; E4910 ELECTRIC SERVICES;
Licenses	C10 Electrical Contractor;
Trucks	

Gender	M
Ethnicity	HISPANIC
Firm Type	DBE

Firm ID	41963
DBA Name	BLUE CABLE INC
Firm Name	
Address Line1	7306 COLDWATER CANYON AVE #10
Address Line2	
City	NORTH HOLLYWOOD
State	CA
Zip Code1	91605
Zip Code2	
Mailing Address Line1	
Mailing Address Line2	
Mailing City	
Mailing State	
Mailing Zip Code1	
Mailing Zip Code2	
Certification Type	DBE
EMail	helinda@bluecable.com
Contact Name	HELINDA NAZARI
Area Code	818
Phone Number	559-5454
Extension	
Alt Area Code	
Alt Phone Number	
Extension	
Fax Area Code	818
Fax Phone Number	861-7259
Agency Name	DEPARTMENT OF TRANSPORTATION
Counties	01; 02; 03; 04; 05; 06; 07; 08; 09; 10; 11; 12; 13; 14; 15; 16; 17; 18; 19; 20; 21; 22; 23; 24; 25; 26; 27; 28; 29; 30; 31; 32; 33; 34; 35; 36; 37; 38; 39; 40; 41; 42; 43; 44; 45; 46; 47; 48; 49; 50; 51; 52; 53; 54; 55; 56; 57; 58;
Districts	01; 02; 03; 04; 05; 06; 07; 08; 09; 10; 11; 12;
DBE NAICS	238210;
ACDBE NAICS	
Work Codes	C9859 Commercial Electrical; C9857 Low Voltage Electrical Systems; C8602 SIGNAL & LIGHTING; C9858 RESIDENTIAL ELECTRICAL;
Licenses	B General Building Contractor; C10 Electrical Contractor;
Trucks	
Gender	M
Ethnicity	HISPANIC
Firm Type	DBE

Firm ID	41929
DBA Name	CABLE LINKS CONSTRUCTION GROUP, INC.
Firm Name	CABLE LINKS CONSTRUCTION GROUP, INC.
Address Line1	5940 E SHIELDS, SUITE 101
Address Line2	
City	FRESNO
State	CA
Zip Code1	93727
Zip Code2	
Mailing Address Line1	
Mailing Address Line2	
Mailing City	
Mailing State	
Mailing Zip Code1	
Mailing Zip Code2	
Certification Type	DBE
EMail	office@clcinc.us; sslumberg@cablelinks.us
Contact Name	SANDY SLUMBERGER
Area Code	559
Phone Number	277-8555
Extension	
Alt Area Code	
Alt Phone Number	
Extension	
Fax Area Code	559
Fax Phone Number	274-1555
Agency Name	CITY OF FRESNO
Counties	01; 07; 10; 16; 19; 20; 21; 24; 27; 28; 30; 34; 37; 38; 40; 41; 43; 44; 54;
Districts	03; 04; 05; 06; 07; 10; 11; 12;
DBE NAICS	236220; 238210; 238990; 517919; 561621;
ACDBE NAICS	
Work Codes	E4890 COMMUNICATIONS SERVICES; C9857 Low Voltage Electrical Systems; 17374 Intelligent Transportation Systems (ITS);
Licenses	A General Engineering Contractor; B General Building Contractor; C07 Low Voltage Systems Contractor; C10 Electrical Contractor;
Trucks	
Gender	M
Ethnicity	HISPANIC
Firm Type	DBE

Firm ID	31277
DBA Name	CALIFORNIA PROFESSIONAL ENGINEERING INC
Firm Name	CALIFORNIA PROFESSIONAL ENGINEERING, INC.
Address Line1	929 OTTERBEIN AVENUE, UNIT E
Address Line2	
City	LA PUENTE
State	CA
Zip Code1	91748
Zip Code2	
Mailing Address Line1	
Mailing Address Line2	
Mailing City	
Mailing State	
Mailing Zip Code1	
Mailing Zip Code2	
Certification Type	DBE
EMail	van@cpengineeringinc.com
Contact Name	VAN TAN NGUYEN
Area Code	626
Phone Number	810-1336
Extension	
Alt Area Code	
Alt Phone Number	
Extension	
Fax Area Code	626
Fax Phone Number	810-1322
Agency Name	DEPARTMENT OF TRANSPORTATION
Counties	10; 15; 19; 30; 33; 36; 37;
Districts	06; 07; 08; 11; 12;
DBE NAICS	237310; 238210;
ACDBE NAICS	
Work Codes	C8611 RAMP METERING SYSTEM; C8603 SIGNAL; C8608 DETECTOR; C8501 PAVEMENT MARKER; C8602 SIGNAL & LIGHTING; C8604 LIGHTING;
Licenses	A General Engineering Contractor; C10 Electrical Contractor;
Trucks	
Gender	M
Ethnicity	ASIAN PACIFIC
Firm Type	DBE

Firm ID	33135
DBA Name	CINDY BALES ENGINEERING, INC.
Firm Name	CINDY BALES ENGINEERING, INC.
Address Line1	1828 SHADY LANE
Address Line2	
City	BIG BEAR CITY
State	CA
Zip Code1	92314
Zip Code2	
Mailing Address Line1	P. O. BOX 1600
Mailing Address Line2	
Mailing City	BIG BEAR CITY
Mailing State	CA
Mailing Zip Code1	92314
Mailing Zip Code2	1600
Certification Type	DBE
EMail	flyhigh@baleseng.com
Contact Name	CINDY BALES
Area Code	909
Phone Number	585-1557
Extension	
Alt Area Code	
Alt Phone Number	
Extension	
Fax Area Code	909
Fax Phone Number	752-7090
Agency Name	DEPARTMENT OF TRANSPORTATION
Counties	01; 02; 03; 04; 05; 06; 07; 08; 09; 10; 11; 12; 13; 14; 15; 16; 17; 18; 19; 20; 21; 22; 23; 24; 25; 26; 27; 28; 29; 30; 31; 32; 33; 34; 35; 36; 37; 38; 39; 40; 41; 42; 43; 44; 45; 46; 47; 48; 49; 50; 51; 52; 53; 54; 55; 56; 57; 58;
Districts	01; 02; 03; 04; 05; 06; 07; 08; 09; 10; 11; 12;
DBE NAICS	238210;
ACDBE NAICS	
Work Codes	C8903 ELECTRICAL SERVICES FOR RAIL CARS; C1201 TRAFFIC CONTROL SYSTEM; C9858 RESIDENTIAL ELECTRICAL;
Licenses	C10 Electrical Contractor;
Trucks	
Gender	F
Ethnicity	CAUCASIAN
Firm Type	DBE

Firm ID	42843
DBA Name	DELTA ELECTRIC
Firm Name	DELTA ELECTRIC
Address Line1	17007 STRAWBERRY PINE CT.
Address Line2	
City	SANTA CLARITA
State	CA
Zip Code1	91387
Zip Code2	
Mailing Address Line1	
Mailing Address Line2	
Mailing City	
Mailing State	
Mailing Zip Code1	
Mailing Zip Code2	
Certification Type	DBE
EMail	deltaelectric1@hotmail.com
Contact Name	ROLANDO ESTEVEZ
Area Code	323
Phone Number	816-0508
Extension	
Alt Area Code	
Alt Phone Number	
Extension	
Fax Area Code	661
Fax Phone Number	250-4090
Agency Name	LOS ANGELES COUNTY METRO TRANSPORTATION AUTHORITY (MTA)
Counties	00;
Districts	00;
DBE NAICS	238210;
ACDBE NAICS	
Work Codes	C8903 ELECTRICAL SERVICES FOR RAIL CARS;
Licenses	C10 Electrical Contractor;
Trucks	
Gender	M
Ethnicity	HISPANIC
Firm Type	DBE

Firm ID	39990
DBA Name	E M F FIRE SOLUTIONS
Firm Name	E M F FIRE SOLUTIONS
Address Line1	14250 CENTRAL AVE UNIT A
Address Line2	
City	CHINO
State	CA
Zip Code1	91710
Zip Code2	
Mailing Address Line1	P.O. BOX 596
Mailing Address Line2	
Mailing City	YORBA LINDA
Mailing State	CA
Mailing Zip Code1	92885
Mailing Zip Code2	
Certification Type	DBE
EMail	cgalvan@cmffire.com
Contact Name	CARLOS GALVAN
Area Code	909
Phone Number	494-8090
Extension	102
Alt Area Code	714
Alt Phone Number	318-7528
Extension	
Fax Area Code	909
Fax Phone Number	494-2929
Agency Name	LOS ANGELES COUNTY METRO TRANSPORTATION AUTHORITY (MTA)
Counties	00;
Districts	00;
DBE NAICS	238210; 238220; 423610;
ACDBE NAICS	
Work Codes	D3620 ELECTRICAL INDUSTRIAL APPARATUS; D3640 ELECTRIC LIGHTING & WIRING EQUIPMENT; D3430 PLUMBING & HEATING, EXCEPT ELECTRIC; C8903 ELECTRICAL SERVICES FOR RAIL CARS; C8901 AIR CONDITIONING/SHEET METAL;
Licenses	B General Building Contractor; C10 Electrical Contractor; C16 Fire Protection Contractor;
Trucks	
Gender	M
Ethnicity	HISPANIC
Firm Type	DBE

Firm ID	43691
DBA Name	ELECTRONIC & TELECOM SYSTEMS INC
Firm Name	

Address Line1	5713 DESERT VIEW DR.
Address Line2	
City	LA JOLLA
State	CA
Zip Code1	92037
Zip Code2	
Mailing Address Line1	
Mailing Address Line2	
Mailing City	
Mailing State	
Mailing Zip Code1	
Mailing Zip Code2	
Certification Type	DBE
EMail	scabaj@etssys.com
Contact Name	STEVEN CABAJ
Area Code	858
Phone Number	999-5348
Extension	
Alt Area Code	
Alt Phone Number	
Extension	
Fax Area Code	
Fax Phone Number	
Agency Name	DEPARTMENT OF TRANSPORTATION
Counties	01; 02; 03; 04; 05; 06; 07; 08; 09; 10; 11; 12; 13; 14; 15; 16; 17; 18; 19; 20; 21; 22; 23; 24; 25; 26; 27; 28; 29; 30; 31; 32; 33; 34; 35; 36; 37; 38; 39; 40; 41; 42; 43; 44; 45; 46; 47; 48; 49; 50; 51; 52; 53; 54; 55; 56; 57; 58;
Districts	01; 02; 03; 04; 05; 06; 07; 08; 09; 10; 11; 12;
DBE NAICS	238210; 238220; 541513; 541690;
ACDBE NAICS	
Work Codes	C8605 MESSAGE SIGNS, LIGHTING & SIGN ILLUMINATION; C9866 HEATING & AIR CONDITIONING; C8711 COMPUTER; C8730 SAFETY STUDIES;
Licenses	C10 Electrical Contractor; C20 Warm-Air Heating, Ventilation and Air-conditioning Contracto;
Trucks	
Gender	M
Ethnicity	HISPANIC
Firm Type	DBE

Firm ID	40613
DBA Name	EMF FIRE SOLUTIONS - ELECTRO MOTIVE FORCE, INC.
Firm Name	ELECTRO MOTIVE FORCE, INC.
Address Line1	14250 CENTRAL AVE. UNIT A
Address Line2	
City	CHINO
State	CA
Zip Code1	91710
Zip Code2	
Mailing Address Line1	P.O. BOX 596
Mailing Address Line2	
Mailing City	YORBA LINDA
Mailing State	CA
Mailing Zip Code1	92885
Mailing Zip Code2	
Certification Type	DBE
EMail	cgalvan@emffire.com
Contact Name	CARLOS GALVAN
Area Code	909
Phone Number	464-8090
Extension	102
Alt Area Code	
Alt Phone Number	
Extension	
Fax Area Code	909
Fax Phone Number	464-2929
Agency Name	LOS ANGELES COUNTY METRO TRANSPORTATION AUTHORITY (MTA)
Counties	00;
Districts	00;
DBE NAICS	238210; 238220;
ACDBE NAICS	
Work Codes	F5060 ELECTRICAL GOODS; D3640 ELECTRIC LIGHTING & WIRING EQUIPMENT; C9850 PLUMBING; C9866 HEATING & AIR CONDITIONING;
Licenses	B General Building Contractor; C10 Electrical Contractor; C16 Fire Protection Contractor;
Trucks	
Gender	M
Ethnicity	HISPANIC
Firm Type	DBE

Firm ID	35396
DBA Name	EXPRESS ENERGY SERVICES, INC
Firm Name	EXPRESS ENERGY SERVICES, INC.
Address Line1	10610 HUMBOLT ST

Address Line2	
City	LOS ALAMITOS
State	CA
Zip Code1	90720
Zip Code2	
Mailing Address Line1	11278 LOS ALAMITOS, #140
Mailing Address Line2	
Mailing City	LOS ALAMITOS
Mailing State	CA
Mailing Zip Code1	90720
Mailing Zip Code2	
Certification Type	DBE
EMail	docrivers@exp-energy.com
Contact Name	DONALD RIVERS
Area Code	714
Phone Number	650-8870
Extension	
Alt Area Code	
Alt Phone Number	
Extension	
Fax Area Code	714
Fax Phone Number	650-8910
Agency Name	DEPARTMENT OF TRANSPORTATION
Counties	01; 02; 03; 04; 05; 06; 07; 08; 09; 10; 11; 12; 13; 14; 15; 16; 17; 18; 19; 20; 21; 22; 23; 24; 25; 26; 27; 28; 29; 30; 31; 32; 33; 34; 35; 36; 37; 38; 39; 40; 41; 42; 43; 44; 45; 46; 47; 48; 49; 50; 51; 52; 53; 54; 55; 56; 57; 58;
Districts	01; 02; 03; 04; 05; 06; 07; 08; 09; 10; 11; 12;
DBE NAICS	238210;
ACDBE NAICS	
Work Codes	C9859 Commercial Electrical; C9858 RESIDENTIAL ELECTRICAL;
Licenses	C10 Electrical Contractor;
Trucks	
Gender	M
Ethnicity	HISPANIC
Firm Type	DBE

Firm ID	45583
DBA Name	FOSCO ELECTRIC
Firm Name	FOSCO ELECTRIC
Address Line1	2010 5TH STREET
Address Line2	
City	SAN FERNANDO
State	CA
Zip Code1	91340
Zip Code2	
Mailing Address Line1	
Mailing Address Line2	
Mailing City	
Mailing State	
Mailing Zip Code1	
Mailing Zip Code2	
Certification Type	DBE
EMail	aramirez@FOSCOelectric.com
Contact Name	ALEX RAMIREZ
Area Code	818
Phone Number	322-6116
Extension	
Alt Area Code	
Alt Phone Number	
Extension	
Fax Area Code	
Fax Phone Number	
Agency Name	LOS ANGELES COUNTY METRO TRANSPORTATION AUTHORITY (MTA)
Counties	01; 02; 03; 04; 05; 06; 07; 08; 09; 10; 11; 12; 13; 14; 15; 16; 17; 18; 19; 20; 21; 22; 23; 24; 25; 26; 27; 28; 29; 30; 31; 32; 33; 34; 35; 36; 37; 38; 39; 40; 41; 42; 43; 44; 45; 46; 47; 48; 49; 50; 51; 52; 53; 54; 55; 56; 57; 58;
Districts	01; 02; 03; 04; 05; 06; 07; 08; 09; 10; 11; 12;
DBE NAICS	236118; 236220; 238210;
ACDBE NAICS	
Work Codes	E4910 ELECTRIC SERVICES; C9802 BUILDING CONSTRUCTION; C9810 SMALL STRUCTURES; C9846 ADDITIONS, ALTERATIONS OR REPAIRS;
Licenses	B General Building Contractor; C07 Low Voltage Systems Contractor; C10 Electrical Contractor;
Trucks	
Gender	M
Ethnicity	HISPANIC
Firm Type	DBE

Firm ID	30303
DBA Name	FRANCIES ELECTRIC, INC.
Firm Name	FRANCIES ELECTRIC, INC.
Address Line1	3420 RIO GRANDE
Address Line2	

City	BAKERSFIELD
State	CA
Zip Code1	93313
Zip Code2	
Mailing Address Line1	PO BOX 70756
Mailing Address Line2	
Mailing City	BAKERSFIELD
Mailing State	CA
Mailing Zip Code1	93387
Mailing Zip Code2	
Certification Type	DBE
EMail	francieselectric@yahoo.com
Contact Name	LEON FRANCIES JR.
Area Code	661
Phone Number	809-4175
Extension	
Alt Area Code	
Alt Phone Number	
Extension	
Fax Area Code	661
Fax Phone Number	834-5725
Agency Name	CITY OF FRESNO
Counties	00;
Districts	00;
DBE NAICS	236115; 236116; 236117; 236118; 236220; 237130; 238110; 238130; 238190; 238210; 238350; 238390; 238990; 541618; 561210; 561790;
ACDBE NAICS	
Work Codes	E4930 COMBINATION UTILITY SERVICES; I7620 ELECTRICAL REPAIR SHOPS; E4910 ELECTRIC SERVICES; C9822 CARPENTRY; C8903 ELECTRICAL SERVICES FOR RAIL CARS; C9801 BUILDING CONSTRUCTION; C9858 RESIDENTIAL ELECTRICAL;
Licenses	B General Building Contractor; C10 Electrical Contractor;
Trucks	
Gender	M
Ethnicity	BLACK
Firm Type	DBE

Firm ID	40998
DBA Name	GALINDO ELECTRIC
Firm Name	GALINDO ELECTRIC
Address Line1	41017 ROAD 116
Address Line2	
City	OROSI
State	CA
Zip Code1	93647
Zip Code2	
Mailing Address Line1	
Mailing Address Line2	
Mailing City	
Mailing State	
Mailing Zip Code1	
Mailing Zip Code2	
Certification Type	DBE
EMail	victor.galindo@galindoelectric.com
Contact Name	VICTOR GALINDO
Area Code	559
Phone Number	
Extension	
Alt Area Code	
Alt Phone Number	
Extension	
Fax Area Code	559
Fax Phone Number	
Agency Name	CITY OF FRESNO
Counties	07; 10; 15; 16; 19; 20; 22; 24; 27; 28; 37; 38; 39; 40; 41; 42; 43; 44; 49;
Districts	04; 05; 06; 07; 10; 11;
DBE NAICS	238210;
ACDBE NAICS	
Work Codes	E4910 ELECTRIC SERVICES; C8903 ELECTRICAL SERVICES FOR RAIL CARS;
Licenses	C10 Electrical Contractor;
Trucks	
Gender	M
Ethnicity	HISPANIC
Firm Type	DBE

Firm ID	36329
DBA Name	GLOBAL ELECTRIC
Firm Name	GLOBAL INSTALLATION & MAINTENANCE INC.
Address Line1	140 E. COMMONWEALTH AVENUE
Address Line2	SUITE 104
City	FULLERTON
State	CA
Zip Code1	92832

Zip Code2	
Mailing Address Line1	140 E. COMMONWEALTH AVENUE
Mailing Address Line2	SUITE 104
Mailing City	FULLERTON
Mailing State	CA
Mailing Zip Code1	92832
Mailing Zip Code2	
Certification Type	DBE
EMail	william@globalelectric.us; dmartin@globalelectric.us
Contact Name	WILLIAM JACKSON
Area Code	800
Phone Number	272-1765
Extension	5
Alt Area Code	714
Alt Phone Number	726-9500
Extension	
Fax Area Code	888
Fax Phone Number	377-1221
Agency Name	LOS ANGELES COUNTY METRO TRANSPORTATION AUTHORITY (MTA)
Counties	00;
Districts	00;
DBE NAICS	238210; 423610; 561621;
ACDBE NAICS	
Work Codes	F5060 ELECTRICAL GOODS; I7382 SECURITY SYSTEMS SERVICES; C8903 ELECTRICAL SERVICES FOR RAIL CARS;
Licenses	C07 Low Voltage Systems Contractor; C10 Electrical Contractor;
Trucks	
Gender	M
Ethnicity	BLACK
Firm Type	DBE

Firm ID	31176
DBA Name	GLOBAL ROAD SEALING, INC
Firm Name	GLOBAL ROAD SEALING, INC
Address Line1	10832 DOROTHY AVE
Address Line2	
City	GARDEN GROVE
State	CA
Zip Code1	92843
Zip Code2	
Mailing Address Line1	
Mailing Address Line2	
Mailing City	
Mailing State	
Mailing Zip Code1	
Mailing Zip Code2	
Certification Type	DBE
EMail	grs@globalroadsealing.com
Contact Name	TRI LA
Area Code	714
Phone Number	893-0845
Extension	
Alt Area Code	
Alt Phone Number	
Extension	
Fax Area Code	714
Fax Phone Number	893-0945
Agency Name	DEPARTMENT OF TRANSPORTATION
Counties	01; 02; 03; 05; 07; 09; 10; 13; 14; 15; 16; 17; 19; 20; 21; 22; 24; 26; 27; 28; 30; 33; 34; 35; 36; 37; 38; 39; 40; 41; 42; 43; 44; 48; 49; 50; 51; 54; 55; 56; 57; 58;
Districts	01; 03; 04; 05; 06; 07; 08; 09; 10; 11; 12;
DBE NAICS	238210; 238910;
ACDBE NAICS	
Work Codes	C8611 RAMP METERING SYSTEM; C1901 ROADWAY EXCAVATION; C1940 DITCHES EXCAVATION; C1920 STRUCTURE EXCAVATION; C8608 DETECTOR; C1601 CLEARING & GRUBBING; C8501 PAVEMENT MARKER; C9980 DEMOLITION; C1201 TRAFFIC CONTROL SYSTEM; C1930 STRUCTURE BACKFILL; C3701 SEAL COAT; C4040 CLEAN & SEAL PAVEMENT JOINTS - ROUT & SEAL CRACKS; C4101 PAVEMENT SUBSEALING & JACKING; C9858 RESIDENTIAL ELECTRICAL;
Licenses	A General Engineering Contractor; C10 Electrical Contractor; C32 Parking and Highway Improvement Contractor;
Trucks	
Gender	M
Ethnicity	ASIAN PACIFIC
Firm Type	DBE

Firm ID	36470
DBA Name	GRACE ELECTRIC, INC.
Firm Name	GRACE ELECTRIC, INC.
Address Line1	7620 TRAVIS ST
Address Line2	
City	BAKERSFIELD
State	CA
Zip Code1	93314

Zip Code2	
Mailing Address Line1	
Mailing Address Line2	
Mailing City	
Mailing State	
Mailing Zip Code1	
Mailing Zip Code2	
Certification Type	DBE
EMail	gmad1961@gmail.com
Contact Name	DAVID MADRUGA
Area Code	661
Phone Number	587-1257
Extension	
Alt Area Code	
Alt Phone Number	
Extension	
Fax Area Code	661
Fax Phone Number	587-9660
Agency Name	DEPARTMENT OF TRANSPORTATION
Counties	10; 15; 16; 19; 36; 40; 42; 54; 56;
Districts	05; 06; 07; 08;
DBE NAICS	238210;
ACDBE NAICS	
Work Codes	C7410 PUMPING PLANT ELECTRICAL EQUIPMENT; C8903 ELECTRICAL SERVICES FOR RAIL CARS;
Licenses	C10 Electrical Contractor;
Trucks	
Gender	F
Ethnicity	HISPANIC
Firm Type	DBE

Firm ID	41653
DBA Name	GREEN TECH ELECTRIC SOLUTIONS
Firm Name	
Address Line1	12333 SARATOGA-SUNNYVALE ROAD, SUITE M
Address Line2	
City	SARATOGA
State	CA
Zip Code1	95070
Zip Code2	
Mailing Address Line1	
Mailing Address Line2	
Mailing City	
Mailing State	
Mailing Zip Code1	
Mailing Zip Code2	
Certification Type	DBE
EMail	manuel@greentechelectricinc.com
Contact Name	MANUEL CORINAS
Area Code	408
Phone Number	280-1180
Extension	4
Alt Area Code	408
Alt Phone Number	593-1435
Extension	
Fax Area Code	408
Fax Phone Number	777-8363
Agency Name	SANTA CLARA VALLEY TRANSPORTATION AUTHORITY (VTA)
Counties	00;
Districts	00;
DBE NAICS	238210;
ACDBE NAICS	
Work Codes	C9858 RESIDENTIAL ELECTRICAL;
Licenses	C10 Electrical Contractor;
Trucks	
Gender	M
Ethnicity	HISPANIC
Firm Type	DBE

Firm ID	39391
DBA Name	HERCA TELECOMM SERVICES, INC.
Firm Name	HERCA CONSTRUCTION SERVICES
Address Line1	18610 BECK STREET
Address Line2	
City	PERRIS
State	CA
Zip Code1	92570
Zip Code2	
Mailing Address Line1	
Mailing Address Line2	
Mailing City	

Mailing State	
Mailing Zip Code1	
Mailing Zip Code2	
Certification Type	DBE
EMail	hector.castellon@hercateleconm.com
Contact Name	HECTOR CASTELLON
Area Code	951
Phone Number	940-5941
Extension	
Alt Area Code	
Alt Phone Number	
Extension	
Fax Area Code	951
Fax Phone Number	940-5456
Agency Name	CITY OF LOS ANGELES
Counties	00;
Districts	00;
DBE NAICS	237130; 238210;
ACDBE NAICS	
Work Codes	D3660 COMMUNICATIONS EQUIPMENT; C8777 Construction Management - Power and Communication Line and Related Structure Construction; C0686 ELECTRICAL & SIGNALS SUPPLIER;
Licenses	A General Engineering Contractor; B General Building Contractor; C10 Electrical Contractor;
Trucks	
Gender	M
Ethnicity	HISPANIC
Firm Type	DBE

Firm ID	33587
DBA Name	INDUSTRIAL BATTERY SERVICES
Firm Name	INDUSTRIAL BATTERY SERVICES
Address Line1	673 ERLANDSON STREET
Address Line2	
City	RICHMOND
State	CA
Zip Code1	94804
Zip Code2	
Mailing Address Line1	
Mailing Address Line2	
Mailing City	
Mailing State	
Mailing Zip Code1	
Mailing Zip Code2	
Certification Type	DBE
EMail	ibsrecoder@aol.com
Contact Name	ELIZABETH RECORDER
Area Code	510
Phone Number	222-7719
Extension	
Alt Area Code	
Alt Phone Number	
Extension	
Fax Area Code	510
Fax Phone Number	412-5988
Agency Name	BAY AREA RAPID TRANSIT DISTRICT (BART)
Counties	00;
Districts	00;
DBE NAICS	238210; 441310;
ACDBE NAICS	
Work Codes	C1201 TRAFFIC CONTROL SYSTEM; C8906 AUTO SERVICE; C9858 RESIDENTIAL ELECTRICAL;
Licenses	C10 Electrical Contractor;
Trucks	
Gender	M
Ethnicity	HISPANIC
Firm Type	DBE

Firm ID	44395
DBA Name	KPA CONSTRUCTORS, INC.
Firm Name	KPA CONSTRUCTORS, INC.
Address Line1	40 N. ALTADENA DR. #206
Address Line2	
City	PASADENA
State	CA
Zip Code1	91107
Zip Code2	3386
Mailing Address Line1	
Mailing Address Line2	
Mailing City	
Mailing State	
Mailing Zip Code1	
Mailing Zip Code2	

Certification Type	DBE
EMail	info@KPAconstructors.com
Contact Name	KARL II PERCELL
Area Code	626
Phone Number	658-8165
Extension	
Alt Area Code	
Alt Phone Number	
Extension	
Fax Area Code	
Fax Phone Number	
Agency Name	LOS ANGELES COUNTY METRO TRANSPORTATION AUTHORITY (MTA)
Counties	00;
Districts	00;
DBE NAICS	237110; 237130; 237990; 238110; 238210; 541330;
ACDBE NAICS	
Work Codes	E4890 COMMUNICATIONS SERVICES; E4952 SEWERAGE SYSTEMS; C8903 ELECTRICAL SERVICES FOR RAIL CARS; D3530 CONSTRUCTION & RELATED MACHINERY; C5100 CONCRETE STRUCTURE; C8720 CIVIL ENGINEERING;
Licenses	A General Engineering Contractor; C10 Electrical Contractor; EC Civil Engineer;
Trucks	
Gender	M
Ethnicity	BLACK
Firm Type	DBE

Firm ID	35670
DBA Name	LOS ANGELES SIGNAL CONSTRUCTION, INC.
Firm Name	LOS ANGELES SIGNAL CONSTRUCTION, INC.
Address Line1	155 N. EUCLA
Address Line2	
City	SAN DIMAS
State	CA
Zip Code1	91773
Zip Code2	
Mailing Address Line1	155 N. EUCLA
Mailing Address Line2	
Mailing City	SAN DIMAS
Mailing State	CA
Mailing Zip Code1	91773
Mailing Zip Code2	
Certification Type	DBE
EMail	info@lasignal.com
Contact Name	CHRISTOPHER MORALES
Area Code	909
Phone Number	599-2201
Extension	
Alt Area Code	
Alt Phone Number	
Extension	
Fax Area Code	909
Fax Phone Number	599-2722
Agency Name	LOS ANGELES COUNTY METRO TRANSPORTATION AUTHORITY (MTA)
Counties	00;
Districts	00;
DBE NAICS	238210;
ACDBE NAICS	
Work Codes	C0686 ELECTRICAL & SIGNALS SUPPLIER;
Licenses	C10 Electrical Contractor;
Trucks	
Gender	M
Ethnicity	HISPANIC
Firm Type	DBE

Firm ID	43314
DBA Name	MARKHAM ELECTRIC SOLUTIONS
Firm Name	MARKHAM ELECTRIC SOLUTIONS
Address Line1	1112 DORIAN DRIVE
Address Line2	
City	BAKERSFIELD
State	CA
Zip Code1	93304
Zip Code2	
Mailing Address Line1	
Mailing Address Line2	
Mailing City	
Mailing State	
Mailing Zip Code1	
Mailing Zip Code2	
Certification Type	DBE
EMail	markelecsol@yahoo.com
Contact Name	EDGAR MARKHAM

Area Code	661
Phone Number	927-8029
Extension	
Alt Area Code	
Alt Phone Number	
Extension	
Fax Area Code	
Fax Phone Number	
Agency Name	DEPARTMENT OF TRANSPORTATION
Counties	01; 10; 14; 15; 16; 19; 30; 33; 36; 37; 54;
Districts	04; 06; 07; 08; 09; 11; 12;
DBE NAICS	238210;
ACDBE NAICS	
Work Codes	C9859 Commercial Electrical; C9858 RESIDENTIAL ELECTRICAL;
Licenses	C10 Electrical Contractor;
Trucks	
Gender	M
Ethnicity	BLACK
Firm Type	DBE

Firm ID	38696
DBA Name	MEGAVOLT ELECTRICAL SERVICES
Firm Name	MEGAVOLT ELECTRICAL SERVICES
Address Line1	17073 KINGSBURY STREET
Address Line2	
City	GRANADA HILLS
State	CA
Zip Code1	91344
Zip Code2	6219
Mailing Address Line1	
Mailing Address Line2	
Mailing City	
Mailing State	
Mailing Zip Code1	
Mailing Zip Code2	
Certification Type	DBE
EMail	xuhua01@yahoo.com
Contact Name	JUAN HERNANDEZ
Area Code	818
Phone Number	635-1454
Extension	
Alt Area Code	
Alt Phone Number	
Extension	
Fax Area Code	
Fax Phone Number	
Agency Name	DEPARTMENT OF TRANSPORTATION
Counties	10; 16; 19; 20; 22; 23; 28; 33; 36; 37; 39; 40; 42; 44; 54; 56;
Districts	01; 04; 05; 06; 07; 08; 10; 11;
DBE NAICS	238210;
ACDBE NAICS	
Work Codes	C9858 RESIDENTIAL ELECTRICAL;
Licenses	C10 Electrical Contractor;
Trucks	
Gender	M
Ethnicity	HISPANIC
Firm Type	DBE

Firm ID	45752
DBA Name	MENDOZA BUSINESS ENTERPRISE INC.
Firm Name	MENDOZA BUSINESS ENTERPRISE INC.
Address Line1	10989 KAY JAY STREET
Address Line2	
City	RIVERSIDE
State	CA
Zip Code1	92503
Zip Code2	
Mailing Address Line1	
Mailing Address Line2	
Mailing City	
Mailing State	
Mailing Zip Code1	
Mailing Zip Code2	
Certification Type	DBE
EMail	Peter.Mendoza.GDL@gmail.com
Contact Name	PETER MENDOZA
Area Code	951
Phone Number	427-2838
Extension	
Alt Area Code	

Alt Phone Number	
Extension	
Fax Area Code	
Fax Phone Number	
Agency Name	LOS ANGELES COUNTY METRO TRANSPORTATION AUTHORITY (MTA)
Counties	01; 02; 03; 04; 05; 06; 07; 08; 09; 10; 11; 12; 13; 14; 15; 16; 17; 18; 19; 20; 21; 22; 23; 24; 25; 26; 27; 28; 29; 30; 31; 32; 33; 34; 35; 36; 37; 38; 39; 40; 41; 42; 43; 44; 45; 46; 47; 48; 49; 50; 51; 52; 53; 54; 55; 56; 57; 58;
Districts	01; 02; 03; 04; 05; 06; 07; 08; 09; 10; 11; 12;
DBE NAICS	238210; 238990;
ACDBE NAICS	
Work Codes	E4910 ELECTRIC SERVICES; C1201 TRAFFIC CONTROL SYSTEM;
Licenses	C10 Electrical Contractor; C31 Construction Zone Traffic Control Contractor;
Trucks	
Gender	M
Ethnicity	HISPANIC
Firm Type	DBE

Firm ID	14906
DBA Name	METCO
Firm Name	MARTINEZ ELECTRIC TRANSPORTATION COMPANY, INC.
Address Line1	2165 FRANCISCO BOULEVARD, #A1
Address Line2	
City	SAN RAFAEL
State	CA
Zip Code1	94901
Zip Code2	
Mailing Address Line1	
Mailing Address Line2	
Mailing City	
Mailing State	
Mailing Zip Code1	
Mailing Zip Code2	
Certification Type	DBE
EMail	c.martinez@metco-usa.com
Contact Name	CHRISTOPHER MARTINEZ
Area Code	415
Phone Number	455-9922
Extension	
Alt Area Code	
Alt Phone Number	
Extension	
Fax Area Code	415
Fax Phone Number	455-9960
Agency Name	SAN FRANCISCO MUNICIPAL TRANSPORTATION AGENCY
Counties	00;
Districts	00;
DBE NAICS	221119; 238210; 238990; 423610; 561621;
ACDBE NAICS	
Work Codes	C8701 BUSINESS ADMINISTRATION; E4820 TELEGRAPH & OTHER COMMUNICATIONS; E4930 COMBINATION UTILITY SERVICES; F5060 ELECTRICAL GOODS; I7382 SECURITY SYSTEMS SERVICES; C8716 ARCHITECTURAL ENGINEER; C8742 MECHANICAL ENGINEERS; C8707 FEASIBILITY STUDIES; E4910 ELECTRIC SERVICES; I8740 MANAGEMENT & PUBLIC RELATIONS; E4810 TELEPHONE COMMUNICATIONS; C8702 MANAGEMENT INFORMATION SYSTEMS; C8903 ELECTRICAL SERVICES FOR RAIL CARS; I7370 COMPUTER & DATA PROCESSING SERVICES; C0686 ELECTRICAL & SIGNALS SUPPLIER; C8700 CONSULTANT, NON ENGINEERING; F5085 COMPUTER EQUIPMENT & SUPPLIES; I7371 COMPUTER PROGRAMMING; C1201 TRAFFIC CONTROL SYSTEM; C8703 TRAFFIC ENGINEER; C8720 CIVIL ENGINEERING; C8730 SAFETY STUDIES; C9858 RESIDENTIAL ELECTRICAL;
Licenses	C10 Electrical Contractor;
Trucks	
Gender	M
Ethnicity	HISPANIC
Firm Type	DBE

Firm ID	41887
DBA Name	OPTIMA ENERGY, INC.
Firm Name	
Address Line1	17209 S. FIGUEROA STREET #D
Address Line2	
City	GARDENA
State	CA
Zip Code1	90248
Zip Code2	
Mailing Address Line1	
Mailing Address Line2	
Mailing City	
Mailing State	
Mailing Zip Code1	
Mailing Zip Code2	
Certification Type	DBE
EMail	young@opnrg.com
Contact Name	YOUNG CHANG
Area Code	310

Phone Number	320-0611
Extension	
Alt Area Code	323
Alt Phone Number	715-8325
Extension	
Fax Area Code	323
Fax Phone Number	383-9932
Agency Name	CITY OF LOS ANGELES
Counties	00;
Districts	00;
DBE NAICS	238210;
ACDBE NAICS	
Work Codes	C9859 Commercial Electrical; C9858 RESIDENTIAL ELECTRICAL;
Licenses	C10 Electrical Contractor;
Trucks	
Gender	M
Ethnicity	ASIAN PACIFIC
Firm Type	DBE

Firm ID	34535
DBA Name	PHASE 3 COMMUNICATIONS
Firm Name	PHASE 3 COMMUNICATIONS, INC.
Address Line1	224-N 27TH STREET, SUITE B
Address Line2	
City	SAN JOSE
State	CA
Zip Code1	95116
Zip Code2	
Mailing Address Line1	
Mailing Address Line2	
Mailing City	
Mailing State	
Mailing Zip Code1	
Mailing Zip Code2	
Certification Type	DBE
EMail	ryusi@p3com.net
Contact Name	NICOLAS DEZUBIRIA
Area Code	408
Phone Number	946-9011
Extension	
Alt Area Code	
Alt Phone Number	
Extension	
Fax Area Code	408
Fax Phone Number	946-0672
Agency Name	SANTA CLARA VALLEY TRANSPORTATION AUTHORITY (VTA)
Counties	00;
Districts	00;
DBE NAICS	238210;
ACDBE NAICS	
Work Codes	E4890 COMMUNICATIONS SERVICES; C9859 Commercial Electrical; C9857 Low Voltage Electrical Systems;
Licenses	C10 Electrical Contractor;
Trucks	
Gender	M
Ethnicity	HISPANIC
Firm Type	DBE

Firm ID	44914
DBA Name	POWER4WARD
Firm Name	POWER4WARD
Address Line1	37107 STRATFORD ST.
Address Line2	
City	INDIO
State	CA
Zip Code1	92203
Zip Code2	
Mailing Address Line1	
Mailing Address Line2	
Mailing City	
Mailing State	
Mailing Zip Code1	
Mailing Zip Code2	
Certification Type	DBE
EMail	AntonioA@power4ward.com
Contact Name	ANTONIO AMEEN
Area Code	228
Phone Number	383-2031
Extension	
Alt Area Code	
Alt Phone Number	

Extension	
Fax Area Code	
Fax Phone Number	
Agency Name	LOS ANGELES COUNTY METRO TRANSPORTATION AUTHORITY (MTA)
Counties	01; 02; 03; 04; 05; 06; 07; 08; 09; 10; 11; 12; 13; 14; 15; 16; 17; 18; 19; 20; 21; 22; 23; 24; 25; 26; 27; 28; 29; 30; 31; 32; 33; 34; 35; 36; 37; 38; 39; 40; 41; 42; 43; 44; 45; 46; 47; 48; 49; 50; 51; 52; 53; 54; 55; 56; 57; 58;
Districts	01; 02; 03; 04; 05; 06; 07; 08; 09; 10; 11; 12;
DBE NAICS	238210;
ACDBE NAICS	
Work Codes	C8903 ELECTRICAL SERVICES FOR RAIL CARS;
Licenses	C10 Electrical Contractor;
Trucks	
Gender	M
Ethnicity	BLACK
Firm Type	DBE

Firm ID	34435
DBA Name	R&A SERVICES
Firm Name	RISELO ENGINEERING SOLUTIONS, INC.
Address Line1	17338 HOLLY DRIVE
Address Line2	
City	FONTANA
State	CA
Zip Code1	92335
Zip Code2	
Mailing Address Line1	
Mailing Address Line2	
Mailing City	
Mailing State	
Mailing Zip Code1	
Mailing Zip Code2	
Certification Type	DBE
EMail	rlopez@randaservices.com
Contact Name	ROMEO LOPEZ
Area Code	909
Phone Number	356-8827
Extension	
Alt Area Code	
Alt Phone Number	
Extension	
Fax Area Code	909
Fax Phone Number	356-8826
Agency Name	CITY OF LOS ANGELES
Counties	00;
Districts	00;
DBE NAICS	238210; 238220;
ACDBE NAICS	
Work Codes	C8901 AIR CONDITIONING/SHEET METAL; C9866 HEATING & AIR CONDITIONING; C9862 RESIDENTIAL AIR CONDITIONING & SHEET METAL;
Licenses	C10 Electrical Contractor; C20 Warm-Air Heating, Ventilation and Air-conditioning Contracto; D21 Machinery and Pumps;
Trucks	
Gender	F
Ethnicity	HISPANIC
Firm Type	DBE

Firm ID	33730
DBA Name	REYES & SONS ELECTRIC CO
Firm Name	REYES & SONS ELECTRIC CO
Address Line1	12939 ARROYO ST.
Address Line2	
City	SYLMAR
State	CA
Zip Code1	91342
Zip Code2	
Mailing Address Line1	
Mailing Address Line2	
Mailing City	
Mailing State	
Mailing Zip Code1	
Mailing Zip Code2	
Certification Type	DBE
EMail	jose@reyesnsonsinc.com
Contact Name	JOSE REYES
Area Code	818
Phone Number	365-2030
Extension	
Alt Area Code	
Alt Phone Number	
Extension	
Fax Area Code	818

Fax Phone Number	743-7450
Agency Name	LOS ANGELES COUNTY METRO TRANSPORTATION AUTHORITY (MTA)
Counties	00;
Districts	00;
DBE NAICS	238210;
ACDBE NAICS	
Work Codes	C9858 RESIDENTIAL ELECTRICAL;
Licenses	B General Building Contractor; C10 Electrical Contractor;
Trucks	
Gender	M
Ethnicity	HISPANIC
Firm Type	DBE

Firm ID	41661
DBA Name	RUBECON BUILDERS INC.
Firm Name	RUBECON GENERAL CONTRACTING
Address Line1	3450 THIRD STREET, BUILDING 1B
Address Line2	
City	SAN FRANCISCO
State	CA
Zip Code1	94124
Zip Code2	
Mailing Address Line1	
Mailing Address Line2	
Mailing City	
Mailing State	
Mailing Zip Code1	
Mailing Zip Code2	
Certification Type	DBE
EMail	ruben@rubecon.com; office@rubecon.com
Contact Name	RUBEN SANTANA
Area Code	415
Phone Number	206-7740
Extension	
Alt Area Code	415
Alt Phone Number	740-9433
Extension	
Fax Area Code	415
Fax Phone Number	206-1750
Agency Name	SAN FRANCISCO MUNICIPAL TRANSPORTATION AGENCY
Counties	01; 07; 10; 19; 21; 24; 27; 28; 30; 34; 38; 40; 41; 43; 44; 48; 49; 50;
Districts	03; 04; 05; 06; 07; 10; 12;
DBE NAICS	236210; 236220; 237310; 238110; 238130; 238210; 238310; 238350;
ACDBE NAICS	
Work Codes	C9822 CARPENTRY; C8903 ELECTRICAL SERVICES FOR RAIL CARS; C9802 BUILDING CONSTRUCTION; D2430 MILLWORK, PLYWOOD & STRUCTURAL MEMBERS; C8783 Engineering - Structural; C5100 CONCRETE STRUCTURE; C9827 DRYWALL CONSTRUCTION;
Licenses	A General Engineering Contractor; B General Building Contractor; C05 Framing and Rough Carpentry Contractor; C06 Cabinet, Millwork and Finish Carpentry Contractor; C08 Concrete Contractor; C09 Drywall Contractor; C10 Electrical Contractor;
Trucks	
Gender	M
Ethnicity	HISPANIC
Firm Type	DBE

Firm ID	39590
DBA Name	SERNA ENGINEERING
Firm Name	SERNA ENGINEERING
Address Line1	15420 OLDE HWY. 80 #121
Address Line2	
City	EL CAJON
State	CA
Zip Code1	92021
Zip Code2	
Mailing Address Line1	
Mailing Address Line2	
Mailing City	
Mailing State	
Mailing Zip Code1	
Mailing Zip Code2	
Certification Type	DBE
EMail	hrredondo80@gmail.com
Contact Name	HENRY REDONDO
Area Code	619
Phone Number	647-7199
Extension	
Alt Area Code	
Alt Phone Number	
Extension	
Fax Area Code	
Fax Phone Number	
Agency Name	DEPARTMENT OF TRANSPORTATION

Counties	10; 13; 15; 16; 19; 20; 21; 22; 24; 30; 33; 34; 36; 37; 38; 39; 40; 42; 45; 52; 54; 56; 57; 58;
Districts	02; 03; 04; 05; 06; 07; 08; 10; 11; 12;
DBE NAICS	237990; 238210;
ACDBE NAICS	
Work Codes	C9858 RESIDENTIAL ELECTRICAL;
Licenses	A General Engineering Contractor; B General Building Contractor; C10 Electrical Contractor;
Trucks	
Gender	M
Ethnicity	HISPANIC
Firm Type	DBE

Firm ID	38446
DBA Name	SERVITEK SOLUTIONS, INC.
Firm Name	SERVITEK SOLUTIONS, INC.
Address Line1	618 BREA CANYON ROAD, SUITE J
Address Line2	
City	CITY OF INDUSTRY
State	CA
Zip Code1	91789
Zip Code2	
Mailing Address Line1	618 BREA CANYON ROAD, SUITE J
Mailing Address Line2	
Mailing City	CITY OF INDUSTRY
Mailing State	CA
Mailing Zip Code1	91789
Mailing Zip Code2	
Certification Type	DBE
EMail	greyes@servitekelectric.com
Contact Name	GEOFF REYES
Area Code	626
Phone Number	227-1650
Extension	101
Alt Area Code	
Alt Phone Number	
Extension	
Fax Area Code	626
Fax Phone Number	478-1300
Agency Name	DEPARTMENT OF TRANSPORTATION
Counties	01; 02; 03; 04; 05; 06; 07; 08; 09; 10; 11; 12; 13; 14; 15; 16; 17; 18; 19; 20; 21; 22; 23; 24; 25; 26; 27; 28; 29; 30; 31; 32; 33; 34; 35; 36; 37; 38; 39; 40; 41; 42; 43; 44; 45; 46; 47; 48; 49; 50; 51; 52; 53; 54; 55; 56; 57; 58;
Districts	01; 02; 03; 04; 05; 06; 07; 08; 09; 10; 11; 12;
DBE NAICS	238210; 541512; 541611; 541690;
ACDBE NAICS	
Work Codes	C8705 DESIGN; I7380 MISC BUSINESS SERVICES; C9859 Commercial Electrical; C8700 CONSULTANT, NON ENGINEERING; C8711 COMPUTER; C9858 RESIDENTIAL ELECTRICAL;
Licenses	C10 Electrical Contractor;
Trucks	
Gender	M
Ethnicity	ASIAN PACIFIC
Firm Type	DBE

Firm ID	45156
DBA Name	SIEGE ELECTRIC, INC.
Firm Name	SIEGE ELECTRIC, INC.
Address Line1	2911 STATE STREET SUITE 1
Address Line2	
City	CARLSBAD
State	CA
Zip Code1	92008
Zip Code2	
Mailing Address Line1	
Mailing Address Line2	
Mailing City	
Mailing State	
Mailing Zip Code1	
Mailing Zip Code2	
Certification Type	DBE
EMail	JMiddleton@Siege-Electric.com
Contact Name	JOSH MIDDLETON
Area Code	760
Phone Number	453-1679
Extension	
Alt Area Code	
Alt Phone Number	
Extension	
Fax Area Code	
Fax Phone Number	
Agency Name	LOS ANGELES COUNTY METRO TRANSPORTATION AUTHORITY (MTA)
Counties	01; 02; 03; 04; 05; 06; 07; 08; 09; 10; 11; 12; 13; 14; 15; 16; 17; 18; 19; 20; 21; 22; 23; 24; 25; 26; 27; 28; 29; 30; 31; 32; 33; 34; 35; 36; 37; 38; 39; 40; 41; 42; 43; 44; 45; 46; 47; 48; 49; 50; 51; 52; 53; 54; 55; 56; 57; 58;

Districts	01; 02; 03; 04; 05; 06; 07; 08; 09; 10; 11; 12;
DBE NAICS	238210;
ACDBE NAICS	
Work Codes	C8903 ELECTRICAL SERVICES FOR RAIL CARS;
Licenses	C10 Electrical Contractor;
Trucks	
Gender	M
Ethnicity	BLACK
Firm Type	DBE

Firm ID	40614
DBA Name	SILVER CREEK ELECTRIC, INC.
Firm Name	
Address Line1	280 COCHRANE CIRCLE, SUITE B
Address Line2	
City	MORGAN HILL
State	CA
Zip Code1	95037
Zip Code2	
Mailing Address Line1	
Mailing Address Line2	
Mailing City	
Mailing State	
Mailing Zip Code1	
Mailing Zip Code2	
Certification Type	DBE
EMail	jdeharo@silvercreekelectric.com
Contact Name	JUAN DEHARO
Area Code	408
Phone Number	321-9094
Extension	
Alt Area Code	
Alt Phone Number	
Extension	
Fax Area Code	408
Fax Phone Number	321-9329
Agency Name	SANTA CLARA VALLEY TRANSPORTATION AUTHORITY (VTA)
Counties	00;
Districts	00;
DBE NAICS	238210;
ACDBE NAICS	
Work Codes	C9859 Commercial Electrical;
Licenses	B General Building Contractor; C10 Electrical Contractor;
Trucks	
Gender	M
Ethnicity	HISPANIC
Firm Type	DBE

Firm ID	41432
DBA Name	SMARTBUILDING IQ, INC
Firm Name	SMARTBUILDING IQ, INC
Address Line1	6711 SIERRA COURT, STE A
Address Line2	
City	DUBLIN
State	CA
Zip Code1	94568
Zip Code2	
Mailing Address Line1	
Mailing Address Line2	
Mailing City	
Mailing State	
Mailing Zip Code1	
Mailing Zip Code2	
Certification Type	DBE
EMail	jabar@smarthomeiq.com
Contact Name	JOHN MCKELLAR
Area Code	925
Phone Number	230-8555
Extension	
Alt Area Code	925
Alt Phone Number	997-0439
Extension	
Fax Area Code	
Fax Phone Number	
Agency Name	BAY AREA RAPID TRANSIT DISTRICT (BART)
Counties	00;
Districts	00;
DBE NAICS	238210;
ACDBE NAICS	
Work Codes	C8903 ELECTRICAL SERVICES FOR RAIL CARS;

Licenses	C10 Electrical Contractor;
Trucks	
Gender	M
Ethnicity	BLACK
Firm Type	DBE

Firm ID	38033
DBA Name	TRAFFIC LOOPS CRACKFILLING, INC
Firm Name	TRAFFIC LOOPS CRACKFILLING, INC
Address Line1	1915 W BALL RD.
Address Line2	
City	ANAHEIM
State	CA
Zip Code1	92804
Zip Code2	
Mailing Address Line1	946 S. EMERALD ST
Mailing Address Line2	
Mailing City	ANAHEIM
Mailing State	CA
Mailing Zip Code1	92804
Mailing Zip Code2	
Certification Type	DBE
EMail	trafficloops@sbcglobal.net
Contact Name	MAI-LAN NGUYEN
Area Code	714
Phone Number	520-4026
Extension	
Alt Area Code	
Alt Phone Number	
Extension	
Fax Area Code	714
Fax Phone Number	520-4027
Agency Name	DEPARTMENT OF TRANSPORTATION
Counties	01; 02; 03; 04; 05; 06; 07; 08; 09; 10; 11; 12; 13; 14; 15; 16; 17; 18; 19; 20; 21; 22; 23; 24; 25; 26; 27; 28; 29; 30; 31; 32; 33; 34; 35; 36; 37; 38; 39; 40; 41; 42; 43; 44; 45; 46; 47; 48; 49; 50; 51; 52; 53; 54; 55; 56; 57; 58;
Districts	01; 02; 03; 04; 05; 06; 07; 08; 09; 10; 11; 12;
DBE NAICS	238210; 238990;
ACDBE NAICS	
Work Codes	C8611 RAMP METERING SYSTEM; C8903 ELECTRICAL SERVICES FOR RAIL CARS; C8608 DETECTOR; C8501 PAVEMENT MARKER; C4040 CLEAN & SEAL PAVEMENT JOINTS - ROUT & SEAL CRACKS; C9858 RESIDENTIAL ELECTRICAL;
Licenses	C10 Electrical Contractor; C32 Parking and Highway Improvement Contractor;
Trucks	
Gender	F
Ethnicity	ASIAN PACIFIC
Firm Type	DBE

Firm ID	42802
DBA Name	TRINITY CONTRACTING CONCEPTS INC.
Firm Name	TRINITY CONTRACTING CONCEPTS INC.
Address Line1	412 W. HILLSDALE ST.
Address Line2	
City	INGLEWOOD
State	CA
Zip Code1	90302
Zip Code2	
Mailing Address Line1	
Mailing Address Line2	
Mailing City	
Mailing State	
Mailing Zip Code1	
Mailing Zip Code2	
Certification Type	DBE
EMail	tyauston@trinityccinc.com
Contact Name	FRANK J. AUSTON
Area Code	310
Phone Number	925-6601
Extension	
Alt Area Code	
Alt Phone Number	
Extension	
Fax Area Code	
Fax Phone Number	
Agency Name	LOS ANGELES COUNTY METRO TRANSPORTATION AUTHORITY (MTA)
Counties	00;
Districts	00;
DBE NAICS	236118; 238210;
ACDBE NAICS	
Work Codes	C8903 ELECTRICAL SERVICES FOR RAIL CARS; C9802 BUILDING CONSTRUCTION;
Licenses	B General Building Contractor; C10 Electrical Contractor;
Trucks	

Gender	M
Ethnicity	BLACK
Firm Type	DBE

Firm ID	43709
DBA Name	TURNER & TURNER ELECTRIC INC
Firm Name	
Address Line1	3241 SHERIDAN WAY
Address Line2	
City	STOCKTON
State	CA
Zip Code1	95219
Zip Code2	3725
Mailing Address Line1	P.O. BOX 31733
Mailing Address Line2	
Mailing City	STOCKTON
Mailing State	CA
Mailing Zip Code1	95213
Mailing Zip Code2	1733
Certification Type	DBE
EMail	ronroc.rt@icloud.com;
Contact Name	RONALD R. TURNER
Area Code	510
Phone Number	290-9624
Extension	
Alt Area Code	209
Alt Phone Number	227-9128
Extension	
Fax Area Code	209
Fax Phone Number	476-1834
Agency Name	DEPARTMENT OF TRANSPORTATION
Counties	01; 07; 10; 21; 28; 34; 38; 39; 41; 43; 48; 50;
Districts	03; 04; 06; 10;
DBE NAICS	238210; 541611;
ACDBE NAICS	
Work Codes	C9859 Commercial Electrical; C8714 CONSULTANT, PROJECT MANAGEMENT/ BUSINESS ADMIN; C9858 RESIDENTIAL ELECTRICAL;
Licenses	C10 Electrical Contractor;
Trucks	
Gender	M
Ethnicity	BLACK
Firm Type	DBE

Firm ID	42783
DBA Name	WEST PACIFIC ELECTRIC COMPANY
Firm Name	
Address Line1	20071 W GLENDALE AVENUE
Address Line2	
City	LEMOORE
State	CA
Zip Code1	93245
Zip Code2	
Mailing Address Line1	P.O. BOX 368
Mailing Address Line2	
Mailing City	LEMOORE
Mailing State	CA
Mailing Zip Code1	93245
Mailing Zip Code2	
Certification Type	DBE
EMail	westpacificelectricco@gmail.com
Contact Name	VIRGINIA ANN VILLA
Area Code	559
Phone Number	924-6422
Extension	
Alt Area Code	559
Alt Phone Number	469-4729
Extension	
Fax Area Code	559
Fax Phone Number	924-4826
Agency Name	DEPARTMENT OF TRANSPORTATION
Counties	01; 02; 03; 04; 05; 06; 07; 08; 09; 10; 11; 12; 13; 14; 15; 16; 17; 18; 19; 20; 21; 22; 23; 24; 25; 26; 27; 28; 29; 30; 31; 32; 33; 34; 35; 36; 37; 38; 39; 40; 41; 42; 43; 44; 45; 46; 47; 48; 49; 50; 51; 52; 53; 54; 55; 56; 57; 58;
Districts	01; 02; 03; 04; 05; 06; 07; 08; 09; 10; 11; 12;
DBE NAICS	221122; 238210;
ACDBE NAICS	
Work Codes	E4910 ELECTRIC SERVICES; C8605 MESSAGE SIGNS, LIGHTING & SIGN ILLUMINATION; C9859 Commercial Electrical; C8602 SIGNAL & LIGHTING; C8604 LIGHTING;
Licenses	A General Engineering Contractor; B General Building Contractor; C10 Electrical Contractor; C46 Solar Contractor;
Trucks	
Gender	F
Ethnicity	HISPANIC

Firm Type	DBE

Firm ID	14753
DBA Name	WESTPOWER, INC
Firm Name	WESTPOWER, INC
Address Line1	770 L STREET, SUITE 950
Address Line2	
City	SACRAMENTO
State	CA
Zip Code1	95814
Zip Code2	
Mailing Address Line1	770 L STREET, SUITE 950
Mailing Address Line2	
Mailing City	SACRAMENTO
Mailing State	CA
Mailing Zip Code1	95814
Mailing Zip Code2	
Certification Type	DBE
EMail	alex@westpower.com
Contact Name	ALEX TAKAHASHI
Area Code	510
Phone Number	848-0505
Extension	
Alt Area Code	916
Alt Phone Number	747-1500
Extension	
Fax Area Code	510
Fax Phone Number	848-0504
Agency Name	DEPARTMENT OF TRANSPORTATION
Counties	01; 03; 06; 07; 09; 10; 18; 19; 20; 21; 22; 23; 24; 27; 28; 29; 30; 31; 32; 33; 34; 36; 37; 38; 39; 42; 43; 44; 48; 49; 50; 51; 54; 55; 56; 57; 58;
Districts	01; 02; 03; 04; 05; 06; 07; 08; 10; 11; 12;
DBE NAICS	221119; 238210; 541490;
ACDBE NAICS	
Work Codes	E4930 COMBINATION UTILITY SERVICES; E4910 ELECTRIC SERVICES; C8715 CONSULTANT, ENGINEERING; C9858 RESIDENTIAL ELECTRICAL;
Licenses	A General Engineering Contractor; C07 Low Voltage Systems Contractor; C10 Electrical Contractor; EE Electrical Engineer ; HAZ Hazardous Waste;
Trucks	
Gender	M
Ethnicity	ASIAN PACIFIC
Firm Type	DBE

Firm ID	41373
DBA Name	WILL DOUGLASS ELECTRIC
Firm Name	WILL DOUGLASS ELECTRIC
Address Line1	222 W ALAMOS #108 C
Address Line2	
City	CLOVIS
State	CA
Zip Code1	93612
Zip Code2	
Mailing Address Line1	
Mailing Address Line2	
Mailing City	
Mailing State	
Mailing Zip Code1	
Mailing Zip Code2	
Certification Type	DBE
EMail	williamdouglass00@yahoo.com
Contact Name	WILLIAM DOUGLASS
Area Code	559
Phone Number	472-6490
Extension	
Alt Area Code	
Alt Phone Number	
Extension	
Fax Area Code	
Fax Phone Number	
Agency Name	CITY OF FRESNO
Counties	10; 16; 20; 54;
Districts	06;
DBE NAICS	238210;
ACDBE NAICS	
Work Codes	C8604 LIGHTING; C9858 RESIDENTIAL ELECTRICAL;
Licenses	C10 Electrical Contractor;
Trucks	
Gender	M
Ethnicity	BLACK
Firm Type	DBE

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Search Returned 12 Records Thu Jul 05 08:39:10 PDT 2018

Query Criteria
District: 06
County: FRESNO
Certification Types: DBE
License Type: C33 Painting and Decorating Contractor
Naics Category: 23 Construction
Naics Codes: 238320 Painting and Wall Covering Contractors

Firm ID	37118
DBA Name	ABSOLUTE URETHANE
Firm Name	ABSOLUTE URETHANE
Address Line1	6614 SOUTH ELM
Address Line2	
City	FRESNO
State	CA
Zip Code1	93706
Zip Code2	
Mailing Address Line1	
Mailing Address Line2	
Mailing City	
Mailing State	
Mailing Zip Code1	
Mailing Zip Code2	
Certification Type	DBE
EMail	carolyn@absoluteurethane.com; neweamil@newemail.com
Contact Name	CAROLYN PLAZA
Area Code	559
Phone Number	241-0160
Extension	
Alt Area Code	
Alt Phone Number	
Extension	
Fax Area Code	559
Fax Phone Number	227-2212
Agency Name	CITY OF FRESNO
Counties	00;
Districts	00;
DBE NAICS	238160; 238320;
ACDBE NAICS	
Work Codes	C9837 ROOFING; C9854 PAINTING STRUCTURES;
Licenses	ASB Asbestos; C33 Painting and Decorating Contractor; C39 Roofing Contractor;
Trucks	
Gender	F
Ethnicity	HISPANIC
Firm Type	DBE

Firm ID	42891
DBA Name	ANCHOR SINGH PAINTING
Firm Name	ANCHOR SINGH PAINTING
Address Line1	3030 BUCHANAN STREET
Address Line2	
City	SACRAMENTO
State	CA
Zip Code1	95833
Zip Code2	
Mailing Address Line1	
Mailing Address Line2	
Mailing City	
Mailing State	
Mailing Zip Code1	
Mailing Zip Code2	
Certification Type	DBE
EMail	anchorspainting@gmail.com
Contact Name	ANCHOR SINGH
Area Code	916
Phone Number	595-1837
Extension	
Alt Area Code	
Alt Phone Number	
Extension	
Fax Area Code	
Fax Phone Number	
Agency Name	DEPARTMENT OF TRANSPORTATION
Counties	01; 02; 03; 04; 05; 06; 07; 08; 09; 10; 11; 12; 13; 14; 15; 16; 17; 18; 19; 20; 21; 22; 23; 24; 25; 26; 27; 28; 29; 30; 31; 32; 33; 34; 35; 36; 37; 38; 39; 40; 41; 42; 43; 44; 45; 46; 47; 48; 49; 50; 51; 52; 53; 54; 55; 56; 57; 58;
Districts	01; 02; 03; 04; 05; 06; 07; 08; 09; 10; 11; 12;
DBE NAICS	238320;
ACDBE NAICS	

Work Codes	C5900 CLEAN & PAINT STEEL; C9854 PAINTING STRUCTURES;
Licenses	C33 Painting and Decorating Contractor;
Trucks	
Gender	M
Ethnicity	ASIAN PACIFIC
Firm Type	DBE

Firm ID	30832
DBA Name	CYBER PROFESSIONAL SOLUTIONS CORP.
Firm Name	CYBER PROFESSIONAL SOLUTIONS CORP.
Address Line1	3441 MAIN STREET, SUITE 104
Address Line2	
City	CHULA VISTA
State	CA
Zip Code1	91911
Zip Code2	
Mailing Address Line1	3441 MAIN STREET, SUITE 104
Mailing Address Line2	
Mailing City	CHULA VISTA
Mailing State	CA
Mailing Zip Code1	91911
Mailing Zip Code2	5828
Certification Type	DBE
EMail	admin@cyberpsc.com
Contact Name	JOAQUIN CAMPOS
Area Code	619
Phone Number	498-4819
Extension	
Alt Area Code	
Alt Phone Number	
Extension	
Fax Area Code	609
Fax Phone Number	498-1060
Agency Name	DEPARTMENT OF TRANSPORTATION
Counties	01; 02; 03; 04; 05; 06; 07; 08; 09; 10; 11; 12; 13; 14; 15; 16; 17; 18; 19; 20; 21; 22; 23; 24; 25; 26; 27; 28; 29; 30; 31; 32; 33; 34; 35; 36; 37; 38; 39; 40; 41; 42; 43; 44; 45; 46; 47; 48; 49; 50; 51; 52; 53; 54; 55; 56; 57; 58;
Districts	01; 02; 03; 04; 05; 06; 07; 08; 09; 10; 11; 12;
DBE NAICS	236115; 236116; 236117; 236118; 236210; 238210; 238320; 541519;
ACDBE NAICS	
Work Codes	I7378 COMPUTER MAINTENANCE & REPAIR; C9857 Low Voltage Electrical Systems; C8771 Construction Management - Commercial and Institutional Building Construction; C9810 SMALL STRUCTURES; C9846 ADDITIONS, ALTERATIONS OR REPAIRS; C9801 BUILDING CONSTRUCTION; C9854 PAINTING STRUCTURES;
Licenses	C07 Low Voltage Systems Contractor; C33 Painting and Decorating Contractor;
Trucks	
Gender	M
Ethnicity	HISPANIC
Firm Type	DBE

Firm ID	41563
DBA Name	HARRIS DEVELOPMENT CORPORATION
Firm Name	HARRIS DEVELOPMENT COPORATION
Address Line1	1840 SHAW #105-08
Address Line2	
City	CLOVIS
State	CA
Zip Code1	93611
Zip Code2	
Mailing Address Line1	
Mailing Address Line2	
Mailing City	
Mailing State	
Mailing Zip Code1	
Mailing Zip Code2	
Certification Type	DBE
EMail	rharriscorp@gmail.com
Contact Name	ROBERT HARRIS III
Area Code	559
Phone Number	797-1642
Extension	
Alt Area Code	
Alt Phone Number	
Extension	
Fax Area Code	
Fax Phone Number	
Agency Name	CITY OF FRESNO
Counties	10; 16; 20; 22; 24; 46;
Districts	03; 06; 10;
DBE NAICS	236115; 236116; 237110; 238110; 238170; 238190; 238320; 238910;
ACDBE NAICS	
Work Codes	

Licenses	C9903 CONSTRUCTION CLEAN UP; C1920 STRUCTURE EXCAVATION; C9810 SMALL STRUCTURES; C1601 CLEARING & GRUBBING; C9830 WALL COVERING; C9846 ADDITIONS, ALTERATIONS OR REPAIRS; C9801 BUILDING CONSTRUCTION; C1930 STRUCTURE BACKFILL; C7301 CONCRETE CURB & SIDEWALK - MISC; B General Building Contractor; C08 Concrete Contractor; C13 Fencing Contractor; C33 Painting and Decorating Contractor; D03 Awnings; D06 Concrete Related Services; D28 Doors, Gates and Activating Devices; D56 Trenching; D63 Construction Cleanup;
Trucks	
Gender	M
Ethnicity	BLACK
Firm Type	DBE

Firm ID	40338
DBA Name	MAID FAST CONSTRUCTION INC.
Firm Name	MAID FAST CONSTRUCTION INC.
Address Line1	411 PARK RANCH PLACE
Address Line2	
City	ESCONDIDO
State	CA
Zip Code1	92025
Zip Code2	
Mailing Address Line1	
Mailing Address Line2	
Mailing City	
Mailing State	
Mailing Zip Code1	
Mailing Zip Code2	
Certification Type	DBE
EMail	SCOTTMARRONE@MAID-FAST.COM
Contact Name	RENATO MARRONE
Area Code	760
Phone Number	317-5436
Extension	
Alt Area Code	
Alt Phone Number	
Extension	
Fax Area Code	760
Fax Phone Number	317-5436
Agency Name	LOS ANGELES COUNTY METRO TRANSPORTATION AUTHORITY (MTA)
Counties	00;
Districts	00;
DBE NAICS	238320; 561720;
ACDBE NAICS	
Work Codes	I7341 JANITORIAL SERVICES; C9854 PAINTING STRUCTURES;
Licenses	B General Building Contractor; C33 Painting and Decorating Contractor;
Trucks	
Gender	M
Ethnicity	HISPANIC
Firm Type	DBE

Firm ID	37323
DBA Name	MARISCAL PAINTING, INC.
Firm Name	
Address Line1	345 S. MONTE VISTA AVENUE,
Address Line2	
City	COVINA
State	CA
Zip Code1	91723
Zip Code2	
Mailing Address Line1	
Mailing Address Line2	
Mailing City	
Mailing State	
Mailing Zip Code1	
Mailing Zip Code2	
Certification Type	DBE
EMail	mariscaldutchpainting@hotmail.com
Contact Name	JESUS MARISCAL
Area Code	626
Phone Number	331-2304
Extension	
Alt Area Code	
Alt Phone Number	
Extension	
Fax Area Code	626
Fax Phone Number	331-2560
Agency Name	CITY OF LOS ANGELES
Counties	00;
Districts	00;
DBE NAICS	238320;
ACDBE NAICS	
Work Codes	C9854 PAINTING STRUCTURES;

Licenses	C33 Painting and Decorating Contractor;
Trucks	
Gender	M
Ethnicity	HISPANIC
Firm Type	DBE

Firm ID	34815
DBA Name	MIDWEST BUILDING SUPPLIES, INC.
Firm Name	MIDWEST BUILDING SUPPLIES, INC.
Address Line1	15719 DALE STREET, SUITE B
Address Line2	
City	DETROIT
State	MI
Zip Code1	48223
Zip Code2	
Mailing Address Line1	P.O. BOX 85524
Mailing Address Line2	
Mailing City	WESTLAND
Mailing State	MI
Mailing Zip Code1	48185
Mailing Zip Code2	
Certification Type	DBE
EMail	elmerdx@aol.com
Contact Name	ELMER H. DIXON
Area Code	313
Phone Number	592-4989
Extension	
Alt Area Code	
Alt Phone Number	
Extension	
Fax Area Code	734
Fax Phone Number	721-9209
Agency Name	DEPARTMENT OF TRANSPORTATION
Counties	00;
Districts	00;
DBE NAICS	238150; 238320;
ACDBE NAICS	
Work Codes	F5230 PAINT, GLASS, & WALLPAPER STORES; C8904 GLASS INSTALLATION FOR RAIL CARS; C9854 PAINTING STRUCTURES;
Licenses	C17 Glazing Contractor; C33 Painting and Decorating Contractor;
Trucks	
Gender	M
Ethnicity	BLACK
Firm Type	DBE

Firm ID	44466
DBA Name	PURE ADMIRATION PAINTING
Firm Name	PURE ADMIRATION PAINTING
Address Line1	280 NEWHALL STREET
Address Line2	
City	SAN FRANCISCO
State	CA
Zip Code1	94124
Zip Code2	
Mailing Address Line1	P.O. BOX 24004
Mailing Address Line2	
Mailing City	SAN FRANCISCO
Mailing State	CA
Mailing Zip Code1	94124
Mailing Zip Code2	
Certification Type	DBE
EMail	pureadmirationpainting@yahoo.com
Contact Name	TIFFANI ELLIOTT
Area Code	650
Phone Number	921-5897
Extension	
Alt Area Code	
Alt Phone Number	
Extension	
Fax Area Code	
Fax Phone Number	
Agency Name	SAN FRANCISCO MUNICIPAL TRANSPORTATION AGENCY
Counties	00;
Districts	00;
DBE NAICS	238320;
ACDBE NAICS	
Work Codes	C9854 PAINTING STRUCTURES;
Licenses	C33 Painting and Decorating Contractor;
Trucks	
Gender	F
Ethnicity	BLACK

Firm Type	DBE

Firm ID	33060
DBA Name	RHODES PAINTING & DECORATING, INC
Firm Name	RHODES PAINTING & DECORATING, INC
Address Line1	1485 BAYSHORE BLVD., SUITE 320-D
Address Line2	
City	SAN FRANCISCO
State	CA
Zip Code1	94124
Zip Code2	
Mailing Address Line1	
Mailing Address Line2	
Mailing City	
Mailing State	
Mailing Zip Code1	
Mailing Zip Code2	
Certification Type	DBE
EMail	rhodespainting@msn.com
Contact Name	BERNIE RHODES
Area Code	415
Phone Number	587-6220
Extension	
Alt Area Code	
Alt Phone Number	
Extension	
Fax Area Code	415
Fax Phone Number	587-7282
Agency Name	BAY AREA RAPID TRANSIT DISTRICT (BART)
Counties	00;
Districts	00;
DBE NAICS	238320;
ACDBE NAICS	
Work Codes	F5230 PAINT, GLASS, & WALLPAPER STORES; C0659 PAINT SUPPLIER;
Licenses	C33 Painting and Decorating Contractor;
Trucks	
Gender	F
Ethnicity	BLACK
Firm Type	DBE

Firm ID	40619
DBA Name	URBAN GRAFFITI ENTERPRISES, INC.
Firm Name	URBAN GRAFFITI ENTERPRISES, INC.
Address Line1	1280 MOUNTAIN VIEW CIRCLE
Address Line2	
City	AZUSA
State	CA
Zip Code1	91702
Zip Code2	
Mailing Address Line1	P. O. BOX 2383
Mailing Address Line2	
Mailing City	COVINA
Mailing State	CA
Mailing Zip Code1	91722
Mailing Zip Code2	
Certification Type	DBE
EMail	mariag@urbangraffiti.com
Contact Name	JUAN REINOSO
Area Code	626
Phone Number	815-4900
Extension	
Alt Area Code	
Alt Phone Number	
Extension	
Fax Area Code	626
Fax Phone Number	815-4499
Agency Name	LOS ANGELES COUNTY METRO TRANSPORTATION AUTHORITY (MTA)
Counties	00;
Districts	00;
DBE NAICS	238150; 238320; 561790; 562111; 562119;
ACDBE NAICS	
Work Codes	E4953 WASTE COLLECTION AND DISPOSAL; 17340 SERVICES TO BUILDINGS; C8904 GLASS INSTALLATION FOR RAIL CARS; C9854 PAINTING STRUCTURES;
Licenses	C33 Painting and Decorating Contractor; C61 Limited Specialty Contractor; D38 Sand and Water Blasting; D42 Sign Installation; D52 Window Coverings; D63 Construction Cleanup;
Trucks	
Gender	M
Ethnicity	HISPANIC
Firm Type	DBE

Firm ID	17079
DBA Name	VASQUEZ CONSTRUCTION COMPANY
Firm Name	M.W. VASQUEZ CONSTRUCTION CO., INC.
Address Line1	3009 G STREET
Address Line2	
City	SAN DIEGO
State	CA
Zip Code1	92102
Zip Code2	
Mailing Address Line1	
Mailing Address Line2	
Mailing City	
Mailing State	
Mailing Zip Code1	
Mailing Zip Code2	
Certification Type	DBE
EMail	andrea@vasquezco.com
Contact Name	MANUEL VASQUEZ
Area Code	619
Phone Number	237-3607
Extension	
Alt Area Code	
Alt Phone Number	
Extension	
Fax Area Code	619
Fax Phone Number	237-3610
Agency Name	DEPARTMENT OF TRANSPORTATION
Counties	01; 02; 03; 04; 05; 06; 07; 08; 09; 10; 11; 12; 13; 14; 15; 16; 17; 18; 19; 20; 21; 22; 23; 24; 25; 26; 27; 28; 29; 30; 31; 32; 33; 34; 35; 36; 37; 38; 39; 40; 41; 42; 43; 44; 45; 46; 47; 48; 49; 50; 51; 52; 53; 54; 55; 56; 57; 58;
Districts	01; 02; 03; 04; 05; 06; 07; 08; 09; 10; 11; 12;
DBE NAICS	238320; 238350; 238990;
ACDBE NAICS	
Work Codes	C9822 CARPENTRY; C9830 WALL COVERING; C9854 PAINTING STRUCTURES;
Licenses	B General Building Contractor; C33 Painting and Decorating Contractor;
Trucks	
Gender	M
Ethnicity	HISPANIC
Firm Type	DBE

Firm ID	40563
DBA Name	VILLAR CONSTRUCTION, INC.
Firm Name	VILLAR CONSTRUCTION, INC.
Address Line1	5108 E. OLIVE
Address Line2	
City	FRESNO
State	CA
Zip Code1	93727
Zip Code2	
Mailing Address Line1	
Mailing Address Line2	
Mailing City	
Mailing State	
Mailing Zip Code1	
Mailing Zip Code2	
Certification Type	DBE
EMail	mvpainter88@msn.com
Contact Name	MARIO RIOS
Area Code	559
Phone Number	270-7692
Extension	
Alt Area Code	
Alt Phone Number	
Extension	
Fax Area Code	559
Fax Phone Number	251-7743
Agency Name	CITY OF FRESNO
Counties	10; 15; 16; 20; 24; 39; 54;
Districts	06; 10;
DBE NAICS	236115; 238320;
ACDBE NAICS	
Work Codes	C9822 CARPENTRY; C9810 SMALL STRUCTURES; C9801 BUILDING CONSTRUCTION; C9854 PAINTING STRUCTURES;
Licenses	B General Building Contractor; C33 Painting and Decorating Contractor;
Trucks	
Gender	F
Ethnicity	HISPANIC
Firm Type	DBE

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Search Returned 1 Records Thu Jul 05 08:47:23 PDT 2018

Query Criteria
District: 06
County: FRESNO
Certification Types: DBE
Naics Category: 32 Manufacturing
Naics Codes: 326122 Plastics Pipe and Pipe Fitting Manufacturing

Firm ID	36950
DBA Name	AMERICAN UTILITY PRODUCTS
Firm Name	AMERICAN UTILITY PRODUCTS
Address Line1	1557 CANYON MEADOWS LANE
Address Line2	
City	GLENDORA
State	CA
Zip Code1	91740
Zip Code2	
Mailing Address Line1	
Mailing Address Line2	
Mailing City	
Mailing State	
Mailing Zip Code1	
Mailing Zip Code2	
Certification Type	DBE
EMail	sanjay.pandya@gmail.com
Contact Name	SANJAY PANDYA
Area Code	626
Phone Number	335-2753
Extension	
Alt Area Code	
Alt Phone Number	
Extension	
Fax Area Code	626
Fax Phone Number	335-9797
Agency Name	LOS ANGELES COUNTY METRO TRANSPORTATION AUTHORITY (MTA)
Counties	00;
Districts	00;
DBE NAICS	314911; 315999; 326122; 331511; 332911; 332996; 339950; 423440; 423720; 423990;
ACDBE NAICS	
Work Codes	D3320 IRON & STEEL FOUNDRIES; H6220 COMMODITY CONTRACTS BROKERS, DEALERS; C0670 PIPE SUPPLIER; F5090 MISC DURABLE GOODS; D3290 MISC NONMETALLIC MINERAL PRODUCTS; C5601 SIGN STRUCTURE;
Licenses	
Trucks	
Gender	M
Ethnicity	ASIAN SUBCONTINENT
Firm Type	DBE

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Search Returned 4 Records Thu Jul 05 08:43:36 PDT 2018

Query Criteria
District: 06
County: FRESNO
Certification Types: DBE
License Type: C50 Reinforcing Steel Contractor
Naics Category: 23 Construction
Naics Codes: 238120 Structural Steel and Precast Concrete Contractors

Firm ID	33825
DBA Name	AMERICAN STEEL PLACERS, INC.
Firm Name	AMERICAN STEEL PLACERS, INC.
Address Line1	603 S. ARROWHEAD AVENUE
Address Line2	
City	SAN BERNARDINO
State	CA
Zip Code1	92408
Zip Code2	
Mailing Address Line1	
Mailing Address Line2	
Mailing City	
Mailing State	
Mailing Zip Code1	
Mailing Zip Code2	
Certification Type	DBE
EMail	dolores@steelplacers.com
Contact Name	RUSSELL ROBERTSON
Area Code	909
Phone Number	884-6031
Extension	
Alt Area Code	
Alt Phone Number	
Extension	
Fax Area Code	909
Fax Phone Number	884-6032
Agency Name	LOS ANGELES COUNTY METRO TRANSPORTATION AUTHORITY (MTA)
Counties	00;
Districts	00;
DBE NAICS	238120;
ACDBE NAICS	
Work Codes	C0652 REINFORCING BAR SECTION SUPPLIER; C0655 STEEL SUPPLIER; C5201 REINFORCING STEEL; C9829 RETAINER WALLS;
Licenses	C50 Reinforcing Steel Contractor;
Trucks	
Gender	M
Ethnicity	NATIVE AMERICAN
Firm Type	DBE

Firm ID	34508
DBA Name	MAD STEEL INC.
Firm Name	MAD STEEL INC.
Address Line1	555 W. ALLEN AVENUE
Address Line2	SUITE 14
City	SAN DIMAS
State	CA
Zip Code1	91773
Zip Code2	
Mailing Address Line1	
Mailing Address Line2	
Mailing City	
Mailing State	
Mailing Zip Code1	

Mailing Zip Code2	
Certification Type	DBE
EMail	madsteelinc@aol.com
Contact Name	ALBERT DOMINGUEZ
Area Code	909
Phone Number	592-3443
Extension	
Alt Area Code	
Alt Phone Number	
Extension	
Fax Area Code	909
Fax Phone Number	394-0724
Agency Name	CITY OF LOS ANGELES
Counties	00;
Districts	00;
DBE NAICS	238120; 238990;
ACDBE NAICS	
Work Codes	C0652 REINFORCING BAR SECTION SUPPLIER; C5180 SOUND WALL (MASONRY BLOCK - CONCRETE); C5201 REINFORCING STEEL; C9829 RETAINER WALLS;
Licenses	C50 Reinforcing Steel Contractor;
Trucks	
Gender	M
Ethnicity	HISPANIC
Firm Type	DBE

Firm ID	45576
DBA Name	MR. REINFORCING INCORPORATED
Firm Name	MR. REINFORCING INCORPORATED
Address Line1	308 BLACKSHEAR AVENUE
Address Line2	
City	LOS ANGELES
State	CA
Zip Code1	90022
Zip Code2	
Mailing Address Line1	
Mailing Address Line2	
Mailing City	
Mailing State	
Mailing Zip Code1	
Mailing Zip Code2	
Certification Type	DBE
EMail	rick@mrreinforcing.com
Contact Name	RICK HIPOLITO
Area Code	323
Phone Number	528-8874
Extension	
Alt Area Code	
Alt Phone Number	
Extension	
Fax Area Code	
Fax Phone Number	
Agency Name	LOS ANGELES COUNTY METRO TRANSPORTATION AUTHORITY (MTA)
Counties	01; 02; 03; 04; 05; 06; 07; 08; 09; 10; 11; 12; 13; 14; 15; 16; 17; 18; 19; 20; 21; 22; 23; 24; 25; 26; 27; 28; 29; 30; 31; 32; 33; 34; 35; 36; 37; 38; 39; 40; 41; 42; 43; 44; 45; 46; 47; 48; 49; 50; 51; 52; 53; 54; 55; 56; 57; 58;
Districts	01; 02; 03; 04; 05; 06; 07; 08; 09; 10; 11; 12;
DBE NAICS	238120;
ACDBE NAICS	
Work Codes	C5501 STEEL STRUCTURES; C5100 CONCRETE STRUCTURE;
Licenses	C50 Reinforcing Steel Contractor;
Trucks	
Gender	M
Ethnicity	HISPANIC
Firm Type	DBE

Firm ID	38564
DBA Name	TAHLEQUAH STEEL, INC.

Firm Name	TAHLEQUAH STEEL, INC.
Address Line1	2750 N. BELLFLOWER BLVD. #2108
Address Line2	
City	LONG BEACH
State	CA
Zip Code1	90815
Zip Code2	
Mailing Address Line1	
Mailing Address Line2	
Mailing City	
Mailing State	
Mailing Zip Code1	
Mailing Zip Code2	
Certification Type	DBE
EMail	tqsteelinc@gmail.com; tqs.sm5@gmail.com
Contact Name	STEPHANIE MARTINEZ
Area Code	562
Phone Number	421-9333
Extension	
Alt Area Code	562
Alt Phone Number	337-5460
Extension	
Fax Area Code	562
Fax Phone Number	421-9330
Agency Name	LOS ANGELES COUNTY METRO TRANSPORTATION AUTHORITY (MTA)
Counties	10; 16; 19; 20; 30; 33; 34; 36; 37; 38; 40;
Districts	03; 04; 05; 06; 07; 08; 11; 12;
DBE NAICS	238120; 238190;
ACDBE NAICS	
Work Codes	C5501 STEEL STRUCTURES; C9801 BUILDING CONSTRUCTION; C5100 CONCRETE STRUCTURE;
Licenses	C50 Reinforcing Steel Contractor;
Trucks	
Gender	M
Ethnicity	NATIVE AMERICAN
Firm Type	DBE

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SBA Search Results

t Search Results

Quick Market Search Listing, where

the firm has not opted out of DSBS searches;
the profile location is in Metro Statistical Area 2840;
the profile location is in: California;
the profile's status is that of a standard DSBS search;
at least one word of the Capabilities Narrative, Special Equipment/Materials or Keywords is Bypassing;
and economic groups randomized by original start time of search: 2018-07-05 12:07:11 PM.

Data validation took 0.02 seconds. The search took 0.14 seconds for certifications and 0.12 seconds for non-certifications.

Click on either hotlink in a row to list the firms in the economic group meeting your search criteria.

Economic Group	Number of Firms Found
Currently HUBZone Certified	0
Currently SDB Certified	0
Currently 8(a) Certified	0
Woman or Women Owned	0
Service-Disabled Veteran	0
Veteran	0

SBA Search Results

t Search Results

Quick Market Search Listing, where

the firm has not opted out of DSBS searches;
the profile location is in Metro Statistical Area 2840;
the profile location is in: California;
the profile's status is that of a standard DSBS search;
at least one word of the Capabilities Narrative, Special Equipment/Materials or Keywords is Sewer Bypassing;
and economic groups randomized by original start time of search: 2018-07-05 12:07:57 PM.

Data validation took 0.02 seconds. The search took 0.03 seconds for certifications and 0.03 seconds for non-certifications.

Click on either hotlink in a row to list the firms in the economic group meeting your search criteria.

Economic Group	Number of Firms Found
Currently 8(a) Certified	0
Service-Disabled Veteran	0
Veteran	0
Currently SDB Certified	0
Currently HUBZone Certified	0
Woman or Women Owned	0

SBA Search Results

t Search Results

Quick Market Search Listing, where

the firm has not opted out of DSBS searches;
the firm is small in any of these NAICS codes: 238210;
the profile location is in Metro Statistical Area 2840;
the profile location is in: California;
the profile's status is that of a standard DSBS search;
at least one word of the Capabilities Narrative, Special Equipment/Materials or Keywords is Electrical;
and economic groups randomized by original start time of search: 2018-07-05 11:57:56 AM.

Data validation took 0.02 seconds. The search took 2.51 seconds for certifications and 2.50 seconds for non-certifications.

Click on either hotlink in a row to list the firms in the economic group meeting your search criteria.

Economic Group	Number of Firms Found
Service-Disabled Veteran	3
Currently SDB Certified	1
Currently HUBZone Certified	0
Currently 8(a) Certified	1
Woman or Women Owned	1
Veteran	4

SBA Search Results

ng, where
e of: women owned;
the firm is small in any of these NAICS codes: 238210;
the profile location is in Metro Statistical Area 2840;
the profile location is in: California;
at least one word of the Capabilities Narrative, Special Equipment/Materials or Keywords is Electrical;
and randomized by original start time of search: 2018-07-05 11:57:56 AM.

Data validation took 0.00 seconds. The count and search queries took 2.48 seconds and 2.62 seconds, respectively.

Displaying profiles 1 - 1 (of 1 profiles matching criteria):

View	Name and Trade Name of Firm	Contact	Address and City, State Zip	Capabilities Narrative
1	Lighthouse Electrical, Inc.	Vicki Ratto	3585 E Date Ave Fresno, CA 93725-1933	Lighthouse Electrical is a woman-owned small business, full service industrial contractor with over 15 years experience in the industry and a strategic alliance with California's top industrial automation integrator, Industrial Control and Design (ICAD), Lighthouse has the resources and ability to get your project completed on time and to the highest standards.

No more matches

Refine Search

Save E-mail Addresses for All

delimited by:

- (•) semi-colon and space
- ( ) comma and space
- ( ) new line
- ( ) tab

Please notify SAM if you discover any inaccurate contact information (address, e-mail address, fax or phone number) in the way most convenient for you:

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866-606-8220
334-206-7828
DSN: 866-606-8220

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Accessibility Options >

SBA Profile

SBA Profile

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(Back to Profile List, or use Back button)

Identification, Location & Contacts

This profile was last updated:	06/12/2018
Status:	Active
User ID:	P1323647
Name of Firm:	Lighthouse Electrical, Inc.
Trade Name ("Doing Business As ..."):	
DUNS Number:	016464839
Parent DUNS Number:	
Address, line 1:	3585 E Date Ave
Address, line 2:	
City:	Fresno
State:	CA
Zip:	93725-1933
Phone Number:	559-498-3017
Fax Number:	559-498-0292
E-mail Address:	vratto@icadautomation.com
WWW Page:	http://www.lighthouseelec.com/
E-Commerce Website:	http://lighthouseelec.com/
Contact Person:	Vicki Ratto
County Code (3 digit):	019
Congressional District:	16
Metropolitan Statistical Area:	2840
CAGE Code:	64RL1
Year Established:	2005
Accepts Government Credit Card?:	[X] Yes [ ] No
GSA Advantage Contract(s):	

Yes

(Note: Size information is now under "NAICS Codes with Size Determinations by NAICS", below.)

Organization, Ownership & Certifications

Legal Structure:	Subchapter S Corporation
Ownership and Self-Certifications:	Self-Certified Small Disadvantaged Business, Women-Owned Small Business, Woman Owned

Current Principals

(none given)

"Business Development Servicing Office" (for certifications)

FRESNO DISTRICT OFFICE (SBA office code 0942)

8(a) Certification:

SBA 8(a) Case Number:
SBA 8(a) Entrance Date:
SBA 8(a) Exit Date:

Small Disadvantaged Business Certification:

SDB Entrance Date:
SDB Exit Date:

HUBZone Certification:

HUBZone Certified?:	[ ] Yes [X] No
Previously HUBZone certified:	From 11/22/2010 through 11/23/2011

8(a) Joint Venture Certification:

8(a) JV Entrance Date:
8(a) JV Exit Date:

Non-Federal-Government Certifications:

(none given)

Products & Services

Capabilities Narrative:

Lighthouse Electrical is a woman-owned small business, full service industrial contractor with over 15 years experience in the industry and a strategic alliance with California's top industrial automation integrator, Industrial Control and Design (ICAD), Lighthouse has the resources and ability to get your project completed on time and to the highest standards.

Special Equipment/Materials:

(none given)

Business Type Percentages:

(none given)

Bonding Levels

Construction Bonding Level (per contract)	$0
Construction Bonding Level (aggregate)	$0
Service Bonding Level (per contract)	$0
Service Bonding Level (aggregate)	$0

NAICS Codes with Size Determinations by NAICS:

#	Primary?	Code	NAICS Code's Description	"Buy Green"? (1)	Small? (2)
1	Yes	238210	Electrical Contractors and Other Wiring Installation Contractors		Yes

(1) By entering Yes for "Buy Green", the firm asserts that it obeys EPA guidelines for environmental friendliness for this NAICS code. Note, EPA guidelines do not exist for every NAICS code.
(2) If Yes, the firm's revenues/number of employees do not exceed the NAICS code's small business size standard.

Keywords:

Controls, Electrical Wiring, Electrical Systems, Control Panels, Switch Gear Installation, Troubleshoot, Electrical Engineering, PLC Programming, HMC Programming, Custom Control System Design

Miscellaneous:

Quality Assurance Standards:	(none given)
Electronic Data Interchange capable?:	[ ] Yes [ ] No

Export Profile (Trade Mission Online)

Exporter?:	[ ] Yes [X] No [ ] Wants To Be
Export Business Activities:	(none given)
Exporting to:	(none given)
Desired Export Business Relationships:	(none given)
Description of Export Objective(s):	(none given)

Performance History (References)

Name:	Primex Farms
Contract:	
Start:	
End:	
Value:	
Contact:	Mark Sherrell
Phone:	661-758-7790, 804

The structure of this page was last updated 02/01/2013, as part of SBSS 8.1.1.

SBA Search Results

t Search Results

Quick Market Search Listing, where

the firm has not opted out of DSBS searches;
the firm is small in any of these NAICS codes: 238320;
the profile location is in Metro Statistical Area 2840;
the profile location is in: California;
the profile's status is that of a standard DSBS search;
at least one word of the Capabilities Narrative, Special Equipment/Materials or Keywords is Painting;
and economic groups randomized by original start time of search: 2018-07-05 12:01:11 PM.

Data validation took 0.02 seconds. The search took 1.40 seconds for certifications and 1.27 seconds for non-certifications.

Click on either hotlink in a row to list the firms in the economic group meeting your search criteria.

Economic Group	Number of Firms Found
Currently HUBZone Certified	0
Currently SDB Certified	1
Currently 8(a) Certified	2
Woman or Women Owned	2
Service-Disabled Veteran	1
Veteran	2

SBA Search Results

isting, where

ast one of: women owned;
the firm is small in any of these NAICS codes: 238320;
the profile location is in Metro Statistical Area 2840;
the profile location is in: California;
at least one word of the Capabilities Narrative, Special Equipment/Materials or Keywords is Painting;
and randomized by original start time of search: 2018-07-05 12:01:11 PM.

Data validation took 0.00 seconds. The count and search queries took 1.31 seconds and 1.34 seconds, respectively.

Displaying profiles 1 - 2 (of 2 profiles matching criteria):

View	Name and Trade Name of Firm	Contact	Address and City, State Zip	Capabilities Narrative
1	Villa Construction, Inc.	Beatriz Villa de Green	1954 N Gateway Blvd #102 Fresno, CA 93727-1644	Villa Construction Inc is a licensed general building contractor capable of large and small jobs requiring construction expertise for private and public works. We are an insured, bondable, experienced and qualified disadvantaged woman-owned business.
2	DURABLE COOL ROOFS, INC.	ARMINDA L. DUNLAP	1608 E. JEFFERSON AVE. FRESNO, CA 93725-9504	All Roofing systems available, underground, Waterproofing, Design build, Roofing/building Maintenance, Roofing/building Restoration, General construction, Construction management, concrete, asphalt paving, Tenant Improvements,General Painting, Commercial & Industrial. Durable Cool Roofs, Inc is a Minority Owned, 8(a) Certified, Disadvantage Woman Owned Small Business.

No more matches

Refine Search

Save E-mail Addresses for All

delimited by:

- (•) semi-colon and space
- ( ) comma and space
- ( ) new line
- ( ) tab

Please notify SAM if you discover any inaccurate contact information (address, e-mail address, fax or phone number) in the way most convenient for you:

For SAM Customer Service, contact:
Federal Service Desk (8am - 8pm Eastern Time)
866-606-8220
334-206-7828
DSN: 866-606-8220

The structure of this page was last updated 02/01/2013, as part of SBSS 8.1.1.

SBA Profile

SBA Profile

Privacy Statement
(Back to Profile List, or use Back button)

Identification, Location & Contacts

This profile was last updated:	05/07/2018
Status:	Active
User ID:	P1827391
Name of Firm:	Villa Construction, Inc.
Trade Name ("Doing Business As ..."):	
DUNS Number:	079369852
Parent DUNS Number:	
Address, line 1:	1954 N Gateway Blvd #102
Address, line 2:	
City:	Fresno
State:	CA
Zip:	93727-1644
Phone Number:	559-930-8539
Fax Number:	888-516-1725
E-mail Address:	betty@villaconstructioninc.net
WWW Page:	www.villaconstructioninc.net
E-Commerce Website:	
Contact Person:	Beatriz Villa de Green
County Code (3 digit):	019
Congressional District:	16
Metropolitan Statistical Area:	2840
CAGE Code:	744A3
Year Established:	2013
Accepts Government Credit Card?:	[X] Yes [ ] No
GSA Advantage Contract(s):	

No; general contractor, not sub

(Note: Size information is now under "NAICS Codes with Size Determinations by NAICS", below.)

Organization, Ownership & Certifications

Legal Structure:	Subchapter S Corporation
Ownership and Self-Certifications:	Hispanic American, Self-Certified Small Disadvantaged Business, Economically Disadvantaged Women-Owned Small Business, Women-Owned Small Business, Woman Owned

Current Principals

1. Beatriz Villa de Green, President

"Business Development Servicing Office" (for certifications)

FRESNO DISTRICT OFFICE (SBA office code 0942)

8(a) Certification:

SBA 8(a) Case Number:	306780
SBA 8(a) Entrance Date:	07/01/2015
SBA 8(a) Exit Date:	07/01/2024

Small Disadvantaged Business Certification:

SDB Entrance Date:	
SDB Exit Date:	

HUBZone Certification:

HUBZone Certified?:	[ ] Yes [X] No
HUBZone Certification Date:	

8(a) Joint Venture Certification:

8(a) JV Entrance Date:	
8(a) JV Exit Date:	

Non-Federal-Government Certifications:

SBE Supplier 1771175
DOT DBE 42173
WOSB -Fed Self-Cert

Products & Services

Capabilities Narrative:

Villa Construction Inc is a licensed general building contractor capable of large and small jobs requiring construction expertise for private and public works. We are an insured, bondable, experienced and qualified disadvantaged woman-owned business.

Special Equipment/Materials:

none

Business Type Percentages:

Construction (100 %)

Bonding Levels

Construction Bonding Level (per contract)	$8,000,000
Construction Bonding Level (aggregate)	$12,000,000
Service Bonding Level (per contract)	$0
Service Bonding Level (aggregate)	$0

NAICS Codes with Size Determinations by NAICS:

#	Primary?	Code	NAICS Code's Description	"Buy Green"? (1)	Small? (2)
1	Yes	236220	Commercial and Institutional Building Construction		Yes
2		236115	New Single-Family Housing Construction (except For-Sale Builders)		Yes
3		236116	New Multifamily Housing Construction (except For-Sale Builders)		Yes
4		236117	New Housing For-Sale Builders		Yes
5		236118	Residential Remodelers		Yes
6		236210	Industrial Building Construction		Yes
7		237110	Water and Sewer Line and Related Structures Construction		Yes
8		238110	Poured Concrete Foundation and Structure Contractors		Yes
9		238120	Structural Steel and Precast Concrete Contractors		Yes
10		238130	Framing Contractors		Yes
11		238140	Masonry Contractors		Yes
12		238150	Glass and Glazing Contractors		Yes
13		238160	Roofing Contractors		Yes
14		238170	Siding Contractors		Yes
15		238190	Other Foundation, Structure, and Building Exterior Contractors		Yes
16		238210	Electrical Contractors and Other Wiring Installation Contractors		Yes
17		238220	Plumbing, Heating, and Air-Conditioning Contractors		Yes
18		238290	Other Building Equipment Contractors		Yes
19		238310	Drywall and Insulation Contractors		Yes
20		238320	Painting and Wall Covering Contractors		Yes
21		238330	Flooring Contractors		Yes
22		238340	Tile and Terrazzo Contractors		Yes
23		238350	Finish Carpentry Contractors		Yes
24		238390	Other Building Finishing Contractors		Yes
25		238910	Site Preparation Contractors		Yes
26		238990	All Other Specialty Trade Contractors General $15.00m Small Business Size Standard: [Yes] Special $15.00m Building and Property Specialty Trade Services: [Yes]		Yes

(1) By entering Yes for "Buy Green", the firm asserts that it obeys EPA guidelines for environmental friendliness for this NAICS code. Note, EPA guidelines do not exist for every NAICS code.
(2) If Yes, the firm's revenues/number of employees do not exceed the NAICS code's small business size standard.
(4) As seen above, the size standard can depend on subcategories within a NAICS code.

Keywords:

Licensed contractor, genereal building, dependable, bondable, capable, organized, on-time, experienced, women-owned, DBE certified, framing, stone work, finish carpentry, clearing, grubbing, siding, drywall, insulation, painting, flooring, wall coverings, tile, woman owned, small business.

Miscellaneous:

Quality Assurance Standards:	(none given)
Electronic Data Interchange capable?:	[ ] Yes [ ] No

Export Profile (Trade Mission Online)

Exporter?:	[ ] Yes [X] No [ ] Wants To Be
Export Business Activities:	(none given)
Exporting to:	(none given)
Desired Export Business Relationships:	(none given)
Description of Export Objective(s):	(none given)

Performance History (References)

Name:	Partial Roof Repair Bldg 160
Contract:	N62473-16-C-4410
Start:	06/01/2016
End:	08/01/2016
Value:	140,608
Contact:	Alejandro Ochoa
Phone:	559-998-2690

Name:	Renovate Photo Lab, Building 1 NAS-Lemoore
Contract:	N62473-15-c-0420
Start:	10/01/2015
End:	
Value:	545983.13
Contact:	Nathalie Zielinski
Phone:	559-998-3892

Name:	Gustine Garden Apartments -Gustine, CA
Contract:	Rehabilitation
Start:	03/01/2016
End:	07/31/2016
Value:	125,500
Contact:	Michael Condry
Phone:	559-360-8716

Name:	Valle Vista Apartments- Lincoln, CA
Contract:	Rehabilitation
Start:	02/15/2016
End:	08/30/2016
Value:	127,950
Contact:	Michael Condry
Phone:	559-360-8716

Name:	Sherwood Manor - Los Molinos, CA
Contract:	Demolition 35 units
Start:	06/01/2015
End:	11/30/2015
Value:	74,000.00
Contact:	Michael Condry
Phone:	559-360-8716

Name:	Patterson Place Apartments - Patterson, CA
Contract:	Landscaping
Start:	11/01/2014
End:	12/28/2014
Value:	100,000.00
Contact:	Michael Condry
Phone:	559-360-8716

Name:	Hacienda - Pebble Beach
Contract:	Shower addition
Start:	12/01/2016
End:	02/15/2017
Value:	
Contact:	Michael Condry
Phone:	559-360-8716

Name:	Riverview Garden Apartments
Contract:	Landscaping-Fencing
Start:	08/01/2014
End:	11/30/2014
Value:	130,000.00
Contact:	Michael Condry
Phone:	559-360-8716

Name:	Diamond Place Apartments, San Andreas CA
Contract:	Demolition 30 units
Start:	05/15/2015
End:	11/30/2015
Value:	65,000.00
Contact:	Michael Condry
Phone:	559-360-8716

Name:	Golf Sudio
Contract:	Studio
Start:	02/15/2017
End:	03/30/2017
Value:	$90,000
Contact:	Eric Condry
Phone:	559-360-3281

Name:	Reroof Building 736
Contract:	N62473-17-C-2006
Start:	09/12/2017
End:	11/29/2017
Value:	292,051
Contact:	Loreto Manalo
Phone:	559-998-3839

Name:	Pour 3 Concrete Slab
Contract:	AG-32SD-C-17-0097
Start:	10/05/2017
End:	11/12/2017
Value:	23,676.95
Contact:	Jeffery Ridenour
Phone:	309-363-5914

Name:	Replace Exit Doors Building 822
Contract:	N62473-17-C-1822
Start:	09/22/2017
End:	12/11/2017
Value:	242,310
Contact:	Nathalie Zielinski
Phone:	559-998-3892

Name:	Parkview Apartments
Contract:	V17-006
Start:	10/01/2017
End:	
Value:	250,000
Contact:	Bill Griffiths
Phone:	559-875-3330

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SBA Profile

SBA Profile

Privacy Statement
(Back to Profile List, or use Back button)

Identification, Location & Contacts

This profile was last updated:	06/14/2018
Status:	Active
User ID:	P1055278
Name of Firm:	DURABLE COOL ROOFS, INC.
Trade Name ("Doing Business As ..."):	
DUNS Number:	027962170
Parent DUNS Number:	027962170
Address, line 1:	1608 E. JEFFERSON AVE.
Address, line 2:	
City:	FRESNO
State:	CA
Zip:	93725-9504
Phone Number:	559-439-8626
Fax Number:	559-439-8627
E-mail Address:	lucia@durablecoolroofs.com
WWW Page:	http://www.durablecoolroofs.com
E-Commerce Website:	http://www.durablecoolroofs.com
Contact Person:	ARMINDA L. DUNLAP
County Code (3 digit):	019
Congressional District:	21
Metropolitan Statistical Area:	2840
CAGE Code:	5CT73
Year Established:	2009
Accepts Government Credit Card?:	[X] Yes [ ] No
GSA Advantage Contract(s):	

No; different scope

(Note: Size information is now under "NAICS Codes with Size Determinations by NAICS", below.)

Organization, Ownership & Certifications

Legal Structure:	Subchapter S Corporation
Ownership and Self-Certifications:	Hispanic American, Other Minority Owned, Self-Certified Small Disadvantaged Business, Economically Disadvantaged Women-Owned Small Business, Women-Owned Small Business, Woman Owned

Current Principals

1. Arminda L. Dunlap, President

"Business Development Servicing Office" (for certifications)

FRESNO DISTRICT OFFICE (SBA office code 0942)

8(a) Certification:

SBA 8(a) Case Number:	306204
SBA 8(a) Entrance Date:	04/03/2014
SBA 8(a) Exit Date:	04/03/2023

Small Disadvantaged Business Certification:

SDB Entrance Date:
SDB Exit Date:

HUBZone Certification:

HUBZone Certified?: [ ] Yes [X] No
HUBZone Certification Date:

8(a) Joint Venture Certification:

8(a) JV Entrance Date:
8(a) JV Exit Date:

Non-Federal-Government Certifications:

GSBE
IB Roof Systems
GAF Master C. R. C.
Duro-Last Roofing S
Western Colloid

Products & Services

Capabilities Narrative:

All Roofing systems available, underground, Waterproofing, Design build, Roofing/building Maintenance, Roofing/building Restoration, General construction, Construction management, concrete, asphalt paving, Tenant Improvements,General Painting, Commercial & Industrial. Durable Cool Roofs, Inc is a Minority Owned, 8(a) Certified, Disadvantage Woman Owned Small Business.

Special Equipment/Materials:

Graco Pumps, Folk lifts, Asphalt Kettles, asphalt spreaders, felt machines, trailers, service trucks, foam sprayers, Leister Varimat Robot heat welders, transits,multiple roofing and construction tools.

Business Type Percentages:

Construction (50 %)
Service (50 %)

Bonding Levels

Construction Bonding Level (per contract)	$1,500,000
Construction Bonding Level (aggregate)	$3,000,000
Service Bonding Level (per contract)	$1,500,000
Service Bonding Level (aggregate)	$3,000,000

NAICS Codes with Size Determinations by NAICS:

#	Primary?	Code	NAICS Code's Description	"Buy Green"? (1)	Small? (2)
1	Yes	238160	Roofing Contractors		Yes
2		236220	Commercial and Institutional Building Construction		Yes
3		238320	Painting and Wall Covering Contractors		Yes

(1) By entering Yes for "Buy Green", the firm asserts that it obeys EPA guidelines for environmental friendliness for this NAICS code. Note, EPA guidelines do not exist for every NAICS code.
(2) If Yes, the firm's revenues/number of employees do not exceed the NAICS code's small business size standard.

Keywords:

Durable Cools Roofs, Inc, DCRI, is a successful roofing entity, providing roofing solutions for private, and government projects, Our senior management has decades of combined, experience in specifying, and installing commercial buildings, DCRI is a roofing company that is committed, to providing the highest standards in safety, and quality control on all projects, DCRI has a mentor, who graduated from 8a in March 2017, and has many years of experience in, Federal/Military projects all over

Miscellaneous:

Quality Assurance Standards: (none given)
Electronic Data Interchange capable?: [ ] Yes [ ] No

Export Profile (Trade Mission Online)

Exporter?: [ ] Yes [X] No [ ] Wants To Be
Export Business Activities: (none given)
Exporting to: (none given)
Desired Export Business Relationships: (none given)
Description of Export Objective(s): (none given)

Performance History (References)

Name:	National Park Service- Point Reyes
Contract:	P15PX03332
Start:	09/15/2015
End:	10/15/2015
Value:	79,950.00
Contact:	Upon Request
Phone:	

Name:	County of Kern Fire Department
Contract:	1620.7203.13
Start:	05/15/2015
End:	06/15/2015
Value:	58,624.48
Contact:	Upon Request
Phone:	

Name:	Ruiz Foods, Inc.
Contract:	14-0158
Start:	10/01/2014
End:	10/31/2014
Value:	356,650.00
Contact:	Upon Request
Phone:	

Name:	Point Reyes National Park - Lifeboat Station 4 buildings
Contract:	P16PX03694
Start:	01/16/2017
End:	03/08/2017
Value:	99,687.00
Contact:	Upon Request
Phone:	

Name:	Searles Valley Minerals
Contract:	CS1604749
Start:	06/01/2016
End:	06/14/2016
Value:	$42,750.00
Contact:	Upon Request
Phone:	

Name:	California Air National Guard Base, Fresno 144 Fighter Wing Weapons Building
Contract:	
Start:	10/01/2016
End:	10/31/2016
Value:	74,912
Contact:	Upon Request
Phone:	

Name:	Naval Air Station North Island Building 1470, San Diego CA 92135
Contract:	
Start:	03/01/2017
End:	03/31/2017
Value:	147,000
Contact:	Upon Request
Phone:	

Name:	Fambro Warehouse Company
Contract:	13-0210
Start:	09/01/2013
End:	09/30/2013
Value:	96,600.00
Contact:	Upon Request
Phone:	

The structure of this page was last updated 02/01/2013, as part of SBSS 8.1.1.

SBA Search Results

t Search Results

Quick Market Search Listing, where

the firm has not opted out of DSBS searches;
the firm is small in any of these NAICS codes: 326122;
the profile location is in Metro Statistical Area 2840;
the profile location is in: California;
the profile's status is that of a standard DSBS search;
at least one word of the Capabilities Narrative, Special Equipment/Materials or Keywords is Pipe & Fittings;
and economic groups randomized by original start time of search: 2018-07-05 12:08:55 PM.

Data validation took 0.02 seconds. The search took 0.26 seconds for certifications and 0.20 seconds for non-certifications.

Click on either hotlink in a row to list the firms in the economic group meeting your search criteria.

Economic Group	Number of Firms Found
Currently HUBZone Certified	0
Currently 8(a) Certified	0
Currently SDB Certified	0
Woman or Women Owned	0
Service-Disabled Veteran	0
Veteran	0

SBA Search Results

t Search Results

Quick Market Search Listing, where

the firm has not opted out of DSBS searches;
the firm is small in any of these NAICS codes: 326122;
the profile location is in Metro Statistical Area 2840;
the profile location is in: California;
the profile's status is that of a standard DSBS search;
and economic groups randomized by original start time of search: 2018-07-05 12:09:45 PM.

Data validation took 0.02 seconds. The search took 2.44 seconds for certifications and 2.33 seconds for non-certifications.

Click on either hotlink in a row to list the firms in the economic group meeting your search criteria.

Economic Group	Number of Firms Found
Currently HUBZone Certified	0
Currently 8(a) Certified	0
Veteran	0
Woman or Women Owned	1
Currently SDB Certified	0
Service-Disabled Veteran	0

SBA Search Results

ng, where
e of: women owned;
the firm is small in any of these NAICS codes: 326122;
the profile location is in Metro Statistical Area 2840;
the profile location is in: California;
and randomized by original start time of search: 2018-07-05 12:09:45 PM.

Data validation took 0.00 seconds. The count and search queries took 2.36 seconds and 2.57 seconds, respectively.

Displaying profiles 1 - 1 (of 1 profiles matching criteria):

View	Name and Trade Name of Firm	Contact	Address and City, State Zip	Capabilities Narrative
1	SUN WEST SPECIALTY	ROBERT M Schiavone	5665 N MAROA AVE FRESNO, CA 93704-2007	

No more matches

Refine Search

Save E-mail Addresses for All

delimited by:

- (•) semi-colon and space
- ( ) comma and space
- ( ) new line
- ( ) tab

Please notify SAM if you discover any inaccurate contact information (address, e-mail address, fax or phone number) in the way most convenient for you:

For SAM Customer Service, contact:
Federal Service Desk (8am - 8pm Eastern Time)
866-606-8220
334-206-7828
DSN: 866-606-8220

The structure of this page was last updated 02/01/2013, as part of SBSS 8.1.1.

Accessibility Options >

SBA Profile

SBA Profile

Privacy Statement
(Back to Profile List, or use Back button)

Identification, Location & Contacts

This profile was last updated:	02/27/2018
Status:	Active
User ID:	P1203195
Name of Firm:	SUN WEST SPECIALTY Yes
Trade Name ("Doing Business As ..."):	
DUNS Number:	611313420
Parent DUNS Number:	
Address, line 1:	5665 N MAROA AVE
Address, line 2:	
City:	FRESNO
State:	CA
Zip:	93704-2007
Phone Number:	559-436-9731
Fax Number:	559-436-9731
E-mail Address:	robert.schiavone@sbcglobal.net
WWW Page:	
E-Commerce Website:	
Contact Person:	ROBERT M Schiavone
County Code (3 digit):	019
Congressional District:	16
Metropolitan Statistical Area:	2840
CAGE Code:	5YHL7
Year Established:	1989
Accepts Government Credit Card?:	[X] Yes [ ] No
GSA Advantage Contract(s):	

(Note: Size information is now under "NAICS Codes with Size Determinations by NAICS", below.)

Organization, Ownership & Certifications

Legal Structure:	
Ownership and Self-Certifications:	Self-Certified Small Disadvantaged Business, Woman Owned

Current Principals

(none given)

"Business Development Servicing Office" (for certifications)

FRESNO DISTRICT OFFICE (SBA office code 0942)

8(a) Certification:

SBA 8(a) Case Number:
SBA 8(a) Entrance Date:
SBA 8(a) Exit Date:

Small Disadvantaged Business Certification:

SDB Entrance Date:
SDB Exit Date:

HUBZone Certification:

HUBZone Certified?: [ ] Yes [X] No
HUBZone Certification Date:

8(a) Joint Venture Certification:

8(a) JV Entrance Date:
8(a) JV Exit Date:

Non-Federal-Government Certifications:

(none given)

Products & Services

Capabilities Narrative:

(none given)

Special Equipment/Materials:

(none given)

Business Type Percentages:

(none given)

Bonding Levels

Construction Bonding Level (per contract)	(none given)
Construction Bonding Level (aggregate)	(none given)
Service Bonding Level (per contract)	(none given)
Service Bonding Level (aggregate)	(none given)

NAICS Codes with Size Determinations by NAICS:

#	Primary?	Code	NAICS Code's Description	"Buy Green"? (1)	Small? (2)
1	Yes	444130	Hardware Stores		Yes
2		326122	Plastics Pipe and Pipe Fitting Manufacturing		Yes
3		326199	All Other Plastics Product Manufacturing		Yes
4		326220	Rubber and Plastics Hoses and Belting Manufacturing		Yes
5		331511	Iron Foundries		Yes
6		332510	Hardware Manufacturing		Yes
7		332618	Other Fabricated Wire Product Manufacturing		Yes
8		332912	Fluid Power Valve and Hose Fitting Manufacturing		Yes
9		423120	Motor Vehicle Supplies and New Parts Merchant Wholesalers		Yes
10		423710	Hardware Merchant Wholesalers		Yes
11		423830	Industrial Machinery and Equipment Merchant Wholesalers		Yes
12		424950	Paint, Varnish, and Supplies Merchant Wholesalers		Yes

(1) By entering Yes for "Buy Green", the firm asserts that it obeys EPA guidelines for environmental friendliness for this NAICS code. Note, EPA guidelines do not exist for every NAICS code.
(2) If Yes, the firm's revenues/number of employees do not exceed the NAICS code's small business size standard.

Keywords:

(none given)

Miscellaneous:

Quality Assurance Standards:	(none given)
Electronic Data Interchange capable?:	[ ] Yes [ ] No

Export Profile (Trade Mission Online)

Exporter?:	(firm hasn't answered this question yet)
Export Business Activities:	(none given)
Exporting to:	(none given)
Desired Export Business Relationships:	(none given)
Description of Export Objective(s):	(none given)

Performance History (References)

(none given)

The structure of this page was last updated 02/01/2013, as part of SBSS 8.1.1.

SBA Search Results

t Search Results

Quick Market Search Listing, where

the firm has not opted out of DSBS searches;
the firm is small in any of these NAICS codes: 238120;
the profile location is in Metro Statistical Area 2840;
the profile location is in: California;
the profile's status is that of a standard DSBS search;
at least one word of the Capabilities Narrative, Special Equipment/Materials or Keywords is Rebar;
and economic groups randomized by original start time of search: 2018-07-05 12:04:48 PM.

Data validation took 0.02 seconds. The search took 0.08 seconds for certifications and 0.08 seconds for non-certifications.

Click on either hotlink in a row to list the firms in the economic group meeting your search criteria.

Economic Group	Number of Firms Found
Service-Disabled Veteran	0
Veteran	0
Currently SDB Certified	0
Currently 8(a) Certified	0
Woman or Women Owned	0
Currently HUBZone Certified	0

SBA Search Results

t Search Results

Quick Market Search Listing, where

the firm has not opted out of DSBS searches;
the firm is small in any of these NAICS codes: 238120;
the profile location is in Metro Statistical Area 2840;
the profile location is in: California;
the profile's status is that of a standard DSBS search;
at least one word of the Capabilities Narrative, Special Equipment/Materials or Keywords is Reinforcing Steel;
and economic groups randomized by original start time of search: 2018-07-05 12:05:37 PM.

Data validation took 2.48 seconds. The search took 0.18 seconds for certifications and 0.15 seconds for non-certifications.

Click on either hotlink in a row to list the firms in the economic group meeting your search criteria.

Economic Group	Number of Firms Found
Currently HUBZone Certified	0
Service-Disabled Veteran	0
Veteran	0
Woman or Women Owned	0
Currently 8(a) Certified	0
Currently SDB Certified	0

The State of California Certifications

Search Criteria

Business Name

Certification ID

Certification Type

- ☐ Micro Business (MB)
- ☑ Small Business (SB)
- ☐ Disabled Veteran Business Enterprise (DVBE)
- ☐ Non-Profit Veteran Service Agency (NVSA)
- ☐ Non-Profit Recognition (NP)

Business Type

- ☐ Construction
- ☐ Manufacturer
- ☐ Non-Manufacturer
- ☑ Service

Keywords Bypassing

Zip Code

Service Area ID 010

UNSPSC Classifications

NAICS Classifications

License Code

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(https://www.facebook.com/CalDGS)

(https://twitter.com/CalifDGS)

The State of California Certifications

Search Criteria

Business Name		Keywords	Bypassing
Certification ID		Zip Code	
Certification Type	☐ ☑ Small Business (SB) ☐ Disabled Veteran Business Enterprise (DVBE) ☐ Non-Profit Veteran Service Agency (NVSA) ☐ Non-Profit Recognition (NP)	Service Area ID	010
		UNSPSC Classifications	
		NAICS Classifications	
Business Type	☐ Construction ☐ Manufacturer ☐ Non-Manufacturer ☑ Service	License Code	

Clear Search

No Matching Rows Found

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The State of California Certifications

Search Criteria

Business Name

Certification ID

Certification Type

- ☐ Micro Business (MB)
- ☑ Small Business (SB)
- ☐ Disabled Veteran Business Enterprise (DVBE)
- ☐ Non-Profit Veteran Service Agency (NVSA)
- ☐ Non-Profit Recognition (NP)

Business Type

- ☑ Construction
- ☐ Manufacturer
- ☐ Non-Manufacturer
- ☐ Service

Keywords Electrical

Zip Code

Service Area ID 010

UNSPSC Classifications

NAICS Classifications

License Code C-10

Clear | Search

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(http://www.fiscal.ca.gov/)

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The State of California Certifications

Search Criteria

View 10 | 1-100 of 160 | › | » | Download

- SEM INCORPORATED SB(Micro)
- HILLY HOWL INC SB(Micro)
- PREFERRED CEILINGS INC SB
- TOTAL CONCEPT SALES, INC. SB
- H. L. HARRISON ELECTRIC, INC SB(Micro)
- Seamorgh Energy SB
- P.P.MM INC SB(Micro)
- TECHNION CONTRACTORS TCI INC. SB(Micro)
- SHANKS ELECTRIC CORPORATION SB(Micro)
- ELECTRIC CURRENT INC DBA CURRENT ELECTRIC SB(Micro)
- RGE INC SB(Micro)
- Juan Reese Anderson SB(Micro)
- FOSCO ELECTRIC SB(Micro)
- ELEVATING SALES CORP. DVBE , SB(Micro)
- Valley Energy, Inc. SB(Micro)
- SURGENER ELECTRIC INC, DBA MCKEE ELECTRIC COMPANY SB
- KEN CURRAN ELECTRIC INC SB(Micro)
- AMB ELECTRIC SB(Micro)
- SPARKY ELECTRIC INC. SB
- GA TECHNICAL SERVICES, INC. SB
  GA TECHNICAL SERVICES INC
- MANUFACTURERS LIGHTING SOLUTIONS, INC SB(Micro)
- WILD ELECTRIC, INC. SB(Micro)
- PRIOR ELECTRIC SB(Micro)
- Grant, Gregory SB(Micro)
- RED WAVE COMM INC SB
- CONVERSE CONSTRUCTION INC SB
- JOHN DIEHL ELECTRIC SB
- JASZ CO INC SB(Micro)
- PREFERRED POWER SOLUTIONS INC SB
- M BREY ELECTRIC INC SB(Micro)
- PowerTown Solar Electric Inc. SB(Micro)
- SERGENT'S MECHANICAL SYSTEMS INC DVBE , SB

FAITH COM INC SB
CALTEC ELECTRIC INC. SB(Micro)
JAMES ULM DVBE , SB(Micro)
29 Palms Electric Inc. SB
TEL TECH PLUS INC DVBE , SB
KSJ ELECTRICAL CONSTRUCTION INC SB(Micro)
UNIVERSAL SECURITY & FIRE INC SB(Micro)
SERVITEK SOLUTIONS, INC. SB
US Comfort Building Services SB(Micro)
FOUR-A ELECTRIC, INC. SB(Micro)
ICENOGLE CONSTRUCTION MANAGEMENT INC. DVBE , SB(Micro)
EAGLEWEIS INC SB(Micro) EAGLE SECURITY SYSTEMS
ON TARGET ELECTRIC INC DVBE , SB(Micro)
LOOP ELECTRIC INC SB(Micro)
STEVE W FAULKENDER SB
BARKLEY ANDROSS CORP SB(Micro)
NORTH STATE ELECTRICAL CONTRACTORS INC SB
R I C CONSTRUCTION CO INC SB
DUTCHMAN ELECTRIC INC SB
Eric bridge electrical SB(Micro)
CREATIVE ELECTRIC SB(Micro)
ALL POWER, INC. SB
KYBRI GREEN CORPORATION SB(Micro)
PACIFIC POWER ENGINEERS INC DVBE , SB(Micro)
Knight Power & Electric SB(Micro)
ELECTRICAL SYSTEMS ENGINEERING COMPANY SB(Micro)
APPLE VALLEY COMMUNICATIONS INC SB
Security Solutions SB(Micro) NATIONAL SECURITY SYSTEMS
DONANGELO BROTHERS ELECTRIC INC SB(Micro)
KOFFLER ELECTRICAL MECHANICAL APPARATUS REPAIR, INC. SB
Benson & Son Electric, Inc. SB(Micro)
DESIGN ELECTRICAL & GEN CONT INC SB(Micro)
NATIONWIDE ENVIRONMENTAL AND CONSTRUCTION SERVICES INC SB(Micro)
A+ ELECTRICAL SERVICES SB(Micro)
TRAFFIC LOOPS CRACKFILLING INC SB
CHRISTIANBELLE ELECTRIC INC SB(Micro)

SCHRADER MECHANICAL, INC. SB
ALPHA ELECTRIC SB(Micro)
RELIABLE MONITORING SERVICES INC SB
POWER ENGINEERING SERVICES INC SB(Micro)
DECOTECH SYSTEMS INC SB
Veteran Electrical Power Systems SB(Micro)
SANDAU ENGINEERING DVBE , SB(Micro)
CALIFORNIA PLUS ENGINEERING INC SB
Cornerstone Environmental Contractors, Inc. SB
Elite Automation and Electrical Services Inc. SB(Micro)
CALIFORNIA PROFESSIONAL ENGINEERING, INC. SB
Superior Building SB
MORE POWER SB(Micro)
BIRDI & ASSOCIATES INC SB
JAMES DAVID LAWRENCE DVBE , SB(Micro)
TERABAND TECHNOLOGIES INC SB(Micro)
WIRENET COMMUNICATIONS INC SB(Micro)
WEST PACIFIC ELECTRIC COMPANY CORPORATION SB
JOHN K. COHAN SB(Micro)
MADCO ELECTRIC, INC. SB(Micro)
PROFESSIONAL TELECOMMUNICATIONS SERVICES, INC. DVBE , SB
COMPLIANCE ELECTRIC, INC. SB(Micro)
CORE POWER SERVICES INC SB(Micro)
4 Point Power, Inc. SB(Micro)
SigTel, Inc. SB(Micro)
JR SHARP CONSTRUCTION INC SB(Micro)
Duy Electric SB(Micro)
CENTRAL SIERRA ELECTRIC COMPANY INC SB
NATIVE ELECTRICAL CONSTRUCTION INC SB(Micro)
ALLTECH SERVICES INC SB
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NATIONAL HIGH VOLTAGE SERVICES, INC. SB(Micro)
Grace Electric SB(Micro)
PAC-WEST GENERAL DVBE , SB
TRICON CONSTRUCTION INC SB
PTM GENERAL ENGINEERING SERVICES INC SB
ENGINEERING & ENVIRONMENTAL CONSTRUCTION INC. SB(Micro)
D. MERCURIO ENTERPRISES INC DVBE , SB(Micro)
CABLE LINKS CONSTRUCTION GROUP INC DVBE , SB
RBT ELECTRIC, INC. SB(Micro)
LEE CONTRACTORS AND CONSULTANTS, INC. SB(Micro)
JOHNSON MECHANICAL CONTRACTORS INC SB(Micro)
TUNNEL ELECTRIC INC SB
CB GRANT ELECTRIC SB(Micro)
J H BRYANT JR INC SB
PARAGON SYSTEMS, INC. SB(Micro)
GENERAL ELECTRIC DOCTOR SB(Micro)
JBS High Voltage SB(Micro)
Hi-Voltage Splicing Co Inc SB
P&J ELECTRIC SB(Micro)
EAGLE PUMP SERVICES, INC. SB(Micro)
BIG BEAR ELECTRIC INC SB(Micro)
ENSLEY ELECTRIC, INC. SB(Micro)
PB ELECTRIC, INC. SB(Micro)
H. W. SESSOMS CONSTRUCTION INC. SB
NEWTON CONSTRUCTION & MANAGEMENT INC SB
ORANGE COUNTY ELECTRIC, INC. SB(Micro)
ALLEN ALARM SYSTEMS INC SB(Micro) ALLEN ALARM SYSTEMS, INC.
C10 FIRE, INC. SB(Micro)
BENTLEY CONSTRUCTION GROUP INC DVBE , SB(Micro)
US CONTROLS INC SB(Micro)

Blue Collar Contractors SB(Micro)
NORTH AMERICAN POWER & CONTROLS INC SB(Micro)
SUMMIT SIGNAL INC SB(Micro)
WALSH ELECTRONICS SYSTEMS TECHNOLOGY SB(Micro)
HIDDEN VALLEY PUMP SYSTEMS INC SB
C2I (COMPENDIUM INTERNATIONAL, INC.) DVBE , SB
TIM R. TRULL ELECTRIC INC. SB(Micro)
LEE WILSON ELECTRIC COMPANY INC SB
PEI PLACER ELECTRIC INC SB
VINCENT ELECTRIC COMPANY SB
STUDEBAKER BROWN ELECTRIC, INC SB
INDUSTRIAL TESTS, INC SB
L D STROBEL CO INC SB
NORTHERN DIGITAL INC SB
HCI Sprinkler, Inc. SB(Micro)
COLEMAN ELECTRICAL SERVICES, INC. SB(Micro)
CONTROL TECHNOLOGY INC SB(Micro)
PACIFIC INTERNATIONAL ELECTRIC COMPANY INC SB PACIFIC INTL ELECTRIC CO, PACIFIC INTL ELECTRIC COMPANY
CALIFORNIA POWER TEST INC SB(Micro)
SHELL ELECTRIC, INC SB(Micro)
Sbrega Electric SB(Micro)
Lords Electric Inc SB(Micro)
VOBECKY ENTERPRISES, INC. SB(Micro)
DMZ BUILDERS SB
CABAR ELECTRIC INC SB
AEKO CONSULTING INC SB(Micro)
POWER-TECH ENGINEERS INC SB(Micro)
GLOBAL POWER GROUP INC. SB
FRONTLINE ENVIRONMENTAL TECHNOLOGIES GROUP, INC. SB

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Search Criteria

Business Name

Certification ID

Certification Type

- ☐ Micro Business (MB)
- ☑ Small Business (SB)
- ☐ Disabled Veteran Business Enterprise (DVBE)
- ☐ Non-Profit Veteran Service Agency (NVSA)
- ☐ Non-Profit Recognition (NP)

Business Type

- ☑ Construction
- ☐ Manufacturer
- ☐ Non-Manufacturer
- ☐ Service

Keywords Painting

Zip Code

Service Area ID 010

UNSPSC Classifications

NAICS Classifications

License Code C-33

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- PAINTING & DECOR, INC. SB(Micro)
- JAMES L HARRIS' PAINTING & DECORATING INC SB(Micro)
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- TSV PAINTING INC SB
- C V S B Construction Inc SB
- THE COLORES PAINTING CO INC SB(Micro)
- D&H Painting SB(Micro)
- Delta Sandblasting Company, Inc. SB
- INGHAM PAINTING INC SB(Micro)
- GEMS ENVIRONMENTAL MANAGEMENT SERVICES, INC. SB
- ULTRA PAINTING SB(Micro)
- Mark Cormier Painting SB(Micro)
- George Mammos SB(Micro)
- A PLUS PAINTING SB(Micro)
- VERA'S PAINTING SB(Micro)
- VALDEZ PAINTING, INC SB
- TPA CONSTRUCTION INC SB(Micro)
- INNOVATIVE INDUSTRIAL COATINGS, INC. SB(Micro)
- MURPHY INDUSTRIAL COATINGS INC SB
- FIX PAINTING COMPANY SB(Micro)
- FedVet Construction DVBE , SB
- US NATIONAL CORP DBA JIMENEZ PAINTING COMPANY SB(Micro)
- GAIDANO & SONS PAINTING & DECORATING INC SB(Micro)
- San Patricio Painting Inc SB(Micro)
- TONY PAINTING SB(Micro)
- SHOWPLACE SERVICES SB(Micro)
- JEFFCO PAINTING & COATING INC SB
- CAM PAINTING, INC. SB(Micro)
- P.P.MM INC SB(Micro)
- GRAHAM-PREWETT INC SB
- C & J PAINTING SB(Micro)

RO'S PRECISE PAINTING, INC. SB
MIGALE PAINTING COMPANY SB(Micro)
Professional Refinishing Organization SB(Micro)
Tiber Painting LLC SB(Micro)
HAMANAKA PAINTING CO INC SB(Micro)
ANTONIOS ECONOMOS SB
O.H.E PAINTING & WALLCOVERING, INC SB(Micro)
BJS CUSTOM PAINTING SB
JOHNSON & TURNER PAINTING CO., INC. SB
LOUIE LOIZU SB(Micro)
SHALLOW CREEK CONSTRUCTION CO DVBE , SB(Micro)
IOANNIS APOSTOLOS PANAYIOTOU SB(Micro)
J H BRYANT JR CONTRACTORS INC SB
ISR PAINTING & WALLCOVERING INC SB(Micro)
JPB DESIGNS INC SB
GPS Painting and Wallcovering, Inc. SB
PICON FRP, INC. SB
PECORARO INC SB(Micro)
SOCAL PACIFIC CONSTRUCTION CORP SB
AFFORDABLE PAINTING SERVICES INC SB(Micro)
PARADA PAINTING, INC SB(Micro)
MARYANN STATHOULIS SB(Micro)
DARDEN PAINTING INC SB(Micro)
OLYMPOS PAINTING INC SB(Micro)
CROSNO CONSTRUCTION INC SB
WM B SALEH CO SB
CTG CONSTRUCTION INC. SB
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CASCADE, INC. SB(Micro)
RIVER CITY PAINTING SB(Micro)

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Search Criteria

Business Name

Certification ID

Certification Type

- [ ] Micro Business (MB)
- [x] Small Business (SB)
- [ ] Disabled Veteran Business Enterprise (DVBE)
- [ ] Non-Profit Veteran Service Agency (NVSA)
- [ ] Non-Profit Recognition (NP)

Business Type

- [ ] Construction
- [x] Manufacturer
- [ ] Non-Manufacturer
- [ ] Service

Keywords Pipe & Fittings

Zip Code

Service Area ID 010

UNSPSC Classifications

NAICS Classifications

License Code

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Search Criteria

Business Name		**Keywords**	Pipe & Fittings
Certification ID		**Zip Code**	
Certification Type	☐ Small Business (SB) ☐ Disabled Veteran Business Enterprise (DVBE) ☐ Non-Profit Veteran Service Agency (NVSA) ☐ Non-Profit Recognition (NP)	**Service Area ID**	010
		UNSPSC Classifications	
		NAICS Classifications	
Business Type	☐ Construction ☑ Manufacturer ☐ Non-Manufacturer ☐ Service	**License Code**	

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Search Criteria

Business Name

Certification ID

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- ☐ Micro Business (MB)
- ☑ Small Business (SB)
- ☐ Disabled Veteran Business Enterprise (DVBE)
- ☐ Non-Profit Veteran Service Agency (NVSA)
- ☐ Non-Profit Recognition (NP)

Business Type

- ☑ Construction
- ☐ Manufacturer
- ☐ Non-Manufacturer
- ☐ Service

Keywords Rebar

Zip Code

Service Area ID 010

UNSPSC Classifications

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WILLIS REBAR SB

NORTH COAST STEEL INC SB(Micro)

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W. M. LYLES CO.

Good Faith Effort - Solicitation LOG

Owner: County of Fresno
Project: Waterworks District 38 WWTF Improv.
Bid Date: 8/2/18 @ 2:00 PM

Solicitation LOG										LOG Notes
WML Employee	Contractor / Supplier Company	Trade / Type	Person Contacted	Date of Contact	Time	Phone	Fax	Email	Notes
Michael	4 POINT ELECTRIC	Electrical	Louis Herrera	07/06/18	9:19 AM	408-529-8250		louis@4pointelectric.com	SBE
Michael	ACM LIGHTING	Electrical	CARLOS MORALES SR.	07/06/18	9:19 AM	951-272-4881	951-272-4838	acmlighting@sbcglobal.net	M, Hispanic
Michael	AJK COMMUNICATIONS	Electrical	KIRAN KAUR	07/06/18	9:19 AM	562-942-1400	562-942-1800	kirank@ajkcommunications.com	F, Asian Subcontinent
Michael	ALPHA ELECTRIC	Electrical	Kostas Kalfountzos	07/06/18	9:19 AM	916-489-2002	916-489-2041	alphaelectricco@yahoo.com	SBE
Michael	AMB ELECTRIC	Electrical	Angela Brown	07/06/18	9:19 AM	916-770-9959		abrown@ambelectric.net	SBE
Michael	BELLCURVE AND SYNCNETWORKS	Electrical	ABIYOU ADMASSU	07/06/18	9:19 AM	310-678-5018	424-331-5242	syncnetworks@gmail.com	M, Black
Michael	BLESSEDCO ELECTRIC	Electrical	CHRISTIAN RODRIGUEZ	07/06/18	9:19 AM	213-503-7432	661-382-1957	CRodriguez@BlessedCoElectric.com	M, Hispanic
Michael	CABLE LINKS CONSTRUCTION GROUP, INC.	Electrical	SANDY SLUMBERGER	07/06/18	9:19 AM	559-277-8555	559-274-1555	office@clcinc.us	M, Hispanic
Michael	CALIFORNIA POWER TEST INC	Electrical	Christopher Gould	07/06/18	9:19 AM	916-275-0805		powertest@comcast.net	SBE
Michael	CB GRANT ELECTRIC	Electrical	Chuck Beard	07/06/18	9:19 AM	916-803-8360		cbeard@surewest.net	SBE
Michael	CINDY BALES ENGINEERING, INC.	Electrical	CINDY BALES	07/06/18	9:19 AM	909-585-1557	909-752-7090	flyhigh@baleseng.com	F, Caucasian
Michael	D L PAYNE INC	Electrical	Amber Michener	07/06/18	9:19 AM	209-367-4858		amichener@dkpayne.com	SBE
Michael	DELTA ELECTRIC	Electrical	ROLANDO ESTEVEZ	07/06/18	9:19 AM	323-816-0508	661-250-4090	deltaelectric1@hotmail.com	M, Hispanic
Michael	DUY ELECTRIC	Electrical	Duy Nguyen	07/06/18	9:19 AM	916-509-1995		duyelectric15@gmail.com	SBE
Michael	ELITE AUTOMATION & ELECTRICAL SERVICES	Electrical	Josh Lancaster	07/06/18	9:19 AM	661-619-0043		jlancaster@eaaes.com	SBE
Michael	EXPRESS ENERGY SERVICES, INC	Electrical	DONALD RIVERS	07/06/18	9:19 AM	714-650-8870	714-650-8910	docrivers@exp-energy.com	M, Hispanic
Michael	FRANCIES ELECTRIC, INC.	Electrical	LEON FRANCIES JR.	07/06/18	9:19 AM	661-809-4175	661-834-5725	francieselectric@yahoo.com	M, Black
Michael	GALINDO ELECTRIC	Electrical	VICTOR GALINDO	07/06/18	9:19 AM			victor.galindo@galindoelectric.com	M, Hispanic
Michael	GRACE ELECTRIC, INC.	Electrical	DAVID MADRUGA	07/06/18	9:19 AM	661-587-1257	661-587-9660	gmad1961@gmail.com	F, Hispanic
Michael	GREEN TECH ELECTRIC SOLUTIONS	Electrical	MANUEL CORINAS	07/06/18	9:19 AM	408-280-1180	408-777-8363	manuel@greentechelectricinc.com	M, Hispanic
Michael	HI-VOLTAGE SPLICING CO INC	Electrical	Madison Jiminez	07/06/18	9:19 AM	925-838-7979	925-838-7978	madison@hi-voltagesplicing.com	SBE
Michael	INDUSTRIAL BATTERY SERVICES	Electrical	ELIZABETH RECORDER	07/06/18	9:19 AM	510-222-7719	510-412-5988	ibsrecoder@aol.com	M, Hispanic
Michael	JBS HIGH VOLTAGE	Electrical	Joseph Bryan	07/06/18	9:19 AM	530-301-2681		joe@jbshighvoltage.com	SBE
Michael	LIGHTHOUSE ELECTRICAL INC	Electrical	VICKI RATTO	07/06/18	9:19 AM	559-498-3017	559-498-0292	vratto@icadautomation.com	WBE
Michael	LOOP ELECTRIC	Electrical	Kimberly Kitsch	07/06/18	9:19 AM	661-588-0577		kim@loopelectric.com	SBE
Michael	LOS ANGELES SIGNAL CONSTRUCTION, INC.	Electrical	CHRISTOPHER MORALES	07/06/18	9:19 AM	909-599-2201	909-599-2722	info@lasignal.com	M, Hispanic
Michael	MADCO ELECTRIC	Electrical	Jill Davies	07/06/18	9:19 AM	559-896-5637		madco8812@gmail.com	SBE
Michael	MARKHAM ELECTRIC SOLUTIONS	Electrical	EDGAR MARKHAM	07/06/18	9:19 AM	661-927-8029		markelecsol@yahoo.com	M, Black
Michael	MEGAVOLT ELECTRICAL SERVICES	Electrical	JUAN HERNANDEZ	07/06/18	9:19 AM	818-635-1454		xuhua01@yahoo.com	M, Hispanic
Michael	METCO	Electrical	CHRISTOPHER MARTINEZ	07/06/18	9:19 AM	415-455-9922	415-455-9960	c.martinez@metco-usa.com	M, Hispanic
Michael	OPTIMA ENERGY, INC.	Electrical	YOUNG CHANG	07/06/18	9:19 AM	310-320-0611	323-383-9932	young@opnrg.com	M, Asian Pacific
Michael	P&J ELECTRIC	Electrical	Peter Glasner	07/06/18	9:19 AM	661-822-6217	661-822-6227	pjelectcathy@yahoo.com	SBE
Michael	PB ELECTRIC, INC.	Electrical	Stacie Baker	07/06/18	9:19 AM	916-858-1342	916-858-1625	stacie@pbelectricinc.com	SBE
Michael	PEI PLACER ELECTRIC INC	Electrical	Lynne Harker	07/06/18	9:19 AM	916-338-4400	916-338-4411	litlgnrl@placerelectric.com	SBE
Michael	PHASE 3 COMMUNICATIONS	Electrical	NICOLAS DEZUBIRIA	07/06/18	9:19 AM	408-946-9011	408-946-0672	ryusi@p3com.net	M, Hispanic
Michael	POWER4WARD	Electrical	ANTONIO AMEEN	07/06/18	9:19 AM	228-383-2031		AntonioA@power4ward.com	M, Black
Michael	PREFERRED POWER SOLUTIONS	Electrical	Karen Cleveland	07/06/18	9:19 AM	661-322-0880	661-322-0090	karen@preferredpowersolutions.com	SBE
Michael	SERVITEK SOLUTIONS, INC.	Electrical	GEOFF REYES	07/06/18	9:19 AM	626-227-1650	626-478-1300	greyes@servitekelectric.com	M, Asian Pacific
Michael	SIEGE ELECTRIC, INC.	Electrical	JOSH MIDDLETON	07/06/18	9:19 AM	760-453-1679		JMiddleton@Siege-Electric.com	M, Black
Michael	SILVER CREEK ELECTRIC, INC.	Electrical	JUAN DEHARO	07/06/18	9:19 AM	408-321-9094	408-21-9329	jdeharo@silvercreekelectric.com	M, Hispanic
Michael	SMARTBUILDING IQ, INC	Electrical	JOHN MCKELLAR	07/06/18	9:19 AM	925-230-8555		jabar@smarthomeiq.com	M, Black
Michael	SPARKY ELECTRIC	Electrical	Tresa Taylor	07/06/18	9:19 AM	559-492-1752	559-272-9082	tresa@sparkyelectricinc.com	SBE
Michael	TIM R. TRULL ELECTRIC INC.	Electrical	Tim Trull	07/06/18	9:19 AM	559-479-0983		tim@timrtrullelectric.com	SBE
Michael	TURNER & TURNER ELECTRIC INC	Electrical	RONALD R. TURNER	07/06/18	9:19 AM	510-290-9624	209-476-1834	ronroc.rt@icloud.com;	M, Black
Michael	UNITED ELECTRIC	Electrical	Gregory Grant	07/06/18	9:19 AM	916-308-5172		greg7g@yahoo.com	SBE
Michael	WEST PACIFIC ELECTRIC COMPANY	Electrical	VIRGINIA ANN VILLA	07/06/18	9:19 AM	559-924-6422	559-924-4826	westpacificelectricco@gmail.com	F, Hispanic
Michael	WILD ELECTRIC, INC.	Electrical	Tina Schulte	07/06/18	9:19 AM	559-251-7770		tschulte@wildelectric.net	SBE
Michael	WILL DOUGLASS ELECTRIC	Electrical	WILLIAM DOUGLASS	07/06/18	9:19 AM	559-472-6490		williamdouglass00@yahoo.com	M, Black

Print Date and Time:
7/27/2018 1:36 PM

Owner: County of Fresno
Project: Waterworks District 38 WWTF Improv.
Bid Date: 8/2/18 @ 2:00 PM

Solicitation LOG									LOG Notes
WML Employee	Contractor / Supplier Company	Trade / Type	Person Contacted	Date of Contact	Time	Phone	Fax	Email	Notes
Michael	A PLUS PAINTING	Painting	Michael Dovgan	07/06/18	9:19 AM	916-410-7573	916-453-7029	apluspaintingca@gmail.com	SBE
Michael	ABSOLUTE URETHANE	Painting	OMAR OROZCO	07/06/18	9:19 AM	559-241-0160	559-227-2212	omar@absoluteurethane.com	F, Hispanic
Michael	ANCHOR SINGH PAINTING	Painting	ANCHOR SINGH	07/06/18	9:19 AM	916-595-1837		anchorspainting@gmail.com	M, Asian Pacific
Michael	CAM PAINTING	Painting	Priamos Yennaris	07/06/18	9:19 AM	818-716-7410	818-716-7443	campainting@sbcglobal.net	SBE
Michael	COLORES PAINTING	Painting	Hugo Ruiz	07/06/18	9:19 AM	415-235-3155		thecolores1970@yahoo.com	SBE
Michael	D&H PAINTING	Painting	Mike Karapetyan	07/06/18	9:19 AM	916-802-1911		mike_dhpainting@aol.com	SBE
Michael	DUNKIN & BUSH	Painting	Tim Jacober	07/06/18	9:19 AM	661-588-1196	661-588-0364	tjacober@dunkinandbush.com	WBE
Michael	GPS PAINTING & WALLCOVERING	Painting	Eliot Schneider	07/06/18	9:19 AM	714-730-8904	714-505-9423	eschneider@gpspainting.com	SBE
Michael	HARRIS DEVELOPMENT CORPORATION	Painting	ROBERT HARRIS III	07/06/18	9:19 AM	559-797-1642		rharriscorp@gmail.com	M, Black
Michael	INGHAM PAINTING INC	Painting	Doug Ingham	07/06/18	9:19 AM	805-748-6964	805-481-5167	doug@inghampainting.com	SBE
Michael	ISR PAINTING & WALLCOVERING	Painting	Gloria E. Ramirez	07/06/18	9:19 AM	562-407-5217	562-407-5214	gr_isr@yahoo.com	SBE
Michael	JEFFCO PAINTING & COATING INC	Painting	Gene Glockner	07/06/18	9:19 AM	707-562-1900	707-562-1907	geneglockner@jeffcoptg.com	SBE
Michael	MARISCAL PAINTING, INC	Painting	JESUS MARISCAL	07/06/18	9:19 AM	626-331-2304	626-331-2560	mariscaldutchpainting@hotmail.com	M, Hispanic
Michael	MC PAINTING	Painting	Mark Cormier	07/06/18	9:19 AM	916-521-3585		mcpaintingcal@yahoo.com	SBE
Michael	MURPHY INDUSTRIAL COATINGS	Painting	John Shewmaker	07/06/18	9:19 AM	562-427-7720	562-426-6751	john@murphy.ac	SBE
Michael	NATIONAL COATING & LINING CO.	Painting	Anton Anstett	07/06/18	9:19 AM	951-674-1030	951-674-8124	tony@socal-pacific.com	SBE
Michael	O.H.E. PAINTING & WALLCOVERING INC	Painting	Tony Ramirez	07/06/18	9:19 AM	619-575-2888		estebanr@ohepaintings.com	SBE
Michael	PARADA PAINTING	Painting	Lisa Greenelsh	07/06/18	9:19 AM	951-878-7051	951-878-7052	lgreenelsh@paradapainting.com	SBE
Michael	R&L QUALITY PAINTING	Painting	Earvin Godinez	07/06/18	9:19 AM	657-217-9935		earvin@rlqualitypainting.com	SBE
Michael	RO'S PRECISE PAINTING	Painting	Luz Garza	07/06/18	9:19 AM	559-875-6861	559-875-4749	luz@rppaintinginc.com	SBE
Michael	SAN PATRICIO PAINTING INC	Painting	Dan O'Hara	07/06/18	9:19 AM	514-559-1481		1ohara1@live.com	SBE
Michael	SHOWPLACE SERVICES	Painting	Steve Wilson	07/06/18	9:19 AM	530-459-5327	530-459-5327	showplaceservice@aol.com	SBE
Michael	VERA'S PAINTING	Painting	Veronique Loizu	07/06/18	9:19 AM	818-225-1800		lvpaint@outlook.com	SBE
Michael	VILLAR CONSTRUCTION, INC	Painting	MARIO RIOS	07/06/18	9:19 AM	559-270-7692	559-251-7743	mvpainter88@msn.com	F, Hispanic
Michael	WM B SALEH CO	Painting	Ron Ella	07/06/18	9:19 AM	559-255-2046	559-255-2907	ron@salehcompany.com	SBE
Michael	AMERICAN UTILITY PRODUCTS	Pipe & Fittings	SANJAY PANDYA	07/06/18	9:19 AM	626-335-2753	626-335-9797	sanjay.pandya@gmail.com	M, Asian Subcontinent
Michael	SUN WEST SPECIALTY	Pipe & Fittings	ROBERT M SCHIAVONE	07/06/18	9:19 AM	559-436-9731		robert.schiavone@sbcglobal.net	WBE
Michael	AMERICAN STEEL PLACERS INC	Rebar	RUSSELL ROBERTSON	07/06/18	9:19 AM	909-884-6031	909-884-6032	dolores@steelplacers.com	M, Native American
Michael	MAD STEEL INC	Rebar	ALBERT DOMINGUEZ	07/06/18	9:19 AM	909-592-3443	909-394-0724	madsteelinc@aol.com	M, Hispanic
Michael	MISSION CITY REBAR	Rebar	John Gonzales	07/06/18	9:19 AM	925-449-6999		rebarjg@missioncityrebar.com	SBE
Michael	MR. REINFORCING INC	Rebar	RICK HIPOLITO	07/06/18	9:19 AM	323-528-8874		rick@mrreinforcing.com	M, Hispanic
Michael	NORTH COAST STEEL INC	Rebar	John Coleman	07/06/18	9:19 AM	707-837-0225	707-837-0464	jc@northcoaststeel.com	SBE
Michael	TAHLEQUAH STEEL INC	Rebar	STEPHANIE MARTINEZ	07/06/18	9:19 AM	562-421-9333	562-421-9330	tqsteelinc@gmail.com	M, Native American

Print Date and Time:
7/27/2018 1:36 PM

Michael Wise

From: Michael Wise
Sent: Friday, July 6, 2018 9:19 AM
To: Michael Wise
Subject: County of Fresno - Waterworks District 38 Wastewater Treatment Facility Improvements - DBE Solicitation
Attachments: Attachments

Tracking:

Recipient	Delivery
Michael Wise	Delivered: 7/6/2018 9:19 AM
'louis@4pointelectric.com'	
'acmlighting@sbcglobal.net'	
'kirank@ajkcommunications.com'	
'alphaelectricco@yahoo.com'	
'abrown@ambelectric.net'	
'syncnetworks@gmail.com'	
'CRodriguez@BlessedCoElectric.com'	
'office@clcinc.us'	
'powertest@comcast.net'	
'cbeard@surewest.net'	
'flyhigh@baleseng.com'	
'amichener@dkpayne.com'	
'deltaelectric1@hotmail.com'	
'duyelectric15@gmail.com'	
'jlancaster@eaaes.com'	
'docrivers@exp-energy.com'	
'francieselectric@yahoo.com'	
'victor.galindo@galindoelectric.com'	
'gmad1961@gmail.com'	
'manuel@greentechelectricinc.com'	
'madison@hi-voltagesplicing.com'	
'ibsrecoder@aol.com'	
'joe@jbshighvoltage.com'	
'vratto@icadautomation.com'	
'kim@loopelectric.com'	
'info@lasignal.com'	
'madco8812@gmail.com'	
'markelecsol@yahoo.com'	
'xuhua01@yahoo.com'	
'c.martinez@metco-usa.com'	
'young@opnrg.com'	
'pjelectcathy@yahoo.com'	
'stacie@pbelectricinc.com'	

Recipient	Delivery
'litlgnrl@placerelectric.com'	
'ryusi@p3com.net'	
'AntonioA@power4ward.com'	
'karen@preferredpowersolutions.com'	
'greyes@servitekelectric.com'	
'JMiddleton@Siege-Electric.com'	
'jdeharo@silvercreekelectric.com'	
'jabar@smarthomeiq.com'	
'tresa@sparkyelectricinc.com'	
'tim@timrtrullelectric.com'	
'ronroc.rt@icloud.com'	
'greg7g@yahoo.com'	
'westpacificelectricco@gmail.com'	
'tschulte@wildelectric.net'	
'williamdouglass00@yahoo.com'	
'apluspaintingca@gmail.com'	
'omar@absoluteurethane.com'	
'anchorspainting@gmail.com'	
'campainting@sbcglobal.net'	
'thecolores1970@yahoo.com'	
'mike_dhpainting@aol.com'	
'tjacober@dunkinandbush.com'	
'eschneider@gpspainting.com'	
'rharriscorp@gmail.com'	
'doug@inghampainting.com'	
'gr_isr@yahoo.com'	
'geneglockner@jeffcoptg.com'	
'mariscaldutchpainting@hotmail.com'	
'mcpaintingcal@yahoo.com'	
'john@murphy.ac'	
'tony@socal-pacific.com'	
'estebanr@ohepaintings.com'	
'lgreenelsh@paradapainting.com'	
'earvin@rlqualitypainting.com'	
'luz@rppaintinginc.com'	
'1ohara1@live.com'	
'showplaceservice@aol.com'	
'lvpaint@outlook.com'	
'mvpainter88@msn.com'	
'ron@salehcompany.com'	

Recipient	Delivery
'sanjay.pandya@gmail.com'	
'robert.schiavone@sbcglobal.net'	
'dolores@steelplacers.com'	
'madsteelinc@aol.com'	
'rebarjg@missioncityrebar.com'	
'rick@mrreinforcing.com'	
'jc@northcoaststeel.com'	
'tqsteelinc@gmail.com'	

Hello,

We found your company information either through one of various search websites, or through a previous bid. This is a Good Faith Effort bid solicitation for an upcoming project which we are bidding as a prime contractor.

W. M. Lyles Co. is actively seeking certified Disadvantaged Business Enterprises (DBE). For Example, Minority Business Enterprises (MBE), Women Business Enterprises (WBE), Small Business Enterprises (SBE), Small Business in Rural Area (SBRA), Labor Surplus Area Firms (LSAF), and Historically Underutilized Business (HUB) Zone Small Businesses.

If you would, please review and respond to the attached Bid Solicitation Form, and indicate if you are or are not interested in bidding the project listed below:

Project: County of Fresno – Waterworks District 38 Wastewater Treatment Facility Improvements
Bid Date: 8/2/18
Bid Time: 2:00 PM

If interested, I can email plans and specs for the project.

Thank you.

ShareFile Attachments — Expires August 5, 2018

Notice to Bidders.pdf	159.2 KB
RFQ - Fresno.pdf	52.8 KB
Waterworks District 38 - Plans.pdf	7.4 MB
Waterworks District 38 - Specifications.pdf	7.3 MB

Download Attachments

Michael Wise uses ShareFile to share documents securely. Learn More.

Michael Wise
Engineering Assistant
Central Division - Bakersfield
Office: 661.387.1600
Fax: 661.387.1620
Cell: 661.852.1359
E-mail: mwise@wmlylesco.com

W.M. Lyles Co.
"Progress Through Performance"

Please access the hyperlink below for an important electronic communications disclaimer:
http://www.lylesgroup.com/disclaimer_wml.html

W.M. LYLES CO.

BID SOLICITATION

Central Division
2810 Unicorn Road
Bakersfield, CA 93308
Ph. (661) 387-1600 Fx. (661) 387-1620

W.M. Lyles Co. will be bidding as a general contractor on the following project and would appreciate your participation:

Owner:	County of Fresno	Bid Date:	8/2/18 @ 2:00 PM
Project:	Waterworks District 38 WWTF Improv.	Estimated Value:	$600,000
Project Location:	Fresno, CA		

We are actively seeking certified Disadvantage Business Enterprises (DBE) firms for the following scopes of work:
For example: (MBE), (WBE), (SBE), (SBRA), (LSAF), (HUB) Zone, Etc.

SUCONTRACTORS	SUPPLIERS	SERVICES
Electrical	Pipe & Fittings	Bypass
Rebar		
Painting		

Please respond by filling out the information below and return by email or by faxing back to our office at (661) 387-1620

Company: _____ Phone: _____
Contact: _____ Fax: _____
Scope of Work: _____ Email: _____
DBE Agency: _____ Type of DBE: _____
DBE Certification #: _____

☐ We are interested in submitting a bid
☐ We are not interested in submitting a bid

☐ Non-Union ☐ Union Specify: _____
(Laborers, Operators, Carpenters, Etc.)

Plans are available for purchase at:
www.co.fresno.ca.us/planholders

Plans are available for review at:
W.M. Lyles Co. (661) 387-1600

4

W. M. LYLES CO.

Good Faith Effort - Responce LOG

Owner: County of Fresno
Project: Waterworks District 38 WWTF Improv.
Bid Date: 8/2/18 @ 2:00 PM

Initial Follow-Up Phone/Email LOG									LOG Notes	LOG Results	
WML Employee	Contractor / Supplier Company	Trade / Type	Person Contacted	Date of Response	Time	Phone	Fax	Email	Notes	"Interested in Bidding" Not Interested"	Final Response from Interested Companies
Michael	4 POINT ELECTRIC	Electrical	Louis Herrera			408-529-8250		louis@4pointelectric.com		No Response at Time of Bid	
Michael	ACM LIGHTING	Electrical	CARLOS MORALES SR.			951-272-4881	951-272-4838	acmlighting@sbcglobal.net		No Response at Time of Bid	
Michael	AJK COMMUNICATIONS	Electrical	KIRAN KAUR			562-942-1400	562-942-1800	kirank@ajkcommunications.com		No Response at Time of Bid	
Michael	ALPHA ELECTRIC	Electrical	Kostas Kalfountzos			916-489-2002	916-489-2041	alphaelectricco@yahoo.com		No Response at Time of Bid	
Michael	AMB ELECTRIC	Electrical	Angela Brown			916-770-9959		abrown@ambelectric.net		No Response at Time of Bid	
Michael	BELLCURVE AND SYNCNETWORKS	Electrical	ABIYOU ADMASSU			310-678-5018	424-331-5242	syncnetworks@gmail.com		No Response at Time of Bid	
Michael	BLESSEDCO ELECTRIC	Electrical	CHRISTIAN RODRIGUEZ			213-503-7432	661-382-1957	CRodriguez@BlessedCoElectric.com		No Response at Time of Bid	
Michael	CABLE LINKS CONSTRUCTION GROUP, INC.	Electrical	SANDY SLUMBERGER			559-277-8555	559-274-1555	office@clcinc.us		No Response at Time of Bid	
Michael	CALIFORNIA POWER TEST INC	Electrical	Christopher Gould			916-275-0805		powertest@comcast.net		No Response at Time of Bid	
Michael	CB GRANT ELECTRIC	Electrical	Chuck Beard			916-803-8360		cbeard@surewest.net		No Response at Time of Bid	
Michael	CINDY BALES ENGINEERING, INC.	Electrical	CINDY BALES			909-585-1557	909-752-7090	flyhigh@baleseng.com		No Response at Time of Bid	
Michael	D L PAYNE INC	Electrical	Amber Michener			209-367-4858		amichener@dkpayne.com		No Response at Time of Bid	
Michael	DELTA ELECTRIC	Electrical	ROLANDO ESTEVEZ			323-816-0508	661-250-4090	deltaelectric1@hotmail.com		No Response at Time of Bid	
Michael	DUY ELECTRIC	Electrical	Duy Nguyen			916-509-1995		duyelectric15@gmail.com		No Response at Time of Bid	
Michael	ELITE AUTOMATION & ELECTRICAL SERVICES	Electrical	Josh Lancaster			661-619-0043		jlancaster@eaaes.com		No Response at Time of Bid	
Michael	EXPRESS ENERGY SERVICES, INC	Electrical	DONALD RIVERS			714-650-8870	714-650-8910	docrivers@exp-energy.com		No Response at Time of Bid	
Michael	FRANCIES ELECTRIC, INC.	Electrical	LEON FRANCIES JR.			661-809-4175	661-834-5725	francieselectric@yahoo.com		No Response at Time of Bid	
Michael	GALINDO ELECTRIC	Electrical	VICTOR GALINDO					victor.galindo@galindoelectric.com		No Response at Time of Bid	
Michael	GRACE ELECTRIC, INC.	Electrical	DAVID MADRUGA			661-587-1257	661-587-9660	grnad1961@gmail.com		No Response at Time of Bid	
Michael	GREEN TECH ELECTRIC SOLUTIONS	Electrical	MANUEL CORINAS			408-280-1180	408-777-8363	manuel@greentechelectricinc.com		No Response at Time of Bid	
Michael	HI-VOLTAGE SPLICING CO INC	Electrical	Madison Jiminez			925-838-7979	925-838-7978	madison@hi-voltagesplicing.com		No Response at Time of Bid	
Michael	INDUSTRIAL BATTERY SERVICES	Electrical	ELIZABETH RECORDER			510-222-7719	510-412-5988	ibsrecoder@aol.com		No Response at Time of Bid	
Michael	JBS HIGH VOLTAGE	Electrical	Joseph Bryan			530-301-2681		joe@jbshighvoltage.com		No Response at Time of Bid	
Peter	LIGHTHOUSE ELECTRICAL INC	Electrical	VICKI RATTO	08/02/18		559-498-3017	559-498-0292	vratto@lcadautomation.com		Interested in Bidding	Bid Submitted
Michael	LOOP ELECTRIC	Electrical	Kimberly Kitsch	07/06/18	##########	661-588-0577		kim@loopelectric.com	Reply via Email	Not Interested	Traffic Signals, Street Lighting
Michael	LOS ANGELES SIGNAL CONSTRUCTION, INC.	Electrical	CHRISTOPHER MORALES			909-599-2201	909-599-2722	info@lasignal.com		No Response at Time of Bid	
Michael	MADCO ELECTRIC	Electrical	Jill Davies			559-896-5637		madco8812@gmail.com		No Response at Time of Bid	
Michael	MARKHAM ELECTRIC SOLUTIONS	Electrical	EDGAR MARKHAM			661-927-8029		markelecsol@yahoo.com		No Response at Time of Bid	
Michael	MEGAVOLT ELECTRICAL SERVICES	Electrical	JUAN HERNANDEZ			818-635-1454		xuhua01@yahoo.com		No Response at Time of Bid	
Michael	METCO	Electrical	CHRISTOPHER MARTINEZ			415-455-9922	415-455-9960	c.martinez@metco-usa.com		No Response at Time of Bid	
Michael	OPTIMA ENERGY, INC.	Electrical	YOUNG CHANG			310-320-0611	323-383-9932	young@opnrg.com		No Response at Time of Bid	
Michael	P&J ELECTRIC	Electrical	Peter Glasner			661-822-6217	661-822-6227	pjelectcathy@yahoo.com		No Response at Time of Bid	
Michael	PB ELECTRIC, INC.	Electrical	Stacie Baker			916-858-1342	916-858-1625	stacie@pbelectricinc.com		No Response at Time of Bid	
Michael	PEI PLACER ELECTRIC INC	Electrical	Lynne Harker			916-338-4400	916-338-4411	litignrl@placerelectric.com		No Response at Time of Bid	
Michael	PHASE 3 COMMUNICATIONS	Electrical	NICOLAS DEZUBIRIA			408-946-9011	408-946-0672	ryusl@p3com.net		No Response at Time of Bid	
Michael	POWER4WARD	Electrical	ANTONIO AMEEN			228-383-2031		AntonioA@power4ward.com		No Response at Time of Bid	
Michael	PREFERRED POWER SOLUTIONS	Electrical	Karen Cleveland	07/06/18	##########	661-322-0880	661-322-0090	karen@preferredpowersolutions.com	Reply via Email	Undecided	Wants to be a prequalified sub.
Michael	SERVITEK SOLUTIONS, INC.	Electrical	GEOFF REYES			626-227-1650	626-478-1300	greyes@servitekelectric.com		No Response at Time of Bid	
Michael	SIEGE ELECTRIC, INC.	Electrical	JOSH MIDDLETON			760-453-1679		JMiddleton@Siege-Electric.com		No Response at Time of Bid	
Michael	SILVER CREEK ELECTRIC, INC.	Electrical	JUAN DEHARO			408-321-9094	408-21-9329	jdeharo@silvercreekelectric.com		No Response at Time of Bid	
Michael	SMARTBUILDING IQ, INC	Electrical	JOHN MCKELLAR			925-230-8555		jabar@smarthomeiq.com		No Response at Time of Bid	
Michael	SPARKY ELECTRIC	Electrical	Tresa Taylor			559-492-1752	559-272-9082	tresa@sparkyelectricinc.com		No Response at Time of Bid	
Michael	TIM R. TRULL ELECTRIC INC.	Electrical	Tim Trull			559-479-0983		tim@timrtrullelectric.com		No Response at Time of Bid	
Michael	TURNER & TURNER ELECTRIC INC	Electrical	RONALD R. TURNER			510-290-9624	209-476-1834	ronroc.rt@icloud.com;		No Response at Time of Bid	
Michael	UNITED ELECTRIC	Electrical	Gregory Grant			916-308-5172		greg7g@yahoo.com		No Response at Time of Bid	
Michael	WEST PACIFIC ELECTRIC COMPANY	Electrical	VIRGINIA ANN VILLA			559-924-6422	559-924-4826	westpacificelectricco@gmail.com		No Response at Time of Bid	
Michael	WILD ELECTRIC, INC.	Electrical	Tina Schulte			559-251-7770		tschulte@wildelectric.net		No Response at Time of Bid	
Michael	WILL DOUGLASS ELECTRIC	Electrical	WILLIAM DOUGLASS			559-472-6490		willamdouglass00@yahoo.com		No Response at Time of Bid	
Michael	A PLUS PAINTING	Painting	Michael Dovgan			916-410-7573	916-453-7029	apluspaintingca@gmail.com		No Response at Time of Bid	
Michael	ABSOLUTE URETHANE	Painting	OMAR OROZCO			559-241-0160	559-227-2212	omar@absoluteurethane.com		No Response at Time of Bid	
Michael	ANCHOR SINGH PAINTING	Painting	ANCHOR SINGH			916-595-1837		anchorspainting@gmail.com		No Response at Time of Bid	
Michael	CAM PAINTING	Painting	Priamos Yennaris			818-716-7410	818-716-7443	campainting@sbcglobal.net		No Response at Time of Bid	
Michael	COLORES PAINTING	Painting	Hugo Ruiz			415-235-3155		thecolores1970@yahoo.com		No Response at Time of Bid	
Michael	D&H PAINTING	Painting	Mike Karapetyan			916-802-1911		mike_dhpainting@aol.com		No Response at Time of Bid	
Michael	DUNKIN & BUSH	Painting	Tim Jacober			661-588-1196	661-588-0364	tjacober@dunkinandbush.com		No Response at Time of Bid	
Michael	GPS PAINTING & WALLCOVERING	Painting	Eliot Schneider			714-730-8904	714-505-9423	eschneider@gpspainting.com		No Response at Time of Bid	
Michael	HARRIS DEVELOPMENT CORPORATION	Painting	ROBERT HARRIS III			559-797-1642		rharriscorp@gmail.com		No Response at Time of Bid	
Michael	INGHAM PAINTING INC	Painting	Doug Ingham			805-748-6964	805-481-5167	doug@inghampainting.com		No Response at Time of Bid	
Michael	ISR PAINTING & WALLCOVERING	Painting	Gloria E. Ramirez			562-407-5217	562-407-5214	gr_isr@yahoo.com		No Response at Time of Bid	
Michael	JEFFCO PAINTING & COATING INC	Painting	Gene Glockner			707-562-1900	707-562-1907	geneglockner@jeffcoptg.com		No Response at Time of Bid	
Michael	MARISCAL PAINTING, INC	Painting	JESUS MARISCAL			626-331-2304	626-331-2560	mariscaldutchpainting@hotmail.com		No Response at Time of Bid	
Michael	MC PAINTING	Painting	Mark Cormier			916-521-3585		mcpaintingcal@yahoo.com		No Response at Time of Bid	
Michael	MURPHY INDUSTRIAL COATINGS	Painting	John Shewmaker			562-427-7720	562-426-6751	john@murphy.ac		No Response at Time of Bid	
Michael	NATIONAL COATING & LINING CO.	Painting	Anton Anstett	08/02/18		951-674-1030	951-674-8124	tony@socal-pacific.com		Interested in Bidding	Bid Submitted
Michael	NAVAL COATING	Painting	Michael Crockett	07/09/18	##########	619-234-8366	619-234-3560	michael.c@navalcoating.com	Reply via Email	Interested in Bidding	

Print Date and Time:
8/3/2018 8:23 AM

Michael	O.H.E. PAINTING & WALLCOVERING INC	Painting	Tony Ramirez			619-575-2888		estebanr@ohepaintings.com		No Response at Time of Bid	
Michael	PARADA PAINTING	Painting	Lisa Greenelsh			951-878-7051	951-878-7052	lgreenelsh@paradapainting.com		No Response at Time of Bid	
Michael	R&L QUALITY PAINTING	Painting	Earvin Godinez			657-217-9935		earvin@riqualitypainting.com		No Response at Time of Bid	
Michael	RO'S PRECISE PAINTING	Painting	Luz Garza			559-875-6861	559-875-4749	luz@rppaintinginc.com		No Response at Time of Bid	
Michael	SAN PATRICIO PAINTING INC	Painting	Dan O'Hara			514-559-1481		1ohara1@live.com		No Response at Time of Bid	
Michael	SHOWPLACE SERVICES	Painting	Steve Wilson			530-459-5327	530-459-5327	showplaceservice@aol.com		No Response at Time of Bid	
Michael	VERA'S PAINTING	Painting	Veronique Loizu			818-225-1800		lvpaint@outlook.com		No Response at Time of Bid	
Michael	VILLAR CONSTRUCTION, INC	Painting	MARIO RIOS			559-270-7692	559-251-7743	mvpainter88@msn.com		No Response at Time of Bid	
Michael	WM B SALEH CO	Painting	Bon Elia			559-255-2046	559-255-2907	ron@salehcompany.com		No Response at Time of Bid	
Michael	AMERICAN UTILITY PRODUCTS	Pipe & Fittings	SANJAY PANDYA			626-335-2753	626-335-9797	sanjay.pandya@gmail.com		No Response at Time of Bid	
Michael	SUN WEST SPECIALTY	Pipe & Fittings	ROBERT M SCHIAVONE			559-436-9731		robert.schiavone@sbcglobal.net		No Response at Time of Bid	
Michael	AMERICAN STEEL PLACERS INC	Rebar	Dolores Bayona	07/06/18	##########	909-884-6031	909-884-6032	dolores@steelplacers.com	Reply via Email	Not Interested	
Michael	MAD STEEL INC	Rebar	ALBERT DOMINGUEZ			909-592-3443	909-394-0724	madsteelinc@aol.com		No Response at Time of Bid	
Michael	MISSION CITY REBAR	Rebar	John Gonzales			925-449-6999		rebarjg@missioncityrebar.com		No Response at Time of Bid	
Michael	MR. REINFORCING INC	Rebar	RICK HIPOLITO			323-528-8874		rick@mrreinforcing.com		No Response at Time of Bid	
Michael	NORTH COAST STEEL INC	Rebar	John Coleman	07/06/18	##########	707-837-0225	707-837-0464	jc@northcoaststeel.com	Reply via Email	Undecided	
Michael	TAHLEQUAH STEEL INC	Rebar	STEPHANIE MARTINEZ			562-421-9333	562-421-9330	tqsteelinc@gmail.com		No Response at Time of Bid	

Print Date and Time:
8/3/2018 8:23 AM

Michael Wise

From: Dolores Bayona <dolores@steelplacers.com>
Sent: Friday, July 6, 2018 2:16 PM
To: Michael Wise
Subject: RE: County of Fresno - Waterworks District 38 Wastewater Treatment Facility Improvements - DBE Solicitation

Not Bidding at this time.

Thank you for the opportunity.

If further information is needed, please don't hesitate to e-mail me.

Thank you,

Dolores Bayona,
American Steel Placers, Inc.
(909) 884-6031 Phone
(909) 884-6032 Fax
dolores@steelplacers.com

From: Michael Wise [mailto:mwise@wmlylesco.com]
Sent: Friday, July 06, 2018 9:19 AM
To: Michael Wise
Subject: County of Fresno - Waterworks District 38 Wastewater Treatment Facility Improvements - DBE Solicitation

Hello,

We found your company information either through one of various search websites, or through a previous bid. This is a Good Faith Effort bid solicitation for an upcoming project which we are bidding as a prime contractor.

W. M. Lyles Co. is actively seeking certified Disadvantaged Business Enterprises (DBE). For Example, Minority Business Enterprises (MBE), Women Business Enterprises (WBE), Small Business Enterprises (SBE), Small Business in Rural Area (SBRA), Labor Surplus Area Firms (LSAF), and Historically Underutilized Business (HUB) Zone Small Businesses.

If you would, please review and respond to the attached Bid Solicitation Form, and indicate if you are or are not interested in bidding the project listed below:

Project: County of Fresno – Waterworks District 38 Wastewater Treatment Facility Improvements
Bid Date: 8/2/18
Bid Time: 2:00 PM

If interested, I can email plans and specs for the project.

Michael Wise

From: John Coleman <jc@northcoaststeel.com>
Sent: Friday, July 6, 2018 12:29 PM
To: Michael Wise
Cc: Jenny Ringrose
Subject: Re: County of Fresno - Waterworks District 38 Wastewater Treatment Facility Improvements - DBE Solicitation

I will check it out and get back to

John Coleman
President / North Coast Steel

On Jul 6, 2018, at 9:19 AM, Michael Wise <mwise@wmlylesco.com> wrote:

> Hello,
>
> We found your company information either through one of various search websites, or through a previous bid. This is a Good Faith Effort bid solicitation for an upcoming project which we are bidding as a prime contractor.
>
> W. M. Lyles Co. is actively seeking certified Disadvantaged Business Enterprises (DBE). For Example, Minority Business Enterprises (MBE), Women Business Enterprises (WBE), Small Business Enterprises (SBE), Small Business in Rural Area (SBRA), Labor Surplus Area Firms (LSAF), and Historically Underutilized Business (HUB) Zone Small Businesses.
>
> If you would, please review and respond to the attached Bid Solicitation Form, and indicate if you are or are not interested in bidding the project listed below:
>
> Project: County of Fresno – Waterworks District 38 Wastewater Treatment Facility Improvements
> Bid Date: 8/2/18
> Bid Time: 2:00 PM
>
> If interested, I can email plans and specs for the project.
>
> Thank you.

ShareFile Attachments — Expires August 5, 2018

Notice to Bidders.pdf	159.2 KB
RFQ - Fresno.pdf	52.8 KB
Waterworks District 38 - Plans.pdf	7.4 MB

Michael Wise

From: Kim Kitsch <Kim@loopelectric.com>
Sent: Friday, July 6, 2018 11:18 AM
To: Michael Wise
Subject: RE: County of Fresno - Waterworks District 38 Wastewater Treatment Facility Improvements - DBE Solicitation

Hello Michael,
We do Traffic Signals, Street Lighting & Boring only. Im not sure this job would have that on there. Thank you for contacting us.

Kimberly Kitsch

President, Loop Electric Inc.

From: Michael Wise [mailto:mwise@wmlylesco.com]
Sent: Friday, July 06, 2018 9:19 AM
To: Michael Wise
Subject: County of Fresno - Waterworks District 38 Wastewater Treatment Facility Improvements - DBE Solicitation

Hello,

We found your company information either through one of various search websites, or through a previous bid. This is a Good Faith Effort bid solicitation for an upcoming project which we are bidding as a prime contractor.

W. M. Lyles Co. is actively seeking certified Disadvantaged Business Enterprises (DBE). For Example, Minority Business Enterprises (MBE), Women Business Enterprises (WBE), Small Business Enterprises (SBE), Small Business in Rural Area (SBRA), Labor Surplus Area Firms (LSAF), and Historically Underutilized Business (HUB) Zone Small Businesses.

If you would, please review and respond to the attached Bid Solicitation Form, and indicate if you are or are not interested in bidding the project listed below:

Project: County of Fresno – Waterworks District 38 Wastewater Treatment Facility Improvements
Bid Date: 8/2/18
Bid Time: 2:00 PM

If interested, I can email plans and specs for the project.

Thank you.

ShareFile Attachments — Expires August 5, 2018

Notice to Bidders.pdf — 159.2 KB

Michael Wise

From: Karen Cleveland-Preferred Power Solutions <karen@preferredpowersolutions.com>
Sent: Friday, July 6, 2018 10:12 AM
To: Michael Wise
Subject: RE: County of Fresno - Waterworks District 38 Wastewater Treatment Facility Improvements - DBE Solicitation

Good morning,

Preferred Power Solutions is always interested in teaming with a GC on projects. Please advise how we prequalify to be an approved subcontractor for WM Lyles Company? Generally as a small woman owned business we value our resources and bid on projects that we know we are prequalified for, by doing this it helps us from bidding work that will not be awarded. As an approved subcontractor the likely of a good competitive bid will bring positive results.

Thank you,
Karen Cleveland

PREFERRED POWER SOLUTIONS INC
Karen Cleveland - Chief Executive Officer - Preferred Power Solutions Inc.
1400 Easton Drive 116 - Bakersfield, CA 93309
661.322.0880 Office - 661.205.2078 Cell - 661.322.0090 Fax
karen@preferredpowersolutions.com
www.preferredpowersolutions.com

From: Michael Wise [mailto:mwise@wmlylesco.com]
Sent: Friday, July 06, 2018 9:19 AM
To: Michael Wise
Subject: County of Fresno - Waterworks District 38 Wastewater Treatment Facility Improvements - DBE Solicitation

Hello,

We found your company information either through one of various search websites, or through a previous bid. This is a Good Faith Effort bid solicitation for an upcoming project which we are bidding as a prime contractor.

W. M. Lyles Co. is actively seeking certified Disadvantaged Business Enterprises (DBE). For Example, Minority Business Enterprises (MBE), Women Business Enterprises (WBE), Small Business Enterprises (SBE), Small Business in Rural Area (SBRA), Labor Surplus Area Firms (LSAF), and Historically Underutilized Business (HUB) Zone Small Businesses.

Michael Wise

From: Michael Crockett <michael.c@Navalcoating.com>
Sent: Monday, July 9, 2018 8:02 AM
To: Michael Wise
Cc: Dan McCaughin
Subject: Waterworks District 38 Wastewater Treatment Facility Improvements

Good morning Mr. Wise,

Can you send me the plan and specifications for the Waterworks District 38 Wastewater Treatment facility please.

Respectfully,

Michael Crockett USMC Ret.
Office: (619) 234-8366 ext. 127

Fax: (619) 234-3560

michael.c@navalcoating.com

3475 E Street

San Diego, CA 92102

CSLB C-33 #1022673

Department of Industrial Relations (DIR #1000046274)

Certified Disabled Veteran Business Enterprise (DVBE #2002754)

Certified Small Local Business Enterprise for San Diego (SLBE #17NC1424)

SAM Self-Certified Service Disabled Veteran Owned Small Business (SDVOSB)

5

W. M. LYLES CO.

Good Faith Effort - Bid Day Analysis Log - "Bidders List"

Owner: County of Fresno
Project: Waterworks District 38 WWTF Improv.
Bid Date: 8/2/18 @ 2:00 PM

DBE Bids Submitted for the Project								IN BID?	LOG Results	DBE Status	Bid Ammount
	Contractor / Supplier Company	Trade / Type	Person Contacted	Date of Contact	Phone	Fax	Email	"Yes" - "No"	If No, Why?	SBE, MBE, WBE	Estimate $$$
	NATIONAL COATING & LINING COMPANY	Painting	Stephen Stewart	08/02/18	951-471-3388	951-471-3779	stephen@nc-lc.com	No	Not Low	SBE	$ 9,303
	LIGHTHOUSE ELECTRICAL COMPANY	Electrical	David Agrava	08/02/18			admin@lighthouseelec.com	No	Not Low	WBE	$ 210,000

Print Date and Time:
8/3/2018 1:24 PM

Disadvantaged Business Enterprise (DBE) Program

DBE Subcontractor Performance Form

This form is intended to capture the DBE[1] subcontractor's[2] description of work to be performed and the price of the work submitted to the prime contractor. A Financial Assistance Agreement Recipient must require its prime contractor to have its DBE subcontractors complete this form and include all completed forms in the prime contractor's bid or proposal package.

Subcontractor Name SoCal Pacific Construction Corp dba National Coating & Lining Co.		Project Name Waterworks District 38 WWTF Improvements
Bid / Proposal No.	Assistance Agreement ID No. (if known)	Point of Contact Angela Williams
Address 26713 Madison Ave, Murrieta, CA 92562		
Telephone No. 951-471-3388		Email Address info@nc-lc.com
Prime Contractor Name W.M. Lyles Co.		Issuing/Funding Entity USEPA & SWRCB

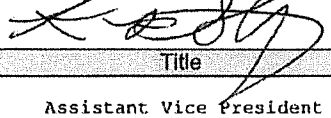
Contract Item Number	Description of Work Submitted from the Prime Contractor Involving Construction, Services, Equipment or Supplies	Price of Work Submitted to the Prime Contractor
	Prepare and finish coat pumps, pipe and appurtenances	

DBE Certified By: DOT X SBA Other: _____	Meets/exceeds EPA certification standards? X YES NO Unknown

[1] A DBE is a Disadvantaged, Minority, or Woman Business Enterprise that has been certified by an entity from which EPA accepts certifications as described in 40 CFR 33.204-33.2015 or certified by EPA. EPA accepts certifications from entities that meet or exceed EPA certification standards as described in 40 CFR 33.202.

[2] Subcontractor is defined as a company, firm, joint venture, or individual who enters into an agreement with a contractor to provide services pursuant to an award of financial assistance.

I certify under penalty of perjury that the forgoing statements are true and correct. Signing this form does not signify a commitment to utilize the subcontractors above. I am aware that in the event of a replacement of a subcontractor, I will adhere to the replacement requirements set forth in 40 CFR Part 33 Section 33.302 (c).

Prime Contractor Signature	Print Name
	Kevin R. Shigematsu
Title	Date
Assistant Vice President	August 2, 2018

Subcontractor Signature	Print Name
	Anton Anstett
Title	Date
President	8/2/18

The public reporting and record keeping burden for this collection of information is estimated to average three (3) hours per response. Send comments on the Agency's need for this information, the accuracy of the provided burden estimates, and any suggested methods for minimizing respondent burden, including through the use of automated collection techniques to the Director, Collection Strategies Division, U.S. Environmental Protection Agency (2822T), 1200 Pennsylvania Ave., NW, Washington, D.C. 20460. Do not send the completed form to this address.

Supplier Profile

State of California Certification

Certification ID : 39380

Legal Business Name
SOCAL PACIFIC CONSTRUCTION CORP

Doing Business As (DBA) Name1:
NATIONAL COATING & LINING COMPANY

Doing Business As (DBA) Name2:

Office Phone Number
951/674-1030

Business Fax Number
951/471-3779

Business Web Address
()

Address
26713 MADISON AVE
MURRIETA
CA 92562

Email:
tony@socal-pacific.com (mailto:tony@socal-pacific.com)

Total No. of Employees
40

Business Types:
Construction

Notification Preference
Email

Service Areas
Alameda , Alpine , Amador , Butte , Calaveras , Colusa , Contra Costa , Del Norte , El Dorado , Fresno , Glenn , Humboldt , Imperial , Inyo , Kern , Kings , Lake , Lassen , Los Angeles , Madera , Marin , Mariposa , Mendocino , Merced , Modoc , Mono , Monterey , Napa , Nevada , Orange , Placer , Plumas , Riverside , Sacramento , San Benito , San Bernardino , San Diego , San Francisco , San Joaquin , San Luis Obispo , San Mateo , Santa Barbara , Santa Clara , Santa Cruz , Shasta , Sierra , Siskiyou , Solano , Sonoma , Stanislaus , Sutter , Tehama , Trinity , Tulare , Tuolumne , Ventura , Yolo , Yuba

View Keywords

View Classifications

Active Certifications ?

Certification Type	Status	From	To
SB	Approved	01/26/2017	01/31/2019

Certification History ?

Return to Search

(http://www.dgs.ca.gov/) (http://www.fiscal.ca.gov/)

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Disadvantaged Business Enterprise (DBE) Program
DBE Subcontractor Performance Form

This form is intended to capture the DBE[1] subcontractor's[2] description of work to be performed and the price of the work submitted to the prime contractor. A Financial Assistance Agreement Recipient must require its prime contractor to have its DBE subcontractors complete this form and include all completed forms in the prime contractor's bid or proposal package.

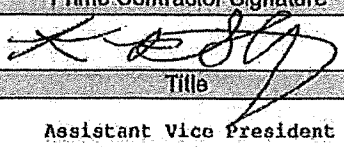
Subcontractor Name Lighthouse Electrical, Inc.		Project Name Waterworks District 38 WWTF Improvements
Bid / Proposal No. C-06-7109-110	Assistance Agreement ID No. (if known)	Point of Contact David Agrava
Address 3585 E. Date Ave.		
Telephone No. 559-498-3017		Email Address admin@lighthouseelec.com
Prime Contractor Name H.M. Lyles Co.		Issuing/Funding Entity USEPA & SWRCB

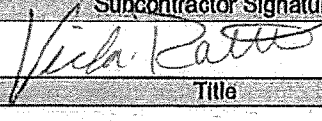
Contract Item Number	Description of Work Submitted from the Prime Contractor Involving Construction, Services, Equipment or Supplies	Price of Work Submitted to the Prime Contractor
DBE Certified By: DOT SBA Other: _____	Meets/exceeds EPA certification standards? YES NO Unknown	

[1] A DBE is a Disadvantaged, Minority, or Woman Business Enterprise that has been certified by an entity from which EPA accepts certifications as described in 40 CFR 33.204-33.2015 or certified by EPA. EPA accepts certifications from entities that meet or exceed EPA certification standards as described in 40 CFR 33.202.

[2] Subcontractor is defined as a company, firm, joint venture, or individual who enters into an agreement with a contractor to provide services pursuant to an award of financial assistance.

I certify under penalty of perjury that the forgoing statements are true and correct. Signing this form does not signify a commitment to utilize the subcontractors above. I am aware that in the event of a replacement of a subcontractor, I will adhere to the replacement requirements set forth in 40 CFR Part 33 Section 33.302 (c).

Prime Contractor Signature	Print Name
	Kevin R. Shigematsu
Title	**Date**
Assistant Vice President	August 2, 2018

Subcontractor Signature	Print Name
	Vicki Ratto
Title	**Date**
CEO	8/2/18

The public reporting and record keeping burden for this collection of information is estimated to average three (3) hours per response. Send comments on the Agency's need for this information, the accuracy of the provided burden estimates, and any suggested methods for minimizing respondent burden, including through the use of automated collection techniques to the Director, Collection Strategies Division, U.S. Environmental Protection Agency (2822T), 1200 Pennsylvania Ave., NW, Washington, D.C. 20460. Do not send the completed form to this address.

California Water Boards

Disadvantaged Business Enterprise (DBE) Program

DBE Subcontractor Utilization Form

This form is intended to capture the prime contractor's actual and/or anticipated use of identified certified DBE[1] subcontractor's[2] and the estimated dollar amount of each subcontract. A Financial Assistance Agreement Recipient must require its prime contractors to complete this form and include it in the bid or proposal package. Prime contractors should also maintain a copy of this form on file.

Prime Contractor Name		Project Name
W. M. Lyles Co.		Waterworks District 38 WWTF Improvements
Bid / Proposal No.	**Assistance Agreement ID No. (if known)**	**Point of Contact**
18-08-C		Kevin R. Shigematsu
Address		
1210 W. Olive Ave., Fresno, CA 93728		
Telephone No.		**Email Address**
559-441-1400		kshigematsu@wmlylesco.com
Issuing/Funding Entity		
USEPA & SWRCB		

I have identified potential DBE certified subcontractors. YES (NO)

If *yes*, please complete the table below. If *no*, please explain:

Subcontractor Name/ Company Name	Company Address / Phone / Email	Estimated Dollar Amount	Currently DBE Certified?

--Continue on back if needed--

[1] A DBE is a Disadvantaged, Minority, or Woman Business Enterprise that has been certified by an entity from which EPA accepts certifications as described in 40 CFR 33.204-33.2015 or certified by EPA. EPA accepts certifications from entities that meet or exceed EPA certification standards as described in 40 CFR 33.202.

[2] Subcontractor is defined as a company, firm, joint venture, or individual who enters into an agreement with a contractor to provide services pursuant to an award of financial assistance.

I certify under penalty of perjury that the forgoing statements are true and correct. Signing this form does not signify a commitment to utilize the subcontractors above. I am aware that in the event of a replacement of a subcontractor, I will adhere to the replacement requirements set forth in 40 CFR Part 33 Section 33.302 (c).

Prime Contractor Signature	Print Name
	Kevin R. Shigematsu
Title	Date
Assistant Vice President	August 2, 2018

The public reporting and record keeping burden for this collection of information is estimated to average three (3) hours per response. Send comments on the Agency's need for this information, the accuracy of the provided burden estimates, and any suggested methods for minimizing respondent burden, including through the use of automated collection techniques to the Director, Collection Strategies Division, U.S. Environmental Protection Agency (2822T), 1200 Pennsylvania Ave., NW, Washington, D.C. 20460. Do not send the completed form to this address.

7

BOARD OF SUPERVISORS COUNTY OF FRESNO STATE OF CALIFORNIA

NOTICE TO BIDDERS

Sealed proposals will be received at the Fresno County Department of Public Works and Planning (Department), Office of the Design Engineer, Seventh Floor, Fresno County Plaza Building, 2220 Tulare Street, Fresno, CA 93721 until

2:00 P.M., (1400 hours and 00 seconds)
Thursday, August 2, 2018

at which time the bidding will be closed. Promptly following the closing of the bidding all timely submitted bids will be publicly opened and read at the Department in said building, for construction in accordance with the project specifications therefor, to which special reference is made as follows:

County of Fresno

WATERWORKS DISTRICT 38
Wastewater Treatment Facility Improvements

Clean Water State Revolving Fund
Project No. C-06-7109-110

559-441-6105

CONTRACT NUMBER: 18-08-C

The work to be done consists, in general, of removal and replacement of wastewater plant treatment machinery, including but not limited to the aerator, the submersible mixer, chain and scraper sludge collector unit, and effluent pumps and necessary appurtenances. In addition, the project includes rehabilitation to the treatment basins if needed, and removal and replacement of the existing electrical motor control center and miscellaneous electrical components.

Funding for this project has been provided in full or in part by the United States Environmental Protection Agency (USEPA) and the State Water Resources Control Board (SWRCB). The contents of this document do not necessarily reflect the views and policies of the USEPA or the SWRCB, nor does the USEPA or the SWRCB endorse trade names or recommend the use of commercial products mentioned in this document.

Bidders are advised that their Good Faith Effort implementation, as described pursuant to the *Guidelines for Meeting the California State Revolving Fund (CASRF) Programs Disadvantaged Business Enterprise (DBE) Requirements* (Proposal 17 of the Bid Book), will be evaluated to determine bidder responsiveness, regardless of whether fair share objectives have been met. Meeting or exceeding the objectives will not be considered evidence of adequate Good Faith Efforts. Emphasis is placed on the need for contractors to post solicitations for bids or proposals for a minimum of 30 calendar days before the bid opening date. Failure to comply with the Good Faith Efforts requirements will be considered non-responsive.

The County of Fresno affirms that in any contract entered into pursuant to this advertisement, disadvantaged business enterprises will be afforded full opportunity to submit bids in response to this invitation.

A pre-bid conference will be held at 2 p.m., on June 28, 2018. A discussion of the project will be held and the project sites will be open for examination. Contractors should meet at the WWD 38

Site, 28763 Sky Harbour Road, Friant, CA 93626. The treatment facility is located toward the north end of Sky Harbour Road. Attendance at the pre-bid is not mandatory; however, the scheduled pre-bid will be the only opportunity for prospective bidders to visit the site in the presence of County staff, and requests for individual site visits with County staff will not be granted. The Department has made available, for inspection of prospective bidders, the record drawings (as-builts) of the wastewater treatment facility.

THIS PROJECT IS SUBJECT TO THE "AMERICAN IRON AND STEEL" PROVISIONS CONTAINED IN SECTION 608 OF THE CLEAN WATER ACT. UNLESS A PREDOMINANTLY IRON OR STEEL PRODUCT QUALIFIES FOR AN EXEMPTION, AS LISTED BY THE UNITED STATES ENVIRONMENTAL PROTECTION AGENCY, ALL MANUFACTURED IRON AND STEEL PRODUCTS MUST BE CERTIFIED AS PRODUCED WITHIN THE UNITED STATES.

Planholder and exchange/publication names may be obtained from the Fresno County website at **http://www.co.fresno.ca.us/planholders**.

Electronic copies, in ".pdf" file format, of the official project plans and specifications, and such additional supplemental project information as may be provided, are available to view, download, and print at **http://www.co.fresno.ca.us/planholders**.

Bid books, which contain bid proposal sheets necessary to submit a bid, may be obtained at no charge by sending a request to DesignServices@co.fresno.ca.us. Upon receipt of the request, a bid book will be mailed to the requestor via First Class United States Mail and the requestor will then be listed as a planholder for the project.

Project plans and specifications will not be sold to prospective bidders in hardcopy format except upon special written request to DesignServices@co.fresno.ca.us. A payment to the Department in the amount of $30 will be required for each set of plans and $30 for each set of specifications.

A Summary of Bids and a list of subcontractors for the apparent low bidder will be posted at the above listed website, generally within 24 hours of the Bid Opening.

All questions regarding this project shall be in writing and shall be received by the Department of Public Works and Planning, Design Division, no later than 2:00 P.M. on the seventh (7th) calendar day before bid opening. Any questions received after this deadline will not receive a response unless the Department of Public Works and Planning elects to issue an addendum to revise the bid opening date. In the event that the bid opening date is revised, the deadline for questions will be extended to no later than 2:00 P.M. on the seventh (7th) calendar day before the revised bid opening date. Questions shall be submitted on the "CONTRACTOR REQUEST FOR CLARIFICATION" form provided in the "Project Details" section of these project specifications. Fax questions to (559) 455-4609; e-mail to DesignServices@co.fresno.ca.us or mail to:

County of Fresno
Department of Public Works and Planning
2220 Tulare Street, Sixth Floor
Fresno, Ca. 93721-2104

Any changes to, or clarification of, the project plans and specifications shall be in the form of a written addendum issued to planholders of record. Questions that prompt a change or clarification shall be included in the addendum with the subsequent answer.

Any oral explanation or interpretations given to this project are not binding.

Bids shall be submitted in a sealed envelope addressed to the Department and labeled with the name of the bidder, the name of the project and the statement 'Do Not Open Until The Time Of Bid Opening.'

Bid security in the amount of ten (10) percent of the amount of the bid, and in the form of a bid bond issued by an admitted surety insurer licensed by the California Department of Insurance, cash, cashier's check or certified check shall accompany the bid. Bid security shall be made in favor of the County of Fresno.

No contract will be awarded to a contractor who has not been licensed in accordance with the provisions of the Contractors State License Law, California Business and Professions Code, Division 3, Chapter 9, as amended, or whose bid is not on the proposal form included in the contract document. A valid California Contractor's License, **Class A (General Engineering)**, is required for this project.

Pursuant to Section 1773 of the Labor Code, the general prevailing wage rates in the county, or counties, in which the work is to be done have been determined by the Director of the California Department of Industrial Relations. These wages are set forth in the General Prevailing Wage Rates for this project, available at County of Fresno, Department of Public Works and Planning, 2220 Tulare Street, Sixth Floor, Fresno CA 93721-2104 and available from the California Department of Industrial Relations' Internet web site at http://www.dir.ca.gov/DLSR/PWD. Future effective general prevailing wage rates, which have been predetermined and are on file with the California Department of Industrial Relations are referenced but not printed in the general prevailing wage rates.

This project is subject to compliance monitoring and enforcement by the Department of Industrial Relations.

No contractor or subcontractor may be listed on a bid proposal for a public works project unless registered with the Department of Industrial Relations pursuant to Labor Code section 1725.5 [with limited exceptions from this requirement for bid purposes only under Labor Code section 1771.1(a)].

No contractor or subcontractor may be awarded a contract for public work on a public works project unless registered with the Department of Industrial Relations pursuant to Labor Code section 1725.5.

This contract is subject to state contract nondiscrimination and compliance requirements pursuant to Government Code, Section 12990.

The Federal minimum wage rates for this project as predetermined by the United States Secretary of Labor are set forth in **General Decision Number CA180029, Dated 6/1/2018**, which is incorporated in these special provisions by this reference as if fully set forth herein and which can be viewed at http://www.wdol.gov/wdol/scafiles/davisbacon/CA29.dvb. Said Federal wage rates, as well as project plans, special provisions, and bid forms, may also be examined at the County of Fresno office described in the preceding paragraph. Addenda to modify the reference to Federal minimum wage rates to reflect revisions thereto, if necessary, will be issued to planholders of record.

Attention is directed to the provisions in the "Federal Requirements" section of these specifications. If there is a difference between the minimum wage rates predetermined by the Secretary of Labor and the general prevailing wage rates determined by the Director of the California Department of Industrial Relations for similar classifications of labor, the Contractor and subcontractors shall pay not less than the higher wage rate. The Department will not accept lower State wage rates not specifically included in the Federal minimum wage determinations. This includes "helper" (or other classifications based on hours of experience) or any other classification not appearing in the Federal wage determinations. Where Federal wage determinations do not contain the State wage rate determination otherwise available for use by the Contractor and subcontractors, the Contractor and subcontractors shall pay not less than the Federal minimum wage rate, which most closely approximates the duties of the employees in question.
The USEPA provides a toll-free "hotline" service to report bid rigging activities. Bid rigging activities can be reported Mondays through Fridays, between 8:00 a.m. and 5:00 p.m., Eastern Time,

Telephone No. 1-888-645-8740. Anyone with knowledge of possible bid rigging, bidder collusion, or other fraudulent activities should use the "hotline" to report these activities. The "hotline" is part of the USEPA's continuing effort to identify and investigate fraud and abuse and is operated under the direction of the USEPA's Office of Inspector General. All information will be treated confidentially and caller anonymity will be respected.

Bids are required for the entire work described herein. Bids will be compared on the basis of the total of bid items.

The successful bidder shall furnish a faithful performance bond in the amount of 100 percent of the contract amount and a payment bond in the amount of 100 percent of the contract amount. Each bond specified in this Notice (bid bond, faithful performance bond and payment bond) shall meet the requirements of all applicable statutes, including but not limited to those specified in Public Contract Code section 20129 and Civil Code section 3248.

Each bond specified in this Notice shall be issued by a surety company designated as an admitted surety insurer in good standing with and authorized to transact business in this state by the California Department of Insurance, and acceptable to the County of Fresno. Bidders are cautioned that representations made by surety companies will be verified with the California Department of Insurance. Additionally, the County of Fresno, in its discretion, when determining the sufficiency of a proposed surety company, may require the surety company to provide additional information supported by documentation. The County generally requires such information and documentation whenever the proposed surety company has either a Best's Key Rating Guide of less than **A** and a financial size designation of less than **VIII**. Provided, however, that the County expressly reserves its right to require all information and documentation to which the County is legally entitled from any proposed surety company.

Pursuant to Public Contract Code Section 22300, substitution of securities for any moneys withheld by the County of Fresno to ensure performance under the contract shall be permitted.

The Board of Supervisors reserves the right to reject any or all bids.

Board of Supervisors, County of Fresno

Jean Rousseau, County Administrative Officer

Issue Date: June 12, 2018

Elect

Bypass

Repair

Painting

ppe & fittings

California State Water Resources Control Board
Division of Financial Assistance
1001 I Street • Sacramento, California 95814 • (916) 341-5700 FAX (916) 341-5707
Mailing Address: P. O. Box 944212 • Sacramento, California • 94244-2120
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Guidelines for Meeting the California State Revolving Fund (CASRF) Programs (Clean Water and Drinking Water SRF) Disadvantaged Business Enterprise Requirements

The Disadvantaged Business Enterprise (DBE) Program is an outreach, education, and objectives program designed to increase the participation of DBEs in the Clean Water State Revolving Fund (CWSRF) and Drinking Water State Revolving Fund (DWSRF) Programs.

How to Achieve the Purpose of the Program

Recipients of CWSRF/DWSRF financing that are subject to the DBE requirements (recipients) are required to seek, and are encouraged to use, DBEs for their procurement needs. Recipients should award a "fair share" of sub-agreements to DBEs. This applies to all sub-agreements for equipment, supplies, construction, and services.

The key functional components of the DBE Program are as follows:

- Fair Share Objectives
- DBE Certification
- Six Good Faith Efforts
- Contract Administration Requirements
- DBE Reporting

Disadvantaged Business Enterprises are:

- Entities owned and/or controlled by socially and economically disadvantaged individuals as described by Title X of the Clean Air Act Amendments of 1990 (42 U.S.C. 7601 note) (10% statute), and Public Law 102-389 (42 U.S.C. 4370d) (8% statute), respectively;
- Minority Business Enterprise (MBE) - entities that are at least 51% owned and/or controlled by a socially and economically disadvantaged individual as described by Title X of the Clean Air Act Amendments of 1990 (42 U.S.C. 7601 note), and Public Law 102-389 (42 U.S.C. 4370d), respectively;
- Women Business Enterprise (WBE) - entities that are at least 51% owned and/or controlled by women;
- Small Business Enterprise (SBE);
- Small Business in a Rural Area (SBRA);
- Labor Surplus Area Firm (LSAF); or
- Historically Underutilized Business (HUB) Zone Small Business Concern or a concern under a successor program.

Certifying DBE Firms:

Under the DBE Program, entities can no longer self-certify and contractors and sub-contractors must be certified at bid opening. Contractors and sub-contractors must provide to the CASRF recipient proof of DBE certification. Certifications will be accepted from the following:

- The U.S. Environmental Protection Agency (USEPA)
- The Small Business Administration(SBA)
- The Department of Transportation's State implemented DBE Certification Program (with U.S. citizenship)
- Tribal, State and Local governments
- Independent private organization certifications

If an entity holds one of these certifications, it is considered acceptable for establishing status under the DBE Program.

Six Good Faith Efforts (GFE)

All CWSRF/DWSRF financing recipients are required to complete and ensure that the prime contractor complies with the GFE below to ensure that DBEs have the opportunity to compete for financial assistance dollars.

1. Ensure DBEs are made aware of contracting opportunities to the fullest extent practical through outreach and recruitment activities. For Tribal, State and Local Government Recipients, this will include placing DBEs on solicitation lists and soliciting them whenever they are potential sources.
2. Make information on forthcoming opportunities available to DBEs. Posting solicitations for bids or proposals for a minimum of 30 calendar days in a local newspaper, before the bid opening date.
3. Consider in the contracting process whether firms competing for large contracts could subcontract with DBEs.
4. Encourage contracting with a group of DBEs when a contract is too large for one firm to handle individually.
5. Use the services of the SBA **and/or** Minority Business Development Agency (MBDA) of the US Department of Commerce.
6. If the prime contractor awards subcontracts, require the prime contractor to take the above steps.

The forms listed in the table below and attached to these guidelines; must be completed and submitted with the GFE:

FORM NUMBER	FORM NAME	REQUIREMENT	PROVIDED BY	COMPLETED BY	SUBMITTED TO
SWRCB Form 4500-2 or EPA Form	DBE Sub-Contractor Participation Form	As Needed to Report Issues	Recipient	Sub-contractor	EPA DBE Coordinator
SWRCB Form 4500-3 or EPA Form	DBE Sub-Contractor Performance Form	Include with Bid or Proposal Package	Prime Contractor	Sub-Contractor	SWRCB by Recipient
SWRCB Form 4500-4 or EPA Form	DBE Sub-Contractor Utilization Form	Include with Bid or Proposal Package	Recipient	Prime Contractor	SWRCB by Recipient

The completed forms must be submitted with each Bid or Proposal. The recipient shall review the bidder's documents closely to determine that the GFE was performed **prior** to bid or proposal opening date. Failure to complete the GFE and to substantiate completion of the GFE before the bid opening date could jeopardize CWSRF/DWSRF financing for the project. The following situations and circumstances require action as indicated:

1. If the apparent successful low bidder was rejected, a complete explanation must be provided.
2. Failure of the apparent low bidder to **perform** the GFE **prior** to bid opening constitutes a non-responsive bid. The construction contract may then be awarded to the next low, responsive, and responsible bidder that meets the requirements or the Recipient may re-advertise the project.
3. If there is a bid dispute, all disputes shall be settled **prior** to submission of the Final Budget Approval Form.

Administration Requirements

- A recipient of CWSRF/DWSRF financing must require entities receiving funds to create and maintain a Bidders List if the recipient of the financing agreement is subject to, or chooses to follow, competitive bidding requirements.
- The Bidders list must include all firms that bid or quote on prime contracts, or bid or quote on subcontracts, including both DBEs and non-DBEs.

- Information retained on the Bidder's List must include the following:
    1. Entity's name with point of contact;
    2. Entity's mailing address and telephone number;
    3. The project description on which the entity bid or quoted and when;
    4. Amount of bid/quote; and
    5. Entity's status as a DBE or non-DBE.
- The Bidders List must be kept until the recipient is no longer receiving funding under the agreement.
- The recipient shall include Bidders List as part of the Final Budget Approval Form.
- A recipient must require its prime contractor to pay its subcontractor for satisfactory performance no more than 30 days from the prime contractor's receipt of payment from the Recipient.
- A recipient must be notified in writing by its prime contractor prior to any termination of a DBE subcontractor by the prime contractor.
- If a DBE subcontractor fails to complete work under the subcontract for any reason, the recipient must require the prime contractor to employ the six GFEs if soliciting a replacement subcontractor.
- A recipient must require its prime contractor to employ the six GFEs even if the prime contractor has achieved its fair share objectives.

Reporting Requirements

For the duration of the construction contract(s), the recipient is required to submit to the State Water Resources Control Board DBE reports annually by October 10 of each fiscal year on the attached Utilization Report form (UR-334). Failure to provide this information as stipulated in the financial agreement language may be cause for withholding disbursements.

CONTACT FOR MORE INFORMATION

SWRCB, CASRF – Barbara August (916) 341-6952 barbara.august@waterboards.ca.gov

US EPA, Region 9 – Joe Ochab (415) 972-3761 ochab.joe@epa.gov

California Water Boards

Disadvantaged Business Enterprise (DBE) Program

DBE Subcontractor Participation Form

A Financial Assistance Agreement Recipient must require its prime contractors to provide this form to its DBE subcontractors. This form gives a DBE[1] subcontractor[2] the opportunity to describe work received and/or report any concerns regarding the funded project (e.g., in areas such as termination by prime contractor, late payments, etc.). The DBE subcontractor can, as an option, complete and submit this form to the DBE Coordinator at any time during the project period of performance.

Subcontractor Name		Project Name
Bid / Proposal No.	Assistance Agreement ID No. (if known)	Point of Contact
Address		
Telephone No.		Email Address
Prime Contractor Name		Issuing/Funding Entity

Contract Item Number	Description of Work Received from the Prime Contractor Involving Construction, Services, Equipment or Supplies	Amount Received by Prime Contractor

[1] A DBE is a Disadvantaged, Minority, or Woman Business Enterprise that has been certified by an entity from which EPA accepts certifications as described in 40 CFR 33.204-33.2015 or certified by EPA. EPA accepts certifications from entities that meet or exceed EPA certification standards as described in 40 CFR 33.202.

[2] Subcontractor is defined as a company, firm, joint venture, or individual who enters into an agreement with a contractor to provide services pursuant to an award of financial assistance.

Please use the space below to report any concerns regarding the above funded project:

Subcontractor Signature	Print Name
Title	Date

The public reporting and record keeping burden for this collection of information is estimated to average three (3) hours per response. Send comments on the Agency's need for this information, the accuracy of the provided burden estimates, and any suggested methods for minimizing respondent burden, including through the use of automated collection techniques to the Director, Collection Strategies Division, U.S. Environmental Protection Agency (2822T), 1200 Pennsylvania Ave., NW, Washington, D.C. 20460. Do not send the completed form to this address.

Send completed Form 4500-2 to:
Mr. Joe Ochab, DBE Coordinator
US EPA, Region 9
75 Hawthorne Street
San Francisco, CA 94105

Water Boards

Disadvantaged Business Enterprise (DBE) Program

DBE Subcontractor Performance Form

This form is intended to capture the DBE[1] subcontractor's[2] description of work to be performed and the price of the work submitted to the prime contractor. A Financial Assistance Agreement Recipient must require its prime contractor to have its DBE subcontractors complete this form and include all completed forms in the prime contractor's bid or proposal package.

Subcontractor Name	Project Name	
Bid / Proposal No.	Assistance Agreement ID No. (if known)	Point of Contact
Address		
Telephone No.	Email Address	
Prime Contractor Name	Issuing/Funding Entity	

Contract Item Number	Description of Work Submitted from the Prime Contractor Involving Construction, Services, Equipment or Supplies	Price of Work Submitted to the Prime Contractor
DBE Certified By: _DOT _SBA Other: _____	Meets/exceeds EPA certification standards? YES NO Unknown	

[1] A DBE is a Disadvantaged, Minority, or Woman Business Enterprise that has been certified by an entity from which EPA accepts certifications as described in 40 CFR 33.204-33.2015 or certified by EPA. EPA accepts certifications from entities that meet or exceed EPA certification standards as described in 40 CFR 33.202.

[2] Subcontractor is defined as a company, firm, joint venture, or individual who enters into an agreement with a contractor to provide services pursuant to an award of financial assistance.

I certify under penalty of perjury that the forgoing statements are true and correct. Signing this form does not signify a commitment to utilize the subcontractors above. I am aware that in the event of a replacement of a subcontractor, I will adhere to the replacement requirements set forth in 40 CFR Part 33 Section 33.302 (c).

Prime Contractor Signature	Print Name
Title	Date

Subcontractor Signature	Print Name
Title	Date

The public reporting and record keeping burden for this collection of information is estimated to average three (3) hours per response. Send comments on the Agency's need for this information, the accuracy of the provided burden estimates, and any suggested methods for minimizing respondent burden, including through the use of automated collection techniques to the Director, Collection Strategies Division, U.S. Environmental Protection Agency (2822T), 1200 Pennsylvania Ave., NW, Washington, D.C. 20460. Do not send the completed form to this address.

California Water Boards

Disadvantaged Business Enterprise (DBE) Program
DBE Subcontractor Utilization Form

This form is intended to capture the prime contractor's actual and/or anticipated use of identified certified DBE[1] subcontractor's[2] and the estimated dollar amount of each subcontract. A Financial Assistance Agreement Recipient must require its prime contractors to complete this form and include it in the bid or proposal package. Prime contractors should also maintain a copy of this form on file.

Prime Contractor Name		Project Name
Bid / Proposal No.	Assistance Agreement ID No. (if known)	Point of Contact
Address		
Telephone No.		Email Address
Issuing/Funding Entity		

I have identified potential DBE certified subcontractors. YES NO

If *yes*, please complete the table below. If *no*, please explain:

Subcontractor Name/ Company Name	Company Address / Phone / Email	Estimated Dollar Amount	Currently DBE Certified?

--Continue on back if needed--

[1] A DBE is a Disadvantaged, Minority, or Woman Business Enterprise that has been certified by an entity from which EPA accepts certifications as described in 40 CFR 33.204-33.2015 or certified by EPA. EPA accepts certifications from entities that meet or exceed EPA certification standards as described in 40 CFR 33.202.

[2] Subcontractor is defined as a company, firm, joint venture, or individual who enters into an agreement with a contractor to provide services pursuant to an award of financial assistance.

I certify under penalty of perjury that the forgoing statements are true and correct. Signing this form does not signify a commitment to utilize the subcontractors above. I am aware that in the event of a replacement of a subcontractor, I will adhere to the replacement requirements set forth in 40 CFR Part 33 Section 33.302 (c).

Prime Contractor Signature	Print Name
Title	Date

The public reporting and record keeping burden for this collection of information is estimated to average three (3) hours per response. Send comments on the Agency's need for this information, the accuracy of the provided burden estimates, and any suggested methods for minimizing respondent burden, including through the use of automated collection techniques to the Director, Collection Strategies Division, U.S. Environmental Protection Agency (2822T), 1200 Pennsylvania Ave., NW, Washington, D.C. 20460. Do not send the completed form to this address.

CALIFORNIA Water Boards

STATE WATER RESOURCES CONTROL BOARD – DIVISION OF FINANCIAL ASSISTANCE
DISADVANTAGED BUSINESS ENTERPRISE (DBE) UTILIZATION
CALIFORNIA STATE REVOLVING FUNDS (CASRF)
FORM UR-334

1. Grant/Finance Agreement Number:	2. Annual Reporting Period 10/1/____ through 09/30/_	3. Purchase Period of Financing Agreement:
4. Total Payments Paid to Prime Contractor or Sub-Contractors During Current Reporting Period: $		
5. Recipient's Name and Address:	6. Recipient's Contact Person and Phone Number:	

7. List All DBE Payments Paid by Recipient or Prime Contractor During Current Reporting Period:

Payment or Purchase Paid by Recipient or Prime Contractor	Amount Paid to Any DBE Contractor or Sub-Contractor For Service Provided to Recipient		Date of Payment (MM/DD/YY)	Procurement Type Code** (see below)	Name and Address of DBE Contractor of Sub-Contractor or Vendor
	MBE	WBE			

8. Initial here if no DBE contractors or sub-contractors paid during current reporting period:
9. Initial here if all procurements for this contract are completed:
10. Comments:

11. Signature and Title of Recipient's Authorized Representative	12. Date

Email Form UR-334 to:

DrinkingWaterSRF@waterboards.ca.gov OR CleanWaterSRF@waterboards.ca.gov

Questions may be directed to:

Barbara August, SWRCB
Barbara.August@waterboards.ca.gov
Phone: (916) 341-6952
Fax: (916) 327-7469

**Procurement Type:
1. Construction
2. Supplies
3. Services (includes business services; professional services; repair services and personnel services)
4. Equipment

STATE WATER RESOURCES CONTROL BOARD - DIVISION OF FINANCIAL ASSISTANCE
DISADVANTAGED BUSINESS ENTERPRISE (DBE) UTILIZATION
CALIFORNIA STATE REVOLVING FUNDS

INSTRUCTIONS FOR COMPLETING FORM UR-334

Box 1 Grant or Financing Agreement Number.

Box 2 Annual reporting period.

Box 3 Enter the dates between which you made procurements under this financing agreement or grant.

Box 4 Enter the total amount of payments paid to the contractor or sub-contractors during this reporting period.

Box 5 Enter Recipient's Name and Address.

Box 6 Enter Recipient's Contact Name and Phone Number.

Box 7 Enter details for the **DBE purchases only** and be sure to limit them to the current period. 1) Use either an "R" or a "C" to represent "Recipient" or "Contractor." 2) Enter a dollar total for DBE and total the two columns at the bottom of the section. 3) Provide the payment date. 4) Enter a product type choice from those at the bottom of the page. 5) List the vendor name and address in the right-hand column

Box 8 Initial here if no DBE contractors or sub-contractors were paid during this reporting period.

Box 9 Initial this box only if all purchases under this financing agreement or grant have been completed during this reporting period or a previous period. If you initial this box, we will no longer send you a survey.

Box 10 This box is for explanatory information or questions.

Box 11 Provide an authorized representative signature.

Box 12 Enter the date form completed.

A G R E E M E N T

THIS AGREEMENT made at Fresno, in Fresno County, California, by and between W.M. Lyles Co., a California Corporation hereinafter called the Contractor, and the County of Fresno hereinafter called the Owner.

WITNESSETH: That the Contractor and the Owner, for the consideration hereinafter named, agree as follows:

ARTICLE I. The Contractor agrees to furnish all labor and materials, including tools, implements, and appliances required, but excluding such materials as are mentioned in the specifications to be furnished by the Owner, and to perform all the work in a good and workmanlike manner, free from any and all liens and claims of mechanics, materialmen, teamsters, subcontractors, artisans, machinists, and laborers required for:

WATERWORKS DISTRICT 38
Wastewater Treatment Facility Improvements

Clean Water State Revolving Fund
Project No. C-06-7109-110

CONTRACT NUMBER: 18-08-C

All in strict compliance with the plans, drawings and specifications therefor prepared by the Owner, and other contract documents relating thereto.

ARTICLE II. The Contractor and the Owner agree that the Notice to Bidders and Special Provisions, the Wage Scale (Prevailing Wages), the, the Plans and Drawings, Addenda and Bulletins thereto, and the Proposal (the Bid Book) hereto attached, together with this Agreement, form the contract, and they are as fully a part of the contract as if hereto attached or herein repeated.

All portions of the Standard Specifications of the State of California, Department of Transportation, dated 2010, which are not in conflict with this contract shall be deemed a part of the specifications as though fully therein set forth; provided, however, that revisions to the said Standard Specifications shall apply only to the extent, if any, included in the Project Details of these specifications or as otherwise incorporated directly herein. No part of said specifications which is in conflict with any portion of this agreement, or which is not actually descriptive of the work to be done thereunder, or of the manner in which said work is to be executed, shall be considered as any part of this agreement, but shall be utterly null and void.

ARTICLE III. The Owner agrees to pay the Contractor in current funds for the performance of the contract the sum of **SIX HUNDRED SEVENTEEN THOUSAND SEVENTY DOLLARS AND 00/100 (617,070.00)** it being understood that said price is based upon the estimated quantities of materials to be used as set forth in the Proposal, except where provisions are made in the contract documents whereby the estimated quantities shall constitute the final quantity; that upon completion of the project the final contract prices shall be revised by change order, if necessary, to reflect the true quantities used at the stated unit price thereof as contained in the Contractor's Proposal hereto attached. Payments on account thereof will be made as set forth in the special provisions.

ARTICLE IV. If the Contractor should be adjudged a bankrupt, or if he should make a general assignment for the benefit of his creditors, or if a receiver should be appointed on account of his insolvency, or if he or any of his subcontractors should persistently violate any of the provisions of the contract, or if he should persistently or repeatedly refuse or should fail, except in cases for which extension of time is provided, to supply enough properly skilled workmen or

proper materials, or if he should fail to make prompt payment to subcontractors or for material or labor, or persistently disregard laws, ordinances or the instructions of the Engineer, then the Owner may, upon certificate of the Engineer when sufficient cause exists to justify such action, serve written notice upon the Contractor and his surety of its intention to terminate the contract, and unless within five days after the serving of such notice, such violations shall cease and satisfactory arrangements for correction thereof be made, the contract shall, upon the expiration of said five days, cease and terminate.

In the event of any such termination, the Owner shall immediately serve written notice thereof upon the surety and the Contractor, and the surety shall have the right to take over and perform the contract, provided, however, that if the surety within ten (10) days after the serving upon it of notice of termination does not give the Owner written notice of its intention to take over and perform the contract or does not commence performance thereof within the ten (10) days stated above from the date of the serving of such notice, the Owner may take over the work and prosecute the same to completion by contract or by any other method it may deem advisable, for the account and at the expense of the Contractor, and the Contractor and his surety shall be liable to the Owner for any excess cost occasioned the Owner thereby, and in such event the Owner may without liability for so doing, take possession of and utilize in completing the work such materials, appliances, plant and other property belonging to the Contractor as may be on the site of the work and necessary therefor. In such case the Contractor shall not be entitled to receive any further payment until the work is finished. If the unpaid balance of the contract price shall exceed the expenses of finishing the work, including compensation for additional managerial and administrative services, such excess shall be paid to the Contractor. If such expense shall exceed such unpaid balance, the Contractor shall pay the difference to the Owner. The expense incurred by the Owner, as herein provided and damage incurred through the Contractor's default, shall be certified by the Engineer.

ARTICLE V. With respect to any work required to be done under this contract, the Contractor will indemnify and hold harmless the COUNTY OF FRESNO, STATE OF CALIFORNIA, UNITED STATES OF AMERICA, PROVOST & PRITCHARD ENGINEERING GROUP, MILLER PEZZONI & ASSOCIATES, INC., and all other participating public agencies, whether or not said agencies are named herein, who have jurisdiction within the areas in which the work is to be performed, and all officers and employees of the Owner, the County, the State, the United States and said other participating agencies, from any and all costs and expenses, attorney fees and court costs, damages, liabilities, claims and losses occurring or resulting to COUNTY in connection with the performance, or failure to perform, by CONTRACTOR, its officers, agents or employees under this Agreement, and from any and all costs and expenses, attorney fees and court costs, damages, liabilities, claims and losses occurring or resulting to any person, firm or corporation who may be injured or damaged by the performance, or failure to perform, of CONTRACTOR, its officers, agents or employees under this Agreement. In addition, CONTRACTOR agrees to indemnify COUNTY for Federal, State of California and/or local audit exceptions resulting from non-compliance herein on the part of CONTRACTOR.

CONTRACTOR agrees to indemnify, save, hold harmless, and at COUNTY'S request, defend the COUNTY, its officers, agents, and employees from any and all costs and expenses, damages, liabilities, claims, and losses occurring or resulting to COUNTY in connection with the performance, or failure to perform, by CONTRACTOR, its officers, agents, or employees under this Agreement, and from any and all costs and expenses, damages, liabilities, claims, and losses occurring or resulting to any person, firm, or corporation who may be injured or damaged by the performance, or failure to perform, of CONTRACTOR, its officers, agents, or employees under this Agreement.

In the event CONTRACTOR fails to keep in effect at all times insurance coverage as herein provided, the COUNTY may, in addition to other remedies it may have, suspend or terminate this Agreement upon the occurrence of such event.

All policies shall be with admitted insurers licensed to do business in the State of California. Insurance purchased shall be purchased from companies possessing a current A.M. Best, Inc. rating of A and FSC VIII or better.

The Certificate of Insurance shall be issued in duplicate, to the COUNTY OF FRESNO and all other participating agencies, whether or not said agencies are named herein, who contribute to the cost of the work or have jurisdiction over areas in which the work is to be performed and all officers and employees of said agencies while acting within the course and scope of their duties and responsibilities.

In the event CONTRACTOR fails to keep in effect at all times insurance coverage as herein provided, the COUNTY may, in addition to other remedies it may have, suspend or terminate this Agreement upon the occurrence of such event.

All policies shall be with admitted insurers licensed to do business in the State of California. Insurance purchased shall be purchased from companies possessing a current A.M Best Company rating of A FSC VII or better.

Without limiting the COUNTY'S right to obtain indemnification from CONTRACTOR or any third parties, CONTRACTOR, at its sole expense, shall maintain in full force and effect, the following insurance policies or a program of self-insurance, including but not limited to, an insurance pooling arrangement or Joint Powers Agreement (JPA) throughout the term of the Agreement:

A. Commercial General Liability

Commercial General Liability Insurance with limits not less than those shown in the following table:

Liability Insurance Requirements

Total bid	For each occurrence[a]	Aggregate for products/completed operation	General aggregate[b]	Umbrella or excess liability[c]
≤ $1,000,000	$1,000,000	$2,000,000	$2,000,000	$5,000,000
> $1,000,000 ≤ $10,000,000	$1,000,000	$2,000,000	$2,000,000	$10,000,000
> $10,000,000 ≤ $25,000,000	$2,000,000	$2,000,000	$4,000,000	$15,000,000
> $25,000,000	$2,000,000	$2,000,000	$4,000,000	$25,000,000

[a]Combined single limit for bodily injury and property damage.
[b]This limit must apply separately to your work under this Contract.
[c]The umbrella or excess policy must contain a clause stating that it takes effect (drops down) in the event the primary limits are impaired or exhausted.

This policy shall be issued on a per occurrence basis. COUNTY may require specific coverages including completed operations, products liability, contractual liability, Explosion-Collapse-Underground, fire legal liability, or any other liability insurance deemed necessary because of the of the nature of this contract.

Such Commercial General Liability insurance shall name the County of Fresno, its officers, agents, and employees, individually and collectively, as additional insured, but only insofar as

the operations under this Agreement are concerned. Such coverage for additional insured shall apply as primary insurance and any other insurance, or self-insurance, maintained by COUNTY, its officers, agents and employees shall be excess only and not contributing with insurance provided under CONTRACTOR's policies herein. This insurance shall not be cancelled or changed without a minimum of thirty (30) days advance written notice given to COUNTY. CONTRACTOR shall obtain endorsements to the Commercial General Liability insurance policy naming COUNTY as an additional insured and providing for a thirty (30) day prior written notice of cancellation or change in terms or coverage.

Within eight (8) days from date CONTRACTOR executes this Agreement, CONTRACTOR shall provide certificates of insurance and endorsement as stated above for all of the foregoing policies, as required herein, to the County of Fresno Department of Public Works and Planning, Design Services, 2220 Tulare Street 7th Floor, Fresno, CA 93721, stating that such insurance coverages have been obtained and are in full force; that the County of Fresno, its officers, agents and employees will not be responsible for an premiums on the policies; that such Commercial General Liability insurance names the County of Fresno, its officers, agents, and employees, individually and collectively, as additional insured, but only insofar as the operations under this Agreement are concerned; that such coverage for additional insured shall apply as primary insurance an any other insurance, or self- insurance shall not be cancelled or changed without a minimum of thirty (30) days advance, written notice given to COUNTY.

CONTRACTOR shall obtain endorsements to the Commercial General Liability insurance naming the County of Fresno, its officers, agents, and employees, individually and collectively, as additional insured, but only insofar as the operations under this Agreement are concerned. Such coverage for additional insured shall apply as primary insurance and any other insurance, or self-insurance, maintained by COUNTY, its officers, agents, and employees shall be excess only and not contributing with insurance provided under CONTRACTOR'S policies herein. This insurance shall not be cancelled or changed without a minimum or thirty (30) days advance written notice given to COUNTY.

B. Automobile Liability

Comprehensive Automobile Liability Insurance with limits of not less than One Million Dollars ($1,000,000) per accident for bodily injury and property damage. Coverage should include owned and non-owned vehicles used in connection with this Agreement and all applicable endorsements.

C. Professional Liability

If CONTRACTOR is a licensed professional or employs professional staff, (e.g., Architect, Engineer, Surveyor, etc.) in providing services, Professional Liability Insurance with limits of not less than One Million Dollars ($1,000,000.00) per occurrence, Three Million Dollars ($3,000,000.00) annual aggregate with a provision for 3 year tail coverage.

D. Worker's Compensation

A policy of Worker's Compensation insurance as may be required by the California Labor Code.

ARTICLE VI. Contractor represents that he has secured the payment of Worker's Compensation in compliance with the provisions of the Labor Code of the State of California and during the performance of the work contemplated herein will continue so to comply with said provisions of said Code. Contractor shall supply the Owner with certificates of insurance, in duplicate, evidencing that Worker's Compensation Insurance is in effect and providing that

the Owner will receive ten days notice of cancellation. If Contractor self-insures Worker's Compensation, Certificate of Consent to Self-insure should be provided the Owner.

ARTICLE VII. The Contractor shall forthwith furnish in duplicate, a faithful performance bond in an amount equal to 100% of the contract price and a payment bond in an amount equal to 100% of the contract price, both bonds to be written by a surety company acceptable to the Owner and in the form prescribed by law.

The payment bond shall contain provisions such that if the Contractor or his subcontractors shall fail to pay (a) amounts due under the Unemployment Insurance Code with respect to work performed under the contract, or (b) any amounts required to be deducted, withheld and paid over to the Employment Development Department and to the Franchise Tax Board from the wages of the employees of the Contractor and subcontractors pursuant to Section 13020 of the Unemployment Insurance Code with respect to such work and labor, then the surety will pay these amounts. In case suit is brought upon the payment bond, the surety will pay a reasonable attorney's fee to be fixed by the court.

ARTICLE VIII. Governing Law – Venue for any action arising out of or relating to this Agreement shall be in Fresno County, California. This Agreement shall be governed by the laws of the State of California

This Contract, 18-08-C was awarded by the Board of Supervisors on September 25, 2018. It has been reviewed by the Department of Public Works and Planning and is in proper order for signature of the Chairman of the Board of Supervisors.

IN WITNESS WHEREOF, they have executed this Agreement this 22nd day of January, 2019

W. M. Lyles Co.
(CONTRACTOR)

77-0004110
(Taxpayer Federal I.D. No.)

By _____

Title Kevin R. Shigematsu, Asst. Vice President

COUNTY OF FRESNO
(OWNER)

By _____
Nathan Magsig, Chairman
of the Board of Supervisors of the
County of Fresno

ATTEST:
Bernice E. Seidel
Clerk of the Board of Supervisors
County of Fresno, State of California

By Susan Bishop
Deputy

Know what's below. Call before you dig.

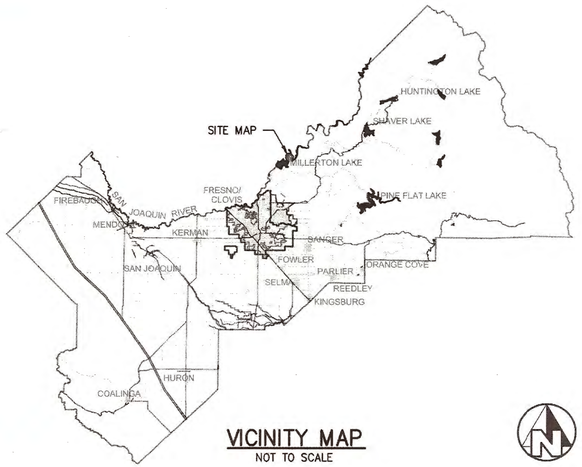
WARNING
POWER LINES OVERHEAD

PLANS FOR CONSTRUCTION

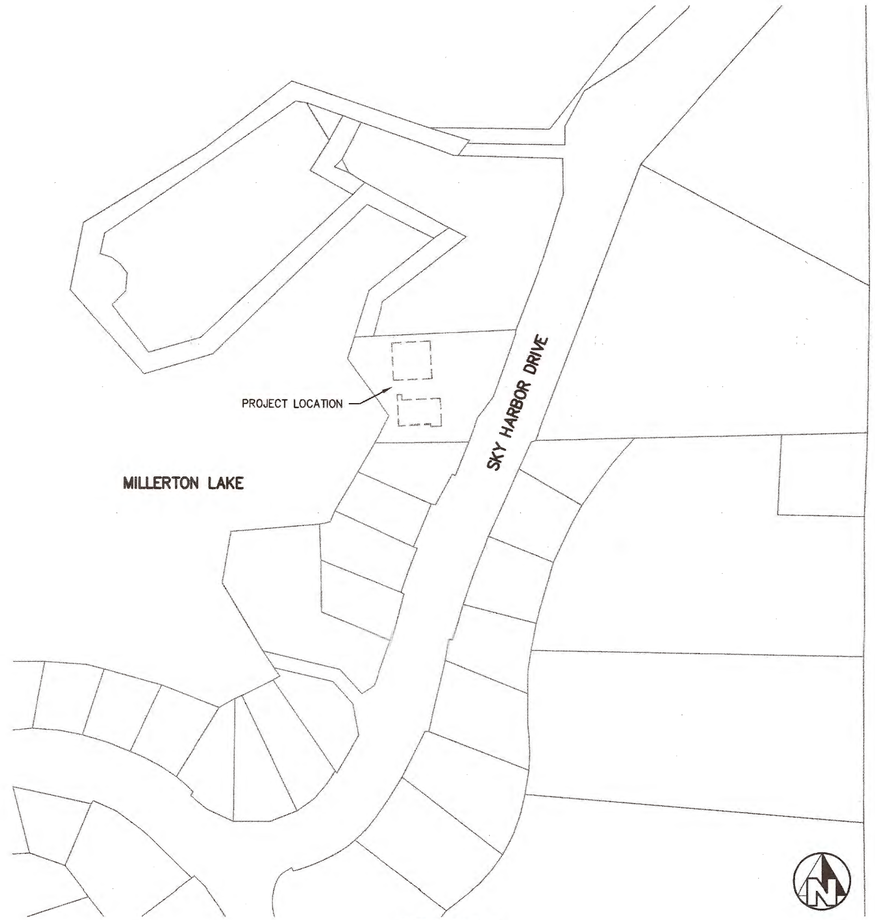
WATERWORKS DISTRICT 38

SKY HARBOR-MILLERTON LAKE

WASTEWATER TREATMENT FACILITY IMPROVEMENTS



VICINITY MAP
NOT TO SCALE



SITE MAP
NOT TO SCALE

SHEET INDEX	
SHEET NO.	DESCRIPTION
GENERAL	
G1	COVER SHEET
G2	LEGEND & NOTES
CIVIL	
C1	OVERALL SITE PLAN
C2	TREATMENT PLANT PLAN
C3	SECTION AND DETAILS
ELECTRICAL	
E0.0	LEGEND & NOTES
E1.0	DEMOLITION PLOT PLAN
E2.0	PROPOSED PLOT PLAN
E3.0	ELECTRICAL DIAGRAMS
E4.0	SINGLE LINE DIAGRAM
E4.1	ELECTRICAL DIAGRAMS
E4.2	ELECTRICAL DIAGRAMS
E4.3	ELECTRICAL DIAGRAMS

SAL QUINTERO — CHAIRMAN — 3rd DISTRICT
ANDREAS A. BORGEAS — VICE CHAIRMAN — 2nd DISTRICT
BRIAN PACHECO — 1st DISTRICT
ERNEST BUDDY MENDES — 4th DISTRICT
NATHAN MAGSIG — 5th DISTRICT

JEAN M. ROUSSEAU
COUNTY ADMINISTRATIVE OFFICER

APPROVED _____

STEVEN E. WHITE, DIRECTOR
DEPARTMENT OF PUBLIC WORKS AND PLANNING

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SITE ADDRESS

FRESNO-WWD 38 WWTF
SKY HARBOR ROAD
FRIANT, CA 93626

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CONSULTING GROUP
An Employee Owned Company
286 WEST CROMWELL AVENUE
FRESNO, CALIFORNIA 93711-6162
559/449-2700 FAX 559/449-2715
www.ppeng.com

REGISTERED PROFESSIONAL ENGINEER — ZHENG TENG — No. 68783 — CIVIL — STATE OF CALIFORNIA

DATE SIGNED: 12-21-2017

THE COUNTY OF FRESNO — 1856

DEPARTMENT OF PUBLIC WORKS AND PLANNING

CALIFORNIA CONTRACTOR'S LICENSES REQUIRED FOR THIS PROJECT					
CLASS A, GENERAL ENGINEERING					
DRAWING NO.	ROAD NO.	BRIDGE NO.	FISCAL YR.	SHEET NO.	TOTAL
11267	N/A	N/A	2017-2018	G1	13
CONTRACT NO. 18-08-C					

RECORD DRAWING		
NAME		
ADDRESS		
CITY	STATE	ZIP
PHONE		
DATE AWARDED		
DATE STARTED		
DATE COMPLETED		
RESIDENT ENGINEER		
NAME	SIGNATURE	
NAME	SIGNATURE	

CONSULTING ENGINEERS AND LAND SURVEYORS OF CALIFORNIA

CONSTRUCTION CONTRACTOR AGREES THAT IN ACCORDANCE WITH GENERALLY ACCEPTED CONSTRUCTION PRACTICES, CONSTRUCTION CONTRACTOR WILL BE REQUIRED TO ASSUME SOLE AND COMPLETE RESPONSIBILITY FOR JOB SITE CONDITIONS DURING THE COURSE OF CONSTRUCTION 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, AND CONSTRUCTION CONTRACTOR FURTHER AGREES TO DEFEND, INDEMNIFY AND HOLD DESIGN PROFESSIONAL HARMLESS FROM ANY AND ALL LIABILITY, REAL AND ALLEGED, IN CONNECTION WITH THE PERFORMANCE OF WORK ON THIS PROJECT, EXCEPTING LIABILITY ARISING FROM THE SOLE NEGLIGENCE OF DESIGN PROFESSIONAL.

SPECIAL NOTE

WHERE UNDERGROUND AND SURFACE STRUCTURES ARE SHOWN ON THE PLANS, THE LOCATIONS, DEPTH AND DIMENSIONS OF STRUCTURES ARE BELIEVED TO BE REASONABLY CORRECT, BUT ARE NOT GUARANTEED. SUCH STRUCTURES ARE SHOWN FOR THE INFORMATION OF THE CONTRACTOR, BUT INFORMATION SO GIVEN IS NOT TO BE CONSTRUED AS A REPRESENTATION THAT SUCH STRUCTURES WILL, IN ALL CASES, BE FOUND WHERE SHOWN, OR THAT THEY REPRESENT ALL OF THE STRUCTURES WHICH MAY BE ENCOUNTERED.

SITE SAFETY AND PROTECTION NOTES

THE DUTY OF THE ENGINEER, OWNER OR ITS AGENTS TO CONDUCT CONSTRUCTION REVIEW OF THE CONTRACTOR'S PERFORMANCE AND THE UNDERTAKING OF INSPECTIONS OR THE GIVING OF INSTRUCTIONS AS AUTHORIZED HEREIN IS NOT INTENDED TO INCLUDE REVIEW OF THE ADEQUACY OF THE CONTRACTOR'S SAFETY MEASURES IN, ON, OR NEAR THE CONSTRUCTION SITE AND SHALL NOT BE CONSTRUED AS SUPERVISION OF THE ACTUAL CONSTRUCTION NOR MAKE THE ENGINEER, OWNER OR ITS AGENTS RESPONSIBLE FOR PROVIDING A SAFE PLACE FOR THE PERFORMANCE OF WORK BY THE CONTRACTOR, SUBCONTRACTORS, OR SUPPLIERS, OR FOR ACCESS, VISITS, USE, WORK, TRAVEL OR OCCUPANCY BY ANY PERSON.

THE CONTRACTOR SHALL HAVE AT THE WORK SITE, COPIES OR SUITABLE EXTRACTS OF CONSTRUCTION SAFETY ORDERS, ISSUED BY CAL-OSHA. HE SHALL COMPLY WITH PROVISIONS OF THESE AND ALL OTHER APPLICABLE LAWS, ORDINANCES AND REGULATIONS. THE CONTRACTOR MUST COMPLY WITH PROVISIONS OF THE SAFETY AND HEALTH REGULATIONS FOR CONSTRUCTION, PROMULGATED BY THE SECRETARY OF LABOR UNDER SECTION 107 OF THE CONTRACT WORK HOURS AND SAFETY STANDARDS ACT, AS SET FORTH IN TITLE 29 C.F.R.

TO PROTECT THE LIVES AND HEALTH OF HIS EMPLOYEES UNDER THE CONTRACT, THE CONTRACTOR SHALL COMPLY WITH ALL PERTINENT PROVISIONS OF THE "MANUAL OF ACCIDENT PREVENTION IN CONSTRUCTION" ISSUED BY THE ASSOCIATED GENERAL CONTRACTORS OF AMERICA, INC., 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 OR WORK UNDER THE CONTRACT.

THE CONTRACTOR ALONE SHALL BE RESPONSIBLE FOR THE SAFETY, EFFICIENCY, AND ADEQUACY OF HIS FACILITIES, APPLIANCES, AND METHODS AND FOR ANY DAMAGE, WHICH MAY RESULT FROM THEIR FAILURE OR THEIR IMPROPER CONSTRUCTION, MAINTENANCE OR OPERATION.

THE CONTRACTOR AGREES THAT IT 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 THE CONTRACTOR SHALL DEFEND, INDEMNIFY AND HOLD THE OWNER, PROVOST & PRITCHARD ENGINEERING GROUP, INC., AND THEIR RESPECTIVE AGENTS 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 OWNER, ENGINEER, OR THEIR RESPECTIVE AGENTS.

THE OWNER AND ITS AGENTS' SITE RESPONSIBILITIES ARE LIMITED SOLELY TO THE ACTIVITIES OF THEIR EMPLOYEES ON SITE. THESE RESPONSIBILITIES SHALL NOT BE INFERRED BY ANY PARTY TO MEAN THAT THE OWNER OR ITS AGENTS HAVE RESPONSIBILITY FOR SITE SAFETY. SAFETY IN, ON, OR ABOUT THE SITE IS THE SOLE AND EXCLUSIVE RESPONSIBILITY OF THE CONTRACTOR ALONE. THE CONTRACTOR'S METHODS OF WORK PERFORMANCE, SUPERINTENDENT AND THE CONTRACTOR'S EMPLOYEES, AND SEQUENCING OF CONSTRUCTION ARE ALSO THE SOLE AND EXCLUSIVE RESPONSIBILITIES OF THE CONTRACTOR ALONE.

GENERAL NOTES

JEFF WELDON OF FRESNO COUNTY (559-994-4189) SHALL BE CONTACTED AT LEAST 48 HOURS PRIOR TO COMMENCEMENT OF WORK ON OR NEAR EXISTING DISTRICT FACILITIES.

USED MATERIAL, REJECTS, MISFITS, OR SECONDS, ETC. ARE NOT ACCEPTABLE FOR USE ON COUNTY OF FRESNO FACILITIES.

ALL CONSTRUCTION SHALL BE IN CONFORMANCE WITH THESE PLANS, PROJECT SPECIFICATIONS AND COUNTY SPECIFICATIONS.

CONTRACTOR SHALL FIELD VERIFY THE HORIZONTAL AND VERTICAL LOCATIONS OF ALL EXISTING FACILITIES PRIOR TO COMMENCING WORK. CALL UNDERGROUND SERVICE ALERT (USA) AT 811. CONTRACTOR SHALL MAKE ENGINEER AWARE OF ANY DISCREPANCIES.

ALL CAST-IN-PLACE CONCRETE STRUCTURES SHALL BE FORMED INSIDE AND OUT AND CONCRETE VIBRATED SUFFICIENTLY TO PROVIDE FOR SMOOTH SURFACED WALLS/FLOORS WITHOUT VOIDS AND HONEYCOMBS.

COUNTY OF FRESNO SHALL INSPECT ALL WORK FOR CONFORMANCE TO COUNTY OF FRESNO SPECIFICATIONS.

ALL NUTS, BOLTS, AND WASHERS USED TO SECURE UNDERGROUND FITTINGS SHALL BE STAINLESS STEEL. AFTER INSTALLATION, ALL STEEL HARDWARE SHALL BE COATED WITH A RUST PREVENTATIVE, WRAPPED WITH 4 MIL POLYETHYLENE SHEETING, AND SECURE WITH PVC TAPE.

ALL CONSTRUCTION SHALL BE PERFORMED IN ACCORDANCE WITH APPLICABLE HEALTH AND SAFETY LAWS OF THE STATE OF CALIFORNIA AND CAL/OSHA STANDARDS.

CONTRACTOR WILL BE RESPONSIBLE FOR THE REPAIR OF ALL PIPELINE CRACKS, WHICH DEVELOP DURING CONSTRUCTION OF IMPROVEMENTS AFFECTING EXISTING FACILITIES.

ALL EXCESS MATERIAL AND/OR DEBRIS SHALL BE REMOVED UPON COMPLETION OF INSTALLATION.

CONTRACTOR TO FILL ALL HOLES IN CONCRETE LEFT BEHIND FROM REMOVING EXISTING SCRAPER MACHINERY. HOLES TO BE FILLED WITH WITH EPOXY.

CONTRACTOR TO FIELD VERIFY ALL DIMENSIONS PRIOR TO CONSTRUCTION.

ADHESIVE ANCHORS, CONCRETE WITH F'C GREATER THAN 2500 PSI, OR SHOP AND FIELD WELDING MUST BE INSPECTED BY APPROVED INDEPENDENT INSPECTORS WHO SHALL BE RETAINEED BY THE OWNER. INSPECTORS SHALL SUBMIT THEIR REPORTS DIRECTLY TO THE FRESNO COUNTY DEVELOPMENT SERVICES DIVISION.

STEEL NOTES

ALL STEEL PIPE AND FITTINGS SHALL BE FURNISHED WITH A SHOP APPLIED HIGH SOLIDS EPOXY COATING ON THE INTERIOR AND EXTERIOR, UNLESS OTHERWISE INDICATED. ALL OTHER EXPOSED STEEL SHALL BE PAINTED WITH A PRE-TREATMENT PRIMER, AN UNDERCOAT AND A FINAL COAT OF PAINT IN ACCORDANCE WITH PROJECT SPECIFICATIONS.

STRUCTURAL STEEL SHALL CONFORM TO THE FOLLOWNG;
A. STRUCTURAL SHAPES W, M, S, HP, C, MC, L, AS PER AISC MANUAL 9TH EDITION, TO COMPLY WITH ASTM A36 (Fy=36 ksi).
B. STRUCTURAL STEEL PIPE, AS PER AISE MANUAL 9TH EDITION, TO PCOMPLY WITH ASTM A500 GRADE C (Fy=46 ksi) OR;
C. STRUCTURAL STEEL PIPE, AS PER USS STEEL COMPANY AND/OR ASTM MANUAL, TO COMPLY WITH DRILL PIPE GRADE E (Fy=75 ksi)

ANY MATERIAL REQUEST WITH DIFFERENT SPECIFICATIONS THAN NOTED ABOVE ARE TO BE DIRECTED TO THE DESIGNER, IN A TIMELY MANNER, PRIOR TO CONSTRUCTION AND/OR INSTALLATION.

STRUCTURAL STEEL DETAILING, FABRICATION AND ERECTION SHALL BE IN ACCORDANCE WITH THE 9TH EDITION OF THE AISC MANUAL AND THE LATEST EDITION OF STRUCTURAL STEEL DETAILING BY THE AISC.

ABREVIATIONS

TS	TUBULAR SECTION
(TYP)	TYPICAL
HP	HORSE POWER
V	VOLT
GPM	GALLONS PER MINUTE
TDH	TOTAL DYNAMIC HEAD
RPM	REVOLUTIONS PER MINUTE
HWL	HIGH WATER LEVEL
EL	ELEVATION
MIN	MINIMUM
F&I	FURNISH AND INSTALL

LEGEND



DETAIL NUMBER
SHEET NUMBER



SECTION LETTER OR DETAIL NUMBER
DRAWING NUMBER ON WHICH SECTION OR DETAIL APPEARS, OR WHERE SECTION

EQUIPMENT LIST

	LOCATION	ITEM	PROCESS CODE	DESCRIPTION	MODEL/SIZE	CAPACITY	PROPOSED
1	AERATION BASIN	AERATOR	SEC-AER-001	SUBMERSIBLE JET AERATOR	TSRUMI 37 BER4 OR FLYGHT NS 3102.095-463MT -JA112-S6	7.5 + LB 02/HR	1
2	AERATION BASIN	MIXER	SEC-MIX-002	SUBMERSIBLE MIXER	TSRUMI MR33NF/NR 1.5 OR FLYGHT 4630.492	260 + N THRUST OR 2,300 + GPM	1
3	CLARIFIER	SCRAPER	SEC-SCP-003	RECTANGULAR TANK CHAIN & FLIGHT SLUDGE SCRAPER COLLECTOR	ENVIREX NON-METALIC, 4 SHAFT, WITH MOTOR DRIVE	30'L X 10'W X 8'D CLARIFIER	1
4	EFFLUENT TANK	PUMP	EFF-P-004,005	MULTISTAGE VERTICAL SUMP PUMP	FLOWAY 6LKM 13 STAGE	120 GPM @ 650 FT TDH	2

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286 WEST CROMWELL AVENUE
FRESNO, CALIFORNIA 93711-6162
559/449-2700 FAX 559/449-2715
www.ppeng.com

	DATE	100% SUBMITTAL		SCALE
DESIGNED: ZT	11-10-17			
DRAWN: PPI	11-10-17			
CHECKED: KKS	11-10-17			

FOR RIGHT OF WAY DATA AND ACCURATE ACCESS DETERMINATION, SEE DOCUMENTS IN THE DEPARTMENT OF PUBLIC WORKS AND PLANNING.

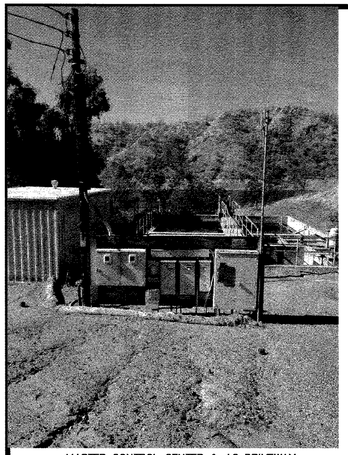
ENGINEER OF RECORD — DATE

REGISTERED PROFESSIONAL ENGINEER — ZHENG YANG — No. 68783 — CIVIL — STATE OF CALIFORNIA

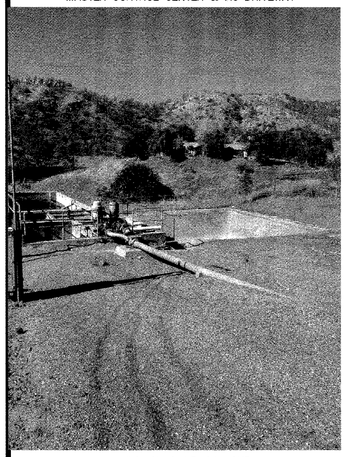
PROJECT
WASTEWATER TREATMENT FACILITY DESIGN
FRESNO COUNTY
ROAD NO. N/A BRIDGE NO. N/A

THE COUNTY OF FRESNO 1856

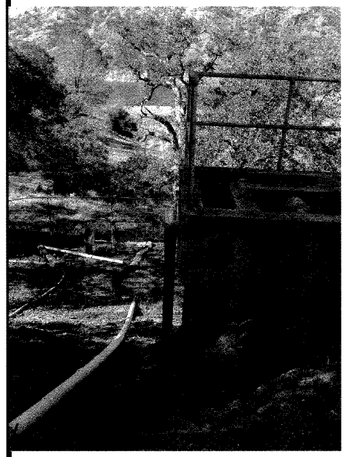
DEPARTMENT OF PUBLIC WORKS AND PLANNING
LEGEND & NOTES
GENERAL
DRAWING NO. 11267 SHEET NO. G2 TOTAL 13



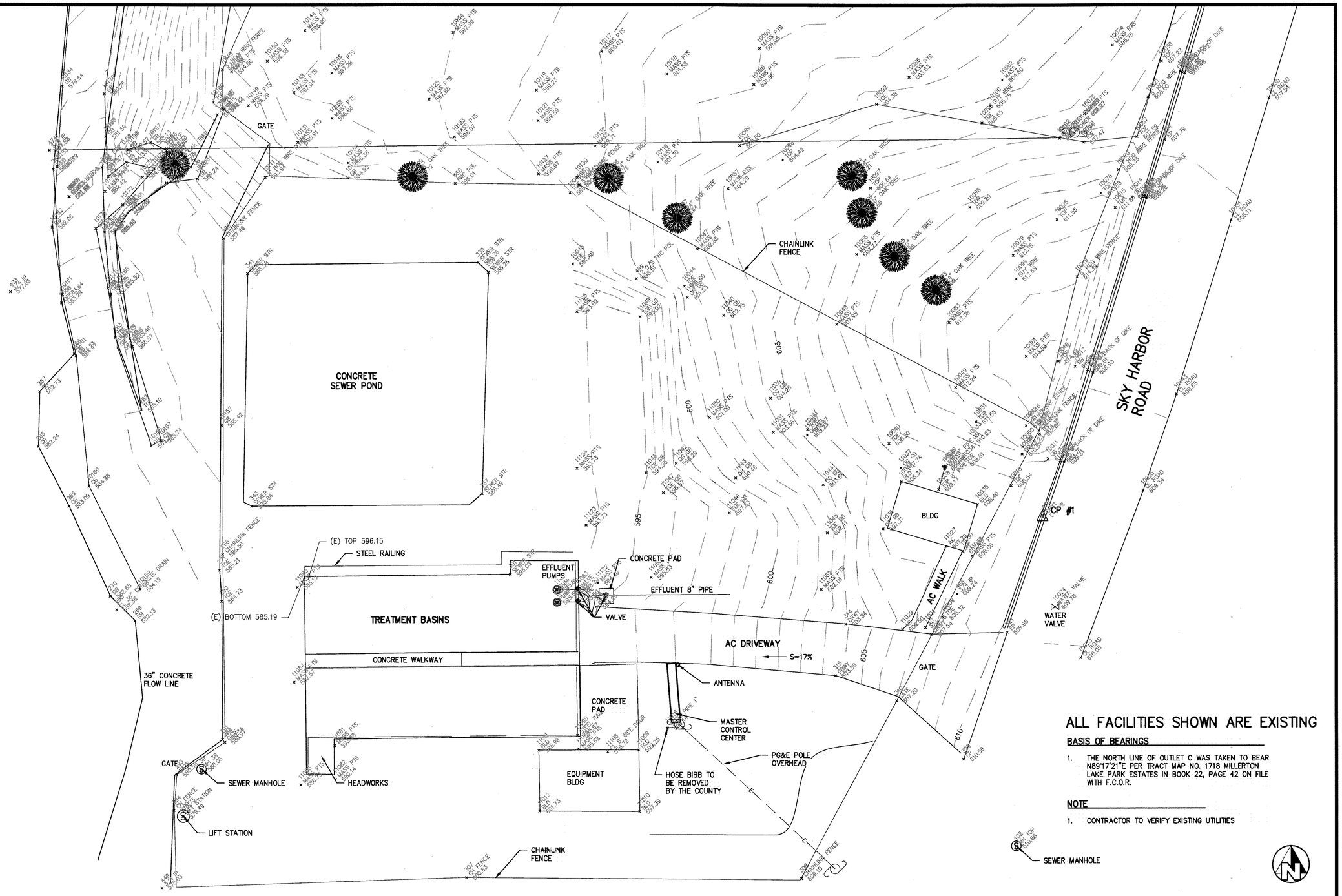
MASTER CONTROL CENTER & AC DRIVEWAY



AC DRIVEWAY & SEWER POND



INFLUENT PUMP STATION & HEADWORKS



ALL FACILITIES SHOWN ARE EXISTING

BASIS OF BEARINGS

1. THE NORTH LINE OF OUTLET C WAS TAKEN TO BEAR N89°17'21"E PER TRACT MAP NO. 1718 MILLERTON LAKE PARK ESTATES IN BOOK 22, PAGE 42 ON FILE WITH F.C.O.R.

NOTE

1. CONTRACTOR TO VERIFY EXISTING UTILITIES

SEWER MANHOLE

	DATE	100% SUBMITTAL
DESIGNED: ZT	11-10-17	
DRAWN: PPI	11-10-17	
CHECKED: KKS	11-10-17	

FOR RIGHT OF WAY DATA AND ACCURATE ACCESS DETERMINATION, SEE DOCUMENTS IN THE DEPARTMENT OF PUBLIC WORKS AND PLANNING.

SCALE

SCALE IN FEET

0 5 10 20

ENGINEER OF RECORD — DATE

REGISTERED PROFESSIONAL ENGINEER — STEVEN T. KEMPF — No. 68787 — CIVIL — STATE OF CALIFORNIA

PROJECT

WASTEWATER TREATMENT FACILITY DESIGN

FRESNO COUNTY

ROAD NO. N/A BRIDGE NO. N/A

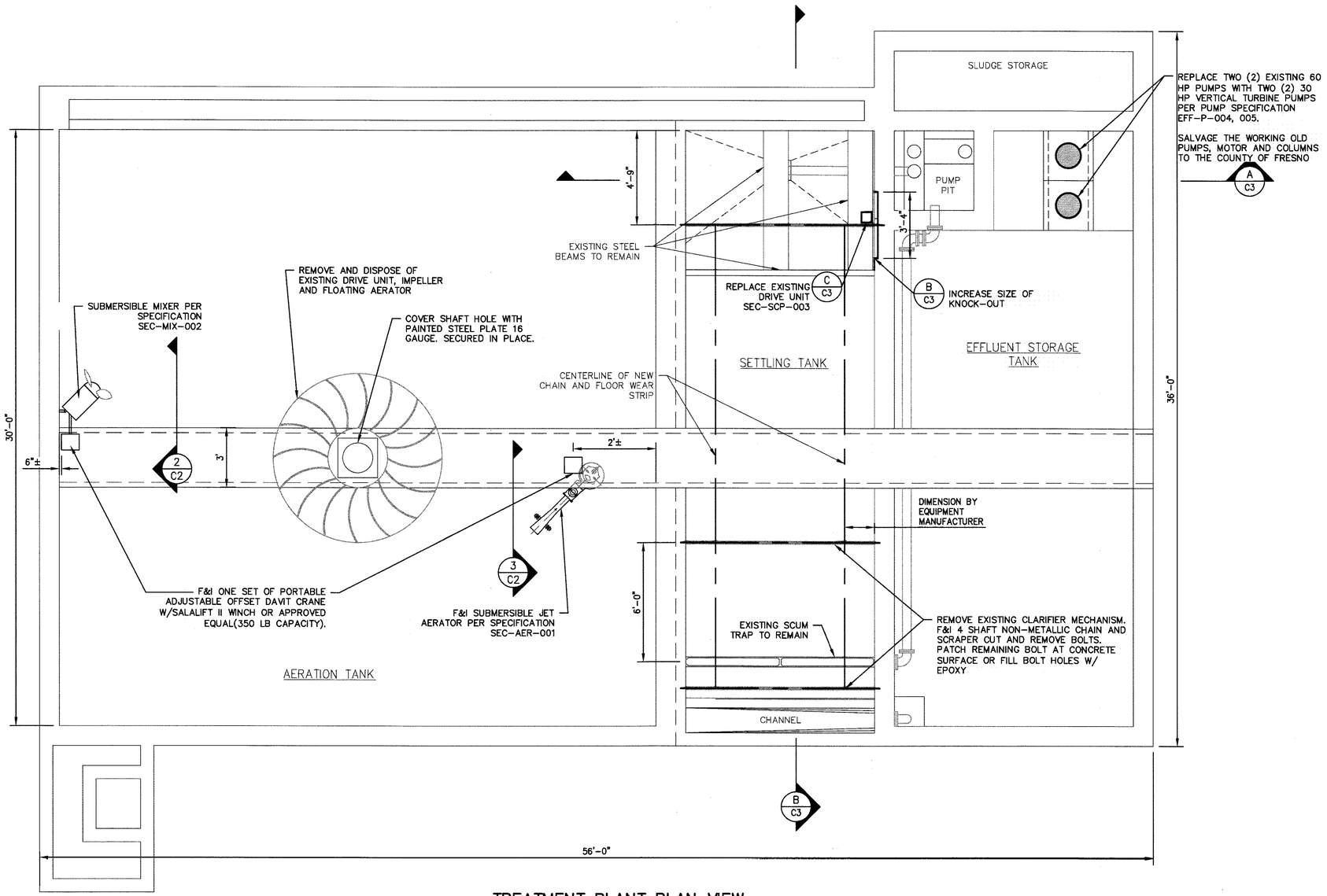
THE COUNTY OF FRESNO

DEPARTMENT OF PUBLIC WORKS AND PLANNING

OVERALL SITE PLAN

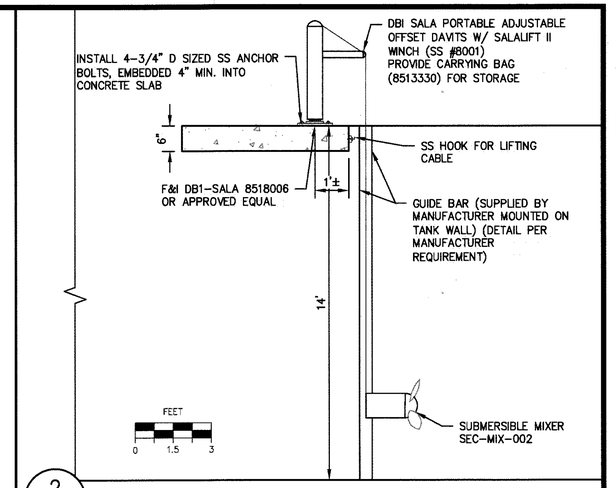
CIVIL

DRAWING NO. 11267 SHEET NO. C1 TOTAL 13



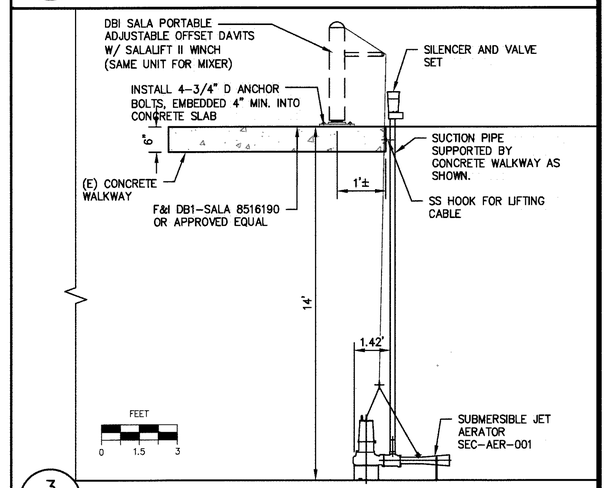
1 / C2

TREATMENT PLANT PLAN VIEW



2 / C2

SUBMERSIBLE MIXER SECTION



3 / C2

JET AERATOR SECTION

	DATE	100% SUBMITTAL	SCALE
DESIGNED: ZT	11-10-17		SCALE IN FEET 0 2 4 8
DRAWN: PPI	11-10-17		
CHECKED: KKS	11-10-17		

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ENGINEER OF RECORD — DATE

REGISTERED PROFESSIONAL ENGINEER ZHENG TENG No. 66787 CIVIL STATE OF CALIFORNIA

PROJECT

WASTEWATER TREATMENT FACILITY DESIGN

FRESNO COUNTY

ROAD NO. N/A BRIDGE NO. N/A

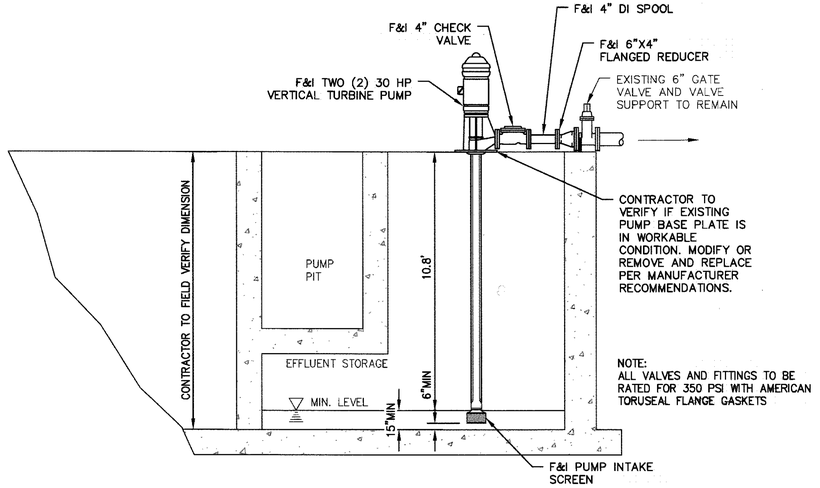
THE COUNTY OF FRESNO

DEPARTMENT OF PUBLIC WORKS AND PLANNING

TREATMENT PLANT PLAN

CIVIL

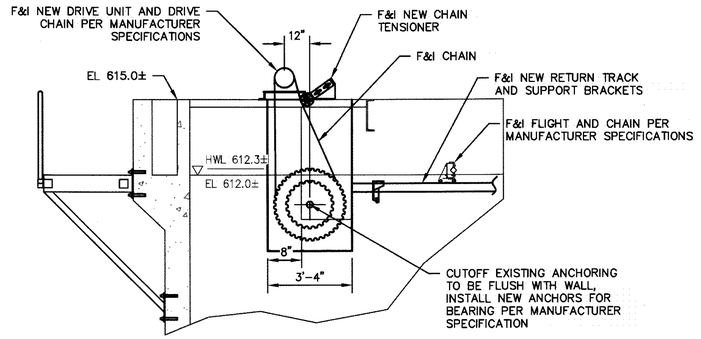
DRAWING NO. 11267 SHEET NO. C2 TOTAL 13



FEET 0 1.5 3

A / C3

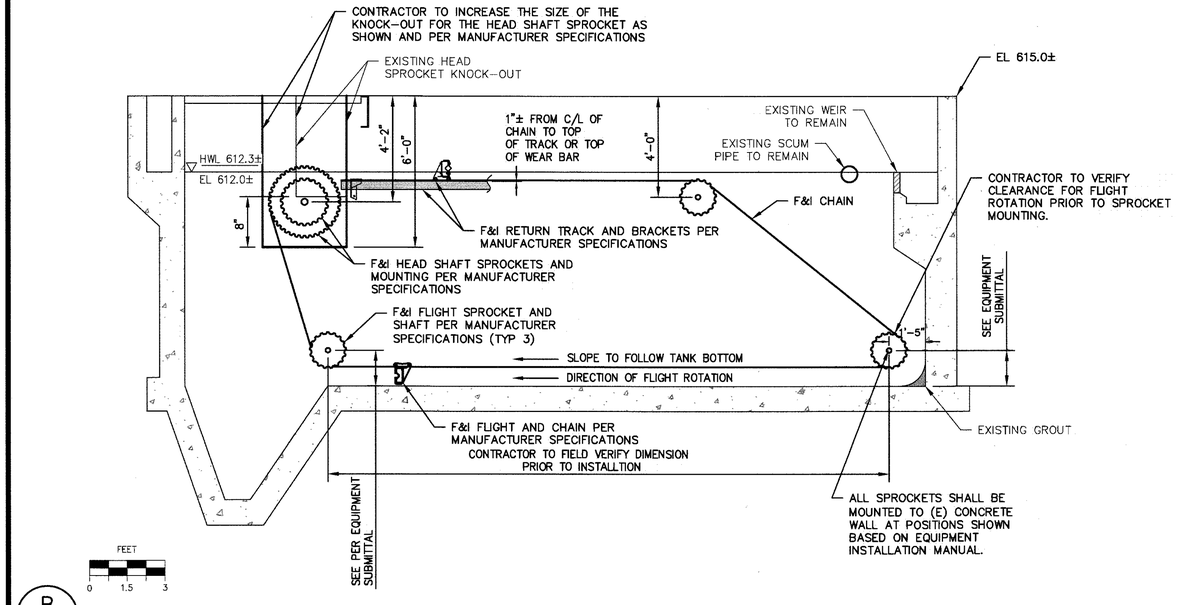
PUMP SECTION



FEET 0 1.5 3

C / C3

DRIVE UNIT DETAIL



FEET 0 1.5 3

B / C3

SETTLING TANK SECTION

EXISTING DRIVE UNIT & SUPPORT BEAM TO BE REPLACED AND REPAIRED

	DATE	100% SUBMITTAL		SCALE
DESIGNED: ZT	11-10-17			
DRAWN: PPI	11-10-17			
CHECKED: KKS	11-10-17			

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ENGINEER OF RECORD _____ DATE _____

REGISTERED PROFESSIONAL ENGINEER — ZT ENG TENG No. 68783 — CIVIL — STATE OF CALIFORNIA

PROJECT

WASTEWATER TREATMENT FACILITY DESIGN

FRESNO COUNTY

ROAD NO. N/A BRIDGE NO. N/A

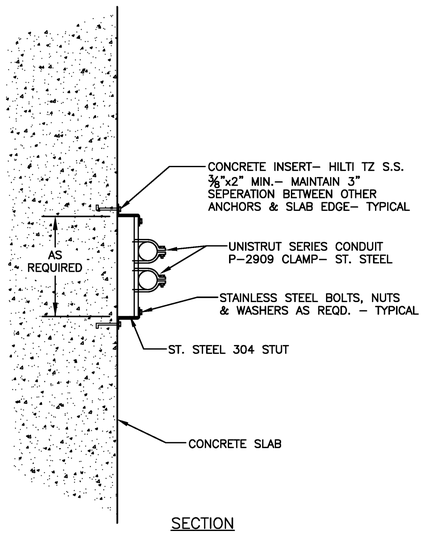
THE COUNTY OF FRESNO

DEPARTMENT OF PUBLIC WORKS AND PLANNING

SECTION AND DETAILS

CIVIL

DRAWING NO. 11267 SHEET NO. C3 TOTAL 13



SECTION

CONDUIT SUPPORT

1 CONDUIT PIPE STRAP MOUNTING

SCALE: N.T.S.

ELECTRICAL ABBREVIATION

Δ	DELTA CONNECTED	(F)	FUTURE	OC	ON CENTER
Y	WYE CONNECTED	FA	FIRE ALARM	OH	OVERHEAD
Ø	PHASE	FACP	FIRE ALARM CONTROL PANEL	OL	THERMAL OVERLOAD RELAY
&	AND	FAT	FIRE ALARM TERMINAL CABINET	OT	OVER TEMPERATURE
@	AT	FIXT	FIXTURE	OSHPD	OFFICE OF STATEWIDE HEALTH PLANNING AND DEVELOPMENT
'	FEET	FLA	FULL LOAD AMPS		
"	INCHES	FLEX	FLEXIBLE		
		FLUOR	FLUORESCENT	PA	PUBLIC ADDRESS
A	AMPERES	FS	FLOW SWITCH	PB	PULL BOX
AC	ALTERNATING CURRENT	FOR	FORWARD–OFF–REVERSE	PNL	PANEL
ACT	ABOVE COUNTERTOP/BACKSPLASH	FT	FEET	PH	PHASE
ADJ	ADJACENT, ADJOINING			PR	PAIR
AFD	ADJUSTABLE FREQUENCY DRIVE	GALV	GALVANIZED	PRI	PRIMARY
AFF	ABOVE FINISHED FLOOR	GND	GROUND	PS	PRESSURE SWITCH
AL	ALUMINUM	GC	GENERAL CONTRACTOR	PWR	POWER
APPROX	APPROXIMATE				
ARCH	ARCHITECT	HI	HIGH	(R)	REMOVE(D)
AUTO	AUTOMATIC	HOA	HAND–OFF–AUTO	RA	REMOTE ANNUNCIATOR
AUX	AUXILIARY	HOS	HAND–OFF–STANDBY	RD	ROAD
ALT	ALTERNATE	HV	HIGH VOLTAGE	REQD	REQUIRED
AWG	AMERICAN WIRE GAUGE	HVAC	HEATING, VENTILATION, AIR CONDITIONING	REQMTS	REQUIREMENTS
				RGP	REDUNDANT GROUND PATH
B	BARE	IDF	INTERMEDIATE DISTRIBUTION FRAME	RM	ROOM
BC	BARE COPPER GROUND	INCAN	INCANDESCENT	RECP	RECEPTACLE
BKBD	BACKBOARD	IDC	INITIATING DEVICE CIRCUIT	RT	RAIN TIGHT
BRKR	BREAKER	IN	INCHES		
BLDG	BUILDING	INST	INSTANTANEOUS	SCH	SCHEDULE
		J	JUNCTION BOX	SEC	SECONDS, SECONDARY
C	CONDUIT OR CONTRACTOR			SHT	SHEET
CAB	CABINET	KV	KILOVOLTS	SIG	SIGNAL
CATV	CABLE TELEVISION	KVA	KILOVOLT AMPERES	SPECS	SPECIFICATIONS
CKT	CIRCUIT	KW	KILOWATTS	SW	SWITCH
CLG	CEILING			SWD	SWITCHED
CO	CONDUIT ONLY	L	LINE	SP	SPARE
COMM	COMMUNICATION	LB	ELBOW	STD	STANDARD
CONC	CONCRETE	LF	LINEAR FEET	STR	STRANDED
CONN	CONNECT	LOS	LOCKOUT–STOP	SWBD	SWITCHBOARD
CONT	CONTINUATION OR CONTINUED	LOH	LOCK–OFF–HALT		
COORD	COORDINATE	LV	LOW VOLTAGE	TELE	TELEPHONE
CR	CONTROL RELAY			TEMP	TEMPERATURE
CT	CURRENT TRANSFORMER	M	MOTOR	TOA	TEST OFF AUTOMATIC
COMP	COMPRESSOR	MAX	MAXIMUM	TH	THERMOSTAT
CU	COPPER	MCA	MINIMUM CIRCUIT AMPS	TRANSF	TRANSFORMER
		MCC	MOTOR CONTROL CENTER	TYP	TYPICAL
DC	DIRECT CURRENT	MCM	THOUSAND CIRCULAR MILLS	TSP	TWISTED SHIELDED PAIR
DET	DETAIL	MCP	MOTOR CIRCUIT PROTECTOR	THRU	THROUGH
DISC	DISCONNECT	MDF	MAIN DISTRIBUTION FRAME		
DIST	DISTRIBUTION	MECH	MECHANICAL	UG	UNDERGROUND
DSA	DIVISION OF THE STATE ARCHITECT	MFG	MANUFACTURER	UNO	UNLESS NOTED OTHERWISE
DWG	DRAWING	MIN	MINIMUM		
		MPOE	MAIN POINT OF ENTRY	V	VOLTS
(E), EXIST	EXISTING	MSB	MAIN SWITCHBOARD	VA	VOLT AMPS
EC	ELECTRICAL CONTRACTOR			VFD	VARIABLE FREQUENCY DRIVE
EL, ELEV	ELEVATION	N	NEUTRAL	VM	VOLT METER
EL	EMERGENCY LIGHT	(N)	NEW		
ELECT	ELECTRICAL	NA	NON–AUTOMATIC	W	WIRE
EMS	ENERGY MANAGEMENT SYSTEM	NAC	NOTIFICATION APPLIANCE CIRCUIT	W/	WITH
EMT	ELECTRICAL METALLIC TUBING	NC	NORMALLY CLOSED	W/O	WITHOUT
EOL	END OF LINE	NIES	NOT IN ELECTRICAL SECTION	WP	WEATHERPROOF
ENCL	ENCLOSURE	NIC	NOT IN ELECTRICAL CODE	WHD	WATT HOUR DEMAND METER
EP	EXPLOSION PROOF	NO., #	NUMBER	WM	WATT METER
EQUIP	EQUIPMENT	NO	NORMALLY OPEN	WH	WATER HEATER
ETC	ET CETERA	NL	NIGHT LIGHT	XFMER	TRANSFORMER
EVAP	EVAPORATOR			(XR)	REMOVE AND RELOCATE(D)

ELECTRICAL COMPLIANCE NOTES

THE INTENT OF THE DRAWINGS AND SPECIFICATION IS TO CONSTRUCT THE PROPOSED BUILDING IN ACCORDANCE WITH TITLE 24, CALIFORNIA CODE OF REGULATIONS. ALL WORK SHALL BE IN ACCORDANCE WITH THE REQUIREMENTS OF TITLE 22, DIVISION 7, CHAPTER 7, CALIFORNIA CODE OF REGULATIONS AND TITLE 24 –– ALL APPLICABLE PARTS OF LATEST EFFECTIVE EDITIONS.

ALL WORK PERFORMED UNDER THIS CONTRACT SHALL CONFORM TO THE FOLLOWING CODES AND REGULATIONS AS APPLICABLE:

2016 CALIFORNIA ADMINISTRATIVE CODE (CAC)
PART 1, TITLE 24, CALIFORNIA CODE OF REGULATIONS (CCR)
2016 CALIFORNIA BUILDING CODE (CBC)
PART 2, TITLE 24, CCR
BASED ON THE 2015 INTERNATIONAL BUILDING CODE (IBC)
2016 CALIFORNIA ELECTRICAL CODE (CEC)
PART 3, TITLE 24, CCR
BASED ON THE 2014 NATIONAL ELECTRICAL CODE (NEC)
2016 CALIFORNIA MECHANICAL CODE (CMC)
PART 4, TITLE 24, CCR
BASED ON THE 2015 UNIFORM MECHANICAL CODE (UMC)
2016 CALIFORNIA PLUMBING CODE (CPC)
PART 5, TITLE 24, CCR
BASED ON THE 2015 UNIFORM PLUMBING CODE (UPC)
2016 CALIFORNIA FIRE CODE (CFC)
PART 9, TITLE 24, CCR
BASED ON THE 2015 INTERNATIONAL FIRE CODE (IFC)

UNLESS OTHERWISE STATED, IT IS INTENDED THAT THE ABOVE CODES AND REGULATIONS REFER TO THE LATEST EDITION OR REVISION IN EFFECT ON THE DATE OF THE CONTRACT. NOTHING ON THE DRAWING IS TO BE CONSTRUED AS REQUIRING OR PERMITTING WORK THAT IS CONTRARY TO THE ABOVE LISTED CODES AND REGULATIONS, OR OTHER LOCAL, STATE OR FEDERAL CODES OR REGULATIONS WHICH MAY BE APPLICABLE.

LEGEND

$	SWITCH
	3 WAY SWITCH W/LEG
	SURFACE LINIER FLUOR
	GFI RECEPTACLE
	J–BOX/OUTLET (CEILING MOUNTED)
	J–BOX/OUTLET (WALL MOUNTED)
	TERMINAL CABINET (FLUSH MOUNTED)
	TERMINAL PANEL (SURFACE MOUNTED)
DC	DISCONNECT
	STARTER
M	MOTOR
—— ——	UNDERGROUND CONDUIT
————	CONDUIT
– – – –	HIDDEN CONDUIT
●	CONDUIT STUB DOWN
o	CONDUIT STUB UP
⊔	CONDUIT CAP
~	CONDUIT BREAK

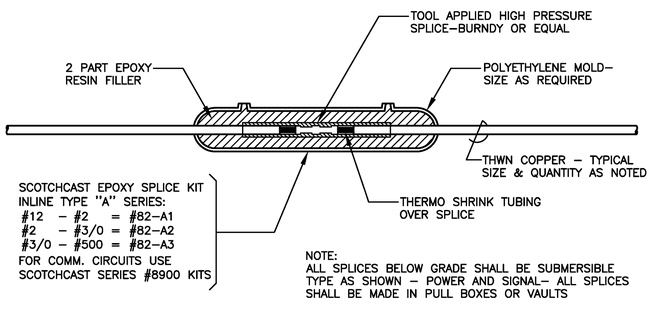
WIRE TICK COMPONENTS (FOR REFERENCE ONLY)

GROUND, NEUTRAL, CKT. WIRE, WIRE SIZE

WIRE TICK

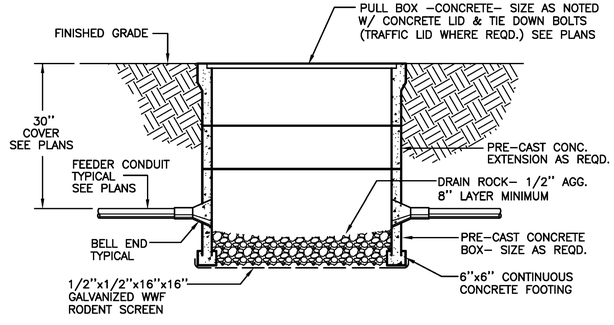
GENERAL ELECTRICAL NOTES

1. PROVIDE ALL LABOR, MATERIALS, TOOLS, PLANT EQUIPMENT, TRANSPORTATION AND ALL PERFORM ALL OPERATIONS NECESSARY FOR THE PROPER EXECUTION AND COMPLETION OF ALL ELECTRICAL WORK REQUIRED FOR THE COMPLETE AND OPERATING SYSTEMS AS OUTLINED WITHIN THE SCOPE OF WORK.
2. UNDERWRITERS LABORATORIES, INC., SHALL MEET THEIR REQUIREMENTS AND SHALL BEAR THEIR LABEL WHEREVER STANDARDS HAVE BEEN ESTABLISHED AND LABEL SERVICE IS REGULARLY FURNISHED BY THAT AGENCY.
3. THE SIZE AND LOCATIONS OF EQUIPMENT ARE SHOWN TO SCALE WHEREVER POSSIBLE, CONTRACTOR SHALL MAKE USE OF ALL DATA IN ALL CONTRACT DOCUMENTS AND VERIFY THIS INFORMATION AT THE SITE.
4. CONDUCTORS SHALL BE COPPER CONDUCTORS TYPE AS NOTED ON CONSTRUCTION DOCUMENTS.
5. DO NOT PENETRATE STRUCTURAL MEMBERS, INCLUDING BEAMS, COLUMNS, OR FOOTINGS, WITHOUT PRIOR WRITTEN CONSENT OF THE OWNER'S STRUCTURAL ENGINEER. SHOULD IT BECOME NECESSARY TO PENETRATE SUCH MEMBERS, NOTIFY THE OWNER IN WRITING WITHOUT DELAY, PRIOR TO PROCEEDING WITH CONSTRUCTION AROUND SUCH MEMBERS.
6. ALL WORK TO BE IN ACCORDANCE WITH REQUIREMENTS OF STATE & GOVERNING LOCAL FIRE CODES AND BUILDING CODES.
7. WHERE EXISTING CONSTRUCTION IS CUT, DAMAGED, OR REMODELED, PATCH WITH MATERIALS TO MATCH IN KIND, QUALITY, AND PERFORMANCE.
8. CONTRACTOR SHALL ASSUME SOLE RESPONSIBILITY FOR SAFETY OF ALL PERSONS ON OR ABOUT THE CONSTRUCTION SITE, IN ACCORDANCE WITH APPLICABLE LAWS AND CODES. GUARD ALL HAZARDS IN ACCORDANCE WITH THE SAFETY PROVISIONS OF THE LATEST MANUAL OF ACCIDENT PREVENTION PUBLISHED BY THE ASSOCIATED GENERAL CONTRACTORS OF AMERICA.
9. CLEAN ALL EXPOSED SURFACES AND NEW EQUIPMENT AFTER COMPLETION.
10. OPERATED DEVICES SUCH AS, BUT NOT LIMITED TO, TELE/DATA OUTLETS, RECEPTACLE OUTLETS AND LIGHT SWITCHES INSTALLED IN AREAS NOT RESTRICTED TO AUTHORIZED MAINTENANCE PERSONAL SHALL BE MOUNTED AT A MINIMUM OF +15" AFF., AS MEASURED FROM THE BOTTOM OF THE DEVICE OUTLET BOX, AND MAXIMUM OF +48" AFF., AS MEASURED FROM THE TOP OF THE DEVICE OUTLET BOX.
11. PRIOR TO SUBMISSION OF ANY BID, THE CONTRACTOR SHALL PERFORM A THOROUGH FIELD SURVEY OF THE EXISTING SITE CONDITIONS AND FEATURES. ANY SITE CONDITIONS WHICH MAY CAUSE SIGNIFICANT DEVIATION FROM THE DESIGN DRAWINGS SHALL BE BROUGHT TO THE ATTENTION OF ARCHITECT/ENGINEER OF RECORD FOR CLARIFICATION PRIOR TO SUBMISSION OF THE CONTRACTOR'S BID. VERIFY DIMENSIONS OF ALL OWNER–FURNISHED OPERATING EQUIPMENT TO ENSURE PROPER COORDINATION WITH CONSTRUCTION.
12. ALL UTILITIES REQUIRED FOR THE CONTINUOUS OPERATION OF ALL EXISTING FACILITIES MUST BE MAINTAINED IN SERVICE AT ALL TIMES. ANY OUTAGES MUST BE COORDINATED IN WRITE WITH COUNTY PRIOR TO PROCEEDING.
13. ALL REMOVED ITEMS DEEMED TO HAVE VALUE BY THE OWNER SHALL BE DELIVERED TO A PLACE OF STORAGE AT THE SITE AS DIRECTED. ALL OTHER ITEMS MUST BE DISPOSED OF OFF SITE IN A LEGAL MANNER.
14. IF ANY PART OF THIS CONTRACTOR'S WORK DEPENDS UPON THE WORK OF A SEPARATE CONTRACTOR, THIS CONTRACTOR SHALL INSPECT SUCH OTHER WORK AND PROMPTLY REPORT IN WRITING TO THE PROJECT ENGINEER ANY DEFECTS IN SUCH OTHER WORK THAT RENDERS IT UNSUITABLE TO RECEIVE THE WORK OF THIS CONTRACTOR. FAILURE OF THIS CONTRACTOR TO SO INSPECT AND REPORT SHALL CONSTITUTE AN ACCEPTANCE OF THE OTHER CONTRACTOR'S WORK, EXCEPT AS TO DEFECTS WHICH MAY DEVELOP IN OTHER CONTRACTOR'S WORK AFTER EXECUTION OF THIS CONTRACTOR'S WORK.
15. WHEREVER MORE THAN ONE (1) MANUFACTURER'S PRODUCT IS SPECIFIED, THE FIRST–NAMED PRODUCT IS THE BASIS FOR THE PROJECT DESIGN AND THE USE OF ALTERNATIVE NAMED MANUFACTURER'S PRODUCTS OR SUBSTITUTES MAY REQUIRE MODIFICATIONS IN THE PROJECT DESIGN AND CONSTRUCTION. IF SUCH ALTERNATIVES ARE PROPOSED BY CONTRACTOR AND ARE FAVORABLY REVIEWED BY THE ARCHITECT/ENGINEER OF RECORD, THE CONTRACTOR SHALL ASSUME COSTS REQUIRED TO MAKE NECESSARY REVISIONS AND MODIFICATIONS INCLUDING ADDITIONAL COSTS TO THE OWNER FOR EVALUATIONS OF MODIFICATION OF THE PROJECT DESIGN SUBMITTED BY CONTRACTOR TO THE ARCHITECT/ENGINEER OF RECORD. SUBSTITUTED ITEMS THAT REQUIRE CALCULATIONS SHALL HAVE CALCULATIONS SUBMITTED WITH SHOP DRAWINGS BEFORE APPROVAL WILL BE CONSIDERED.
16. THE CONTRACTOR SHALL GUARANTEE THAT ALL WORK DONE UNDER THIS SPECIFICATION WILL BE FREE FROM FAULTY MATERIALS OR WORKMANSHIP AND HEREBY AGREES TO REPAIR OR REPLACE WITHOUT COST TO THE OWNER AND TO HIS SATISFACTION ALL DEFECTS OR IMPERFECTIONS APPEARING IN SAID WORK WITHIN A PERIOD OF ONE YEAR AFTER THE DATE OF FINAL ACCEPTANCE BY THE OWNER OF ALL WORK DONE UNDER THIS SPECIFICATION.
17. ALL ELECTRICAL EQUIPMENT EXPOSED TO WEATHER SHALL BE LISTED FOR EXTERIOR USE.



3 SUBMERSIBLE SPLICE –TYPICAL

SCALE: N.T.S.



2 PULL BOX – TYPICAL

SCALE: N.T.S.

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REGISTERED PROFESSIONAL ENGINEER — KEVIN L. PEZZONI — NO. 16286 — EXP. 12/16 — ELECTRICAL — STATE OF CALIFORNIA

	DATE	100% SUBMITTAL		SCALE
DESIGNED: KLP	11-30-2016			AS SHOWN
DRAWN: CAL	11-30-2016			
CHECKED: KLP	11-10-2017			

FOR RIGHT OF WAY DATA AND ACCURATE ACCESS DETERMINATION, SEE DOCUMENTS IN THE DEPARTMENT OF PUBLIC WORKS AND PLANNING.

SUPERVISING ENGINEER — DATE

WASTEWATER TREATMENT FACILITY DESIGN
FRESNO COUNTY

ROAD NO. N/A — BRIDGE NO. N/A

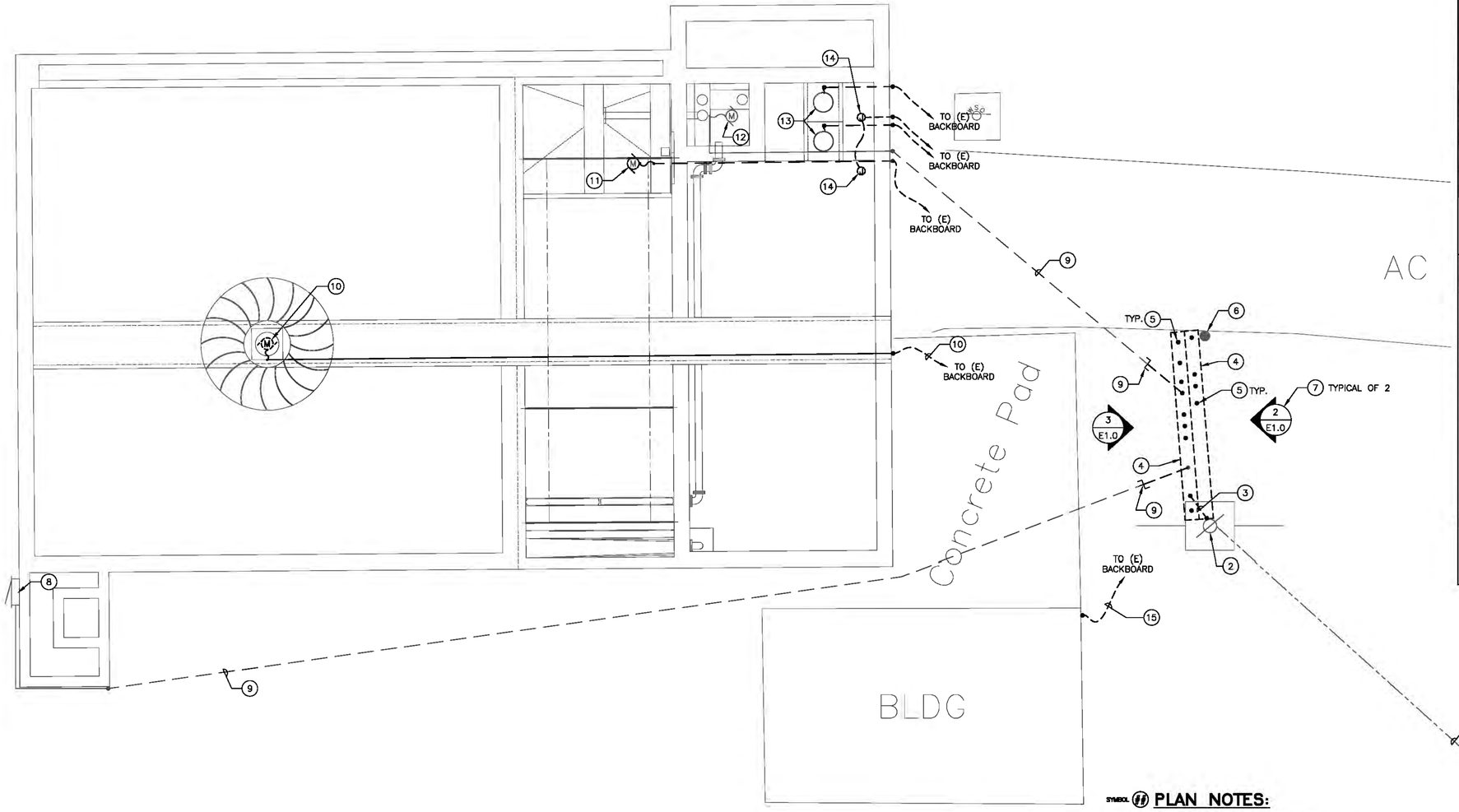
THE COUNTY OF FRESNO

DEPARTMENT OF PUBLIC WORKS AND PLANNING

NOTES AND LEGEND
ELECTRICAL PLAN

DRAWING NO. — SHEET NO. E0.0 — TOTAL 13

02/08/18 6:00:51 PM F:\16\607 FRESNO COUNTY WWD38 SKY HARBOR\ENGR\SHEETS\607_ELECT COVER.DWG KPezzoni





2 **BACKBOARD ELEVATION – EAST SIDE**
SCALE: NONE



3 **BACKBOARD ELEVATION – WEST SIDE**
SCALE: NONE

SYMBOL (#) **PLAN NOTES:**

1. (E) PG&E OVERHEAD SECONDARY TO REMAIN.
2. (E) SECONDARY POLE TO REMAIN.
3. DISCONNECT (E) P.G.&E. SECONDARY & DEMO (E) RISER TO (E) METERING CABINET.
4. DEMO (E) ELECTRICAL EQUIPMENT LOCATED AT BACKBOARD AS WELL AS BACKBOARD AT END OF THE PROJECT.
5. DEMO (E) CONDUIT RISER & FEEDERS AS SHOWN.
6. DEMO (E) SCADA ANTENNA.
7. SEE PHOTO OF (E) CONDITIONS & EQUIPMENT, ABOVE ON THIS SHEET.
8. (E) LIFT STATION PANEL & RACEWAY TO REMAIN –REMOVE (E) CONDUCTORS TO SOURCE.
9. INTERCEPT (E) RACEWAY W/ (N) PULLBOX –DEMO BALANCE OF RACEWAY TO (E) SOURCE.
10. DISCONNECT & REMOVE (E) AERATOR CONDUCTORS & RACEWAY TO SOURCE.
11. DISCONNECT & REMOVE (E) CLARIFIER DRIVE CONDUCTORS & RACEWAY TO SOURCE.
12. (E) RAS PUMP TO REMAIN –INTERCEPT (E) FEEDER NEAR (E) BACKBOARD W/(N) PULLBOX.
13. DISCONNECT & REMOVE (E) EFFLUENT PUMP CONDUCTORS & RACEWAY TO SOURCE.
14. DISCONNECT & REMOVE (E) WET PIT LEVEL CONTROLS TO (E) EFFLUENT PUMPS TO SOURCE.
15. DISCONNECCT & REMOVE (E) 120V CKT. INTO (E) STORAGE BLDG. –RE–USE (E) ENTRANCE FOR (N) RECP.

1 **ELECTRICAL DEMOLITION PLOT PLAN**
SCALE: 1/4"=1'–0"

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REGISTERED PROFESSIONAL ENGINEER KEVIN L. PEZZONI NO. 16256 EXP. 12/18 ELECTRICAL STATE OF CALIFORNIA

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DESIGNED: KLP	11-30-2016			AS SHOWN
DRAWN: CAL	11-30-2016			
CHECKED: KLP	11-10-2017			

FOR RIGHT OF WAY DATA AND ACCURATE ACCESS DETERMINATION, SEE DOCUMENTS IN THE DEPARTMENT OF PUBLIC WORKS AND PLANNING.

SUPERVISING ENGINEER _____ DATE _____

WASTEWATER TREATMENT FACILITY DESIGN
FRESNO COUNTY

ROAD NO. N/A BRIDGE NO. N/A

DEPARTMENT OF PUBLIC WORKS AND PLANNING
DEMOLITION
ELECTRICAL PLOT PLAN

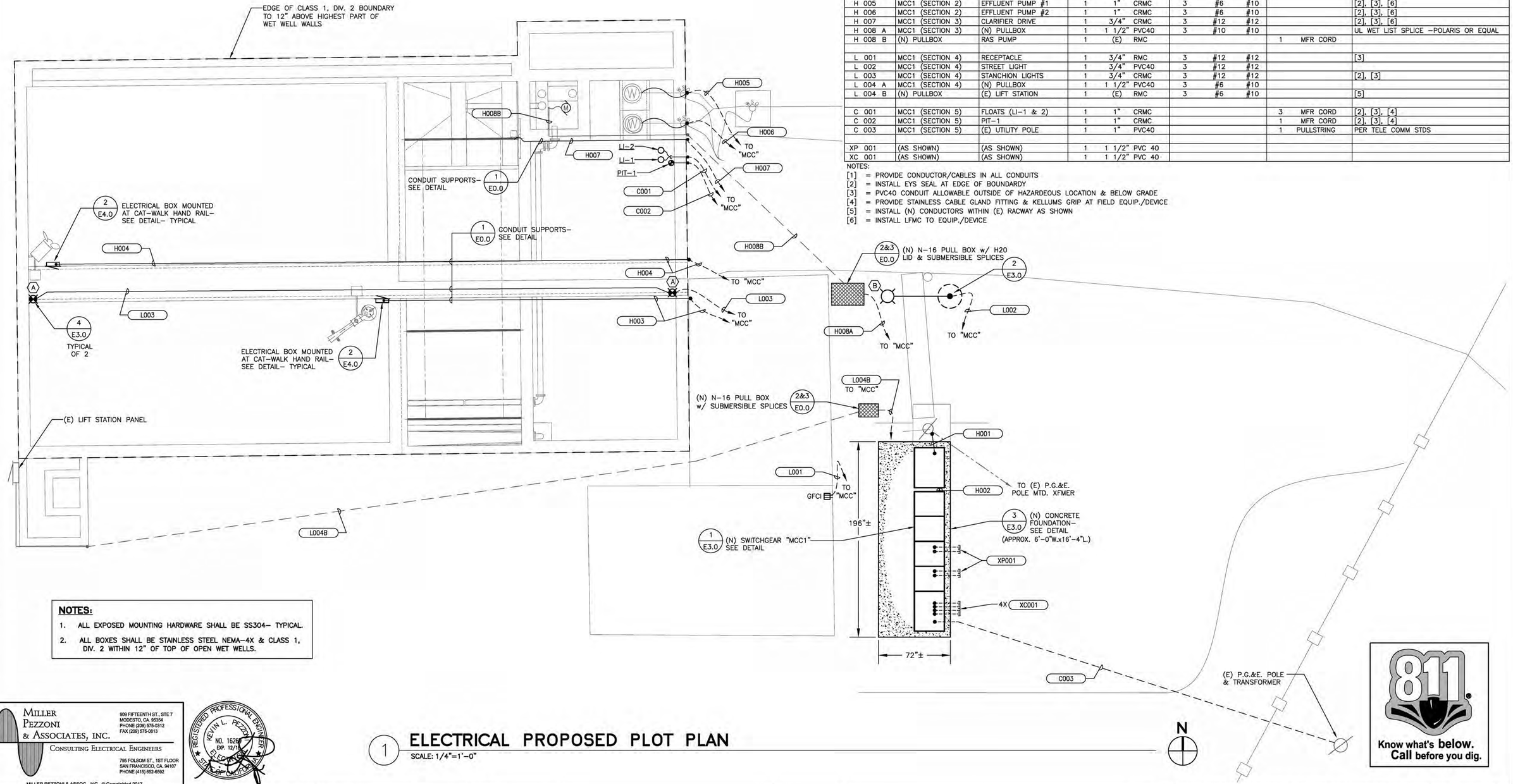
DRAWING NO. SHEET NO. E1.0 TOTAL 13

02/08/18 6:00:56 PM F:\16\607 FRESNO COUNTY WW038 SKY HARBOR\ENGR\SHEETS\607_SITE ELECT_DEMO.DWG KPezzoni

CONDUIT & CABLE SCHEDULE

CONDUIT ID#	FROM	TO	CONDUIT QNTY	CONDUIT SIZE	CONDUIT TYPE	CONDUCTOR QNTY	CONDUCTOR SIZE	CONDUCTOR GND	CABLE QNTY	CABLE TYPE	NOTES
H 001	(E) PG&E POLE	MSB	1	2 1/2"	SCH80	3	#4/0				
H 002	MSB	MCC1 (SECTION 1)	1	3"	RMC	3	500MCM	#2			
H 003	MCC1 (SECTION 1)	AERATOR TERM BOX	1	1"	CRMC	3	#10	#10			[2], [3]
						4	#14	#14			
H 004	MCC1 (SECTION 1)	MIXER TERM BOX	1	1"	CRMC	3	#10	#10			[2], [3]
						4	#14	#14			
H 005	MCC1 (SECTION 2)	EFFLUENT PUMP #1	1	1"	CRMC	3	#6	#10			[2], [3], [6]
H 006	MCC1 (SECTION 2)	EFFLUENT PUMP #2	1	1"	CRMC	3	#6	#10			[2], [3], [6]
H 007	MCC1 (SECTION 3)	CLARIFIER DRIVE	1	3/4"	CRMC	3	#12	#12			[2], [3], [6]
H 008 A	MCC1 (SECTION 3)	(N) PULLBOX	1	1 1/2"	PVC40	3	#10	#10			UL WET LIST SPLICE –POLARIS OR EQUAL
H 008 B	(N) PULLBOX	RAS PUMP	1	(E)	RMC				1	MFR CORD	
L 001	MCC1 (SECTION 4)	RECEPTACLE	1	3/4"	RMC	3	#12	#12			[3]
L 002	MCC1 (SECTION 4)	STREET LIGHT	1	3/4"	PVC40	3	#12	#12			
L 003	MCC1 (SECTION 4)	STANCHION LIGHTS	1	3/4"	CRMC	3	#12	#12			[2], [3]
L 004 A	MCC1 (SECTION 4)	(N) PULLBOX	1	1 1/2"	PVC40	3	#6	#10			
L 004 B	(N) PULLBOX	(E) LIFT STATION	1	(E)	RMC	3	#6	#10			[5]
C 001	MCC1 (SECTION 5)	FLOATS (LI–1 & 2)	1	1"	CRMC				3	MFR CORD	[2], [3], [4]
C 002	MCC1 (SECTION 5)	PIT–1	1	1"	CRMC				1	MFR CORD	[2], [3], [4]
C 003	MCC1 (SECTION 5)	(E) UTILITY POLE	1	1"	PVC40				1	PULLSTRING	PER TELE COMM STDS
XP 001	(AS SHOWN)	(AS SHOWN)	1	1 1/2"	PVC 40						
XC 001	(AS SHOWN)	(AS SHOWN)	1	1 1/2"	PVC 40						

NOTES:
[1] = PROVIDE CONDUCTOR/CABLES IN ALL CONDUITS
[2] = INSTALL EYS SEAL AT EDGE OF BOUNDARDY
[3] = PVC40 CONDUIT ALLOWABLE OUTSIDE OF HAZARDEOUS LOCATION & BELOW GRADE
[4] = PROVIDE STAINLESS CABLE GLAND FITTING & KELLUMS GRIP AT FIELD EQUIP./DEVICE
[5] = INSTALL (N) CONDUCTORS WITHIN (E) RACWAY AS SHOWN
[6] = INSTALL LFMC TO EQUIP./DEVICE



NOTES:

1. ALL EXPOSED MOUNTING HARDWARE SHALL BE SS304– TYPICAL.
2. ALL BOXES SHALL BE STAINLESS STEEL NEMA–4X & CLASS 1, DIV. 2 WITHIN 12" OF TOP OF OPEN WET WELLS.

MILLER PEZZONI & ASSOCIATES, INC.
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REGISTERED PROFESSIONAL ENGINEER KEVIN L. PEZZONI NO. 16268 EXP. 12/19 ELECTRICAL STATE OF CALIFORNIA

1 ELECTRICAL PROPOSED PLOT PLAN

SCALE: 1/4"=1'–0"

N

Know what's below. Call before you dig. 811

	DATE	100% SUBMITTAL	SCALE
DESIGNED: KLP	11-30-2016		AS SHOWN
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CHECKED: KLP	11-10-2017		

FOR RIGHT OF WAY DATA AND ACCURATE ACCESS DETERMINATION, SEE DOCUMENTS IN THE DEPARTMENT OF PUBLIC WORKS AND PLANNING.

SUPERVISING ENGINEER _____ DATE _____

WASTEWATER TREATMENT FACILITY DESIGN
FRESNO COUNTY

ROAD NO. N/A BRIDGE NO. N/A

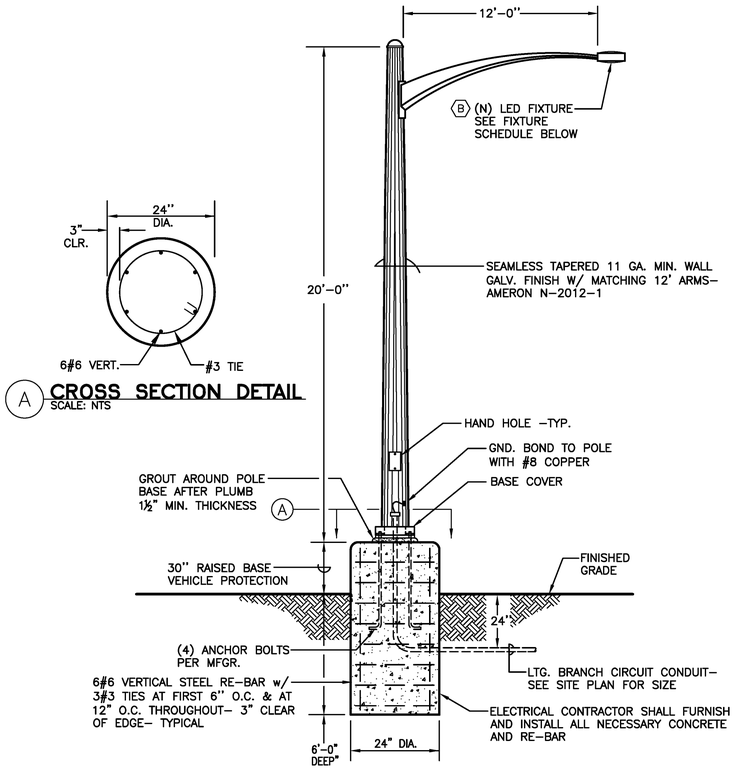
THE COUNTY OF FRESNO 1856

DEPARTMENT OF PUBLIC WORKS AND PLANNING

PROPOSED
ELECTRICAL PLOT PLAN

DRAWING NO. SHEET NO. E2.0 TOTAL 13

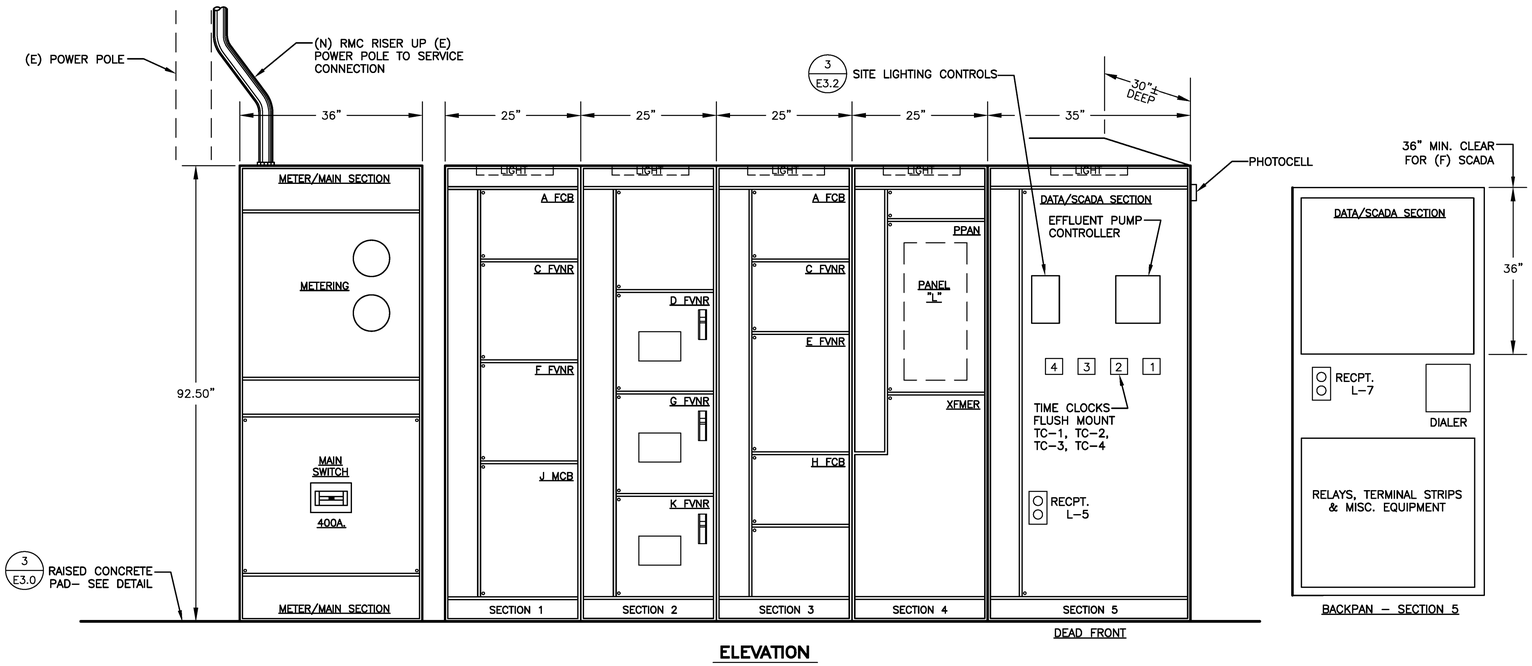
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A **CROSS SECTION DETAIL**
SCALE: NTS

SECTION

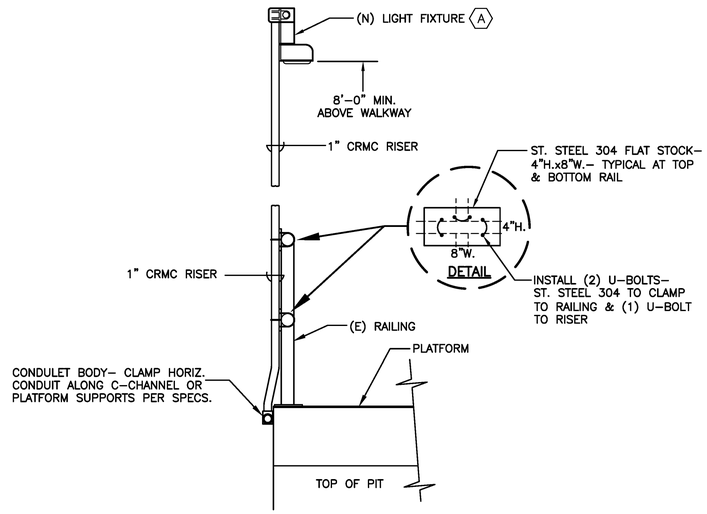
2 SITE LIGHT STANDARD, POLE & BASE
SCALE: NTS



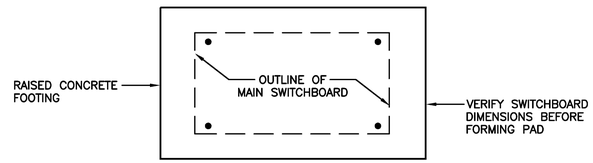
ELEVATION

1 (N) MAIN SWITCHBOARD - "MCC1"
SCALE: NONE

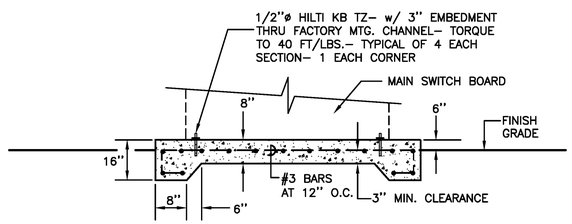
LIGHTING FIXTURE SCHEDULE				
DESIG.	SYMBOL	LAMP QTY/WATTS	DESCRIPTION	MANUFACTURER
(A)		2250lm 21W	CLASS 1, DIV. 2 LED FLOODLIGHT w/ PIPE MOUNT KIT- 180 DEG. BEAM PATTERN- 120V.	DIALIGHT #HZFOC2NS45
(B)		5620lm 53W	STREET LIGHT- LED- TYPE 3 OPTICS- P.C. CONTROL	LEOTEK #GCMI-30F-MV-CW-3-GY-530-PCR5



4 LIGHT MOUNTING AT TANK WALKWAY
SCALE: NTS



PLAN VIEW



SECTION

3 MAIN SWITCHBOARD FOUNDATION -TYPICAL
SCALE: N.T.S.

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	DATE	100% SUBMITTAL		SCALE
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DRAWN: CAL	11-30-2016			
CHECKED: KLP	11-10-2017			

FOR RIGHT OF WAY DATA AND ACCURATE ACCESS DETERMINATION, SEE DOCUMENTS IN THE DEPARTMENT OF PUBLIC WORKS AND PLANNING.

SUPERVISING ENGINEER _____ DATE _____

WASTEWATER TREATMENT FACILITY DESIGN
FRESNO COUNTY

ROAD NO. N/A BRIDGE NO. N/A

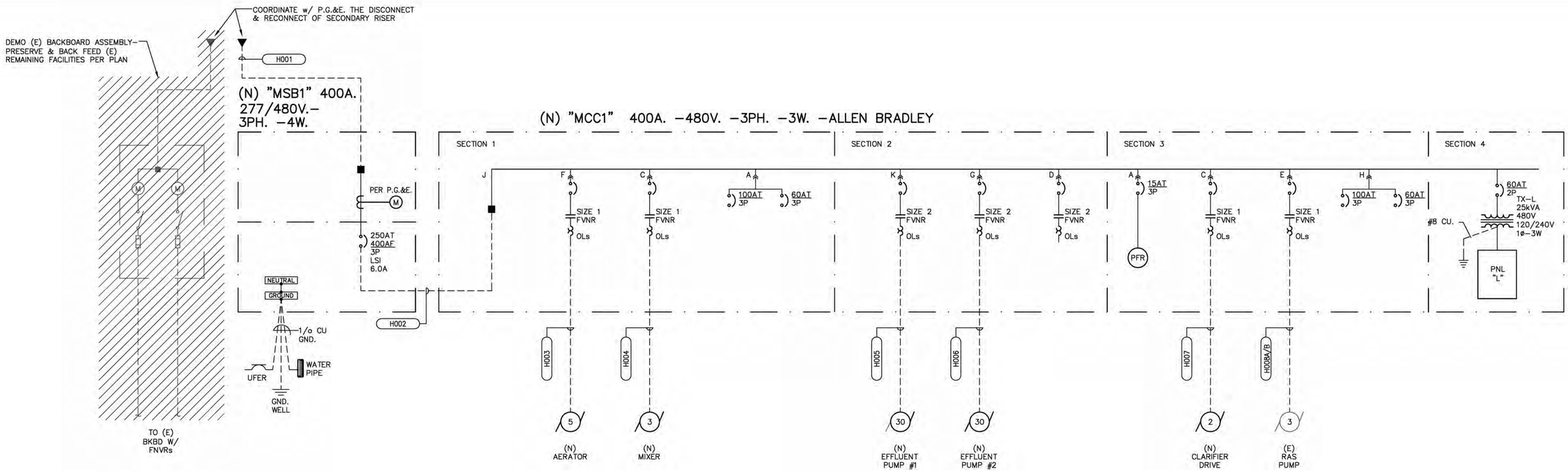
THE COUNTY OF FRESNO 1856

DEPARTMENT OF PUBLIC WORKS AND PLANNING

ELECTRICAL DETAILS

DRAWING NO. SHEET NO. E3.0 TOTAL 13

F:\16\607 FRESNO COUNTY WWD38 SKY HARBOR\ENGR\SHEETS\607_ELECT DETAILS-1.DWG KPezzoni 02/08/18 6:01:10 PM



1 SINGLE LINE DIAGRAM

SCALE: N.T.S.

PANELBOARD SCHEDULE

PANEL: L — **LOCATION:** MCC1
BUS RATING: 100 A. — **PHASE:** 1ø — **SCCR:** 10k — **NEMA TYPE:** 1
VOLTAGE: 120/240 V. — **WIRE:** 3 — **BUSSING:** Cu — **MOUNTING:** FLUSH

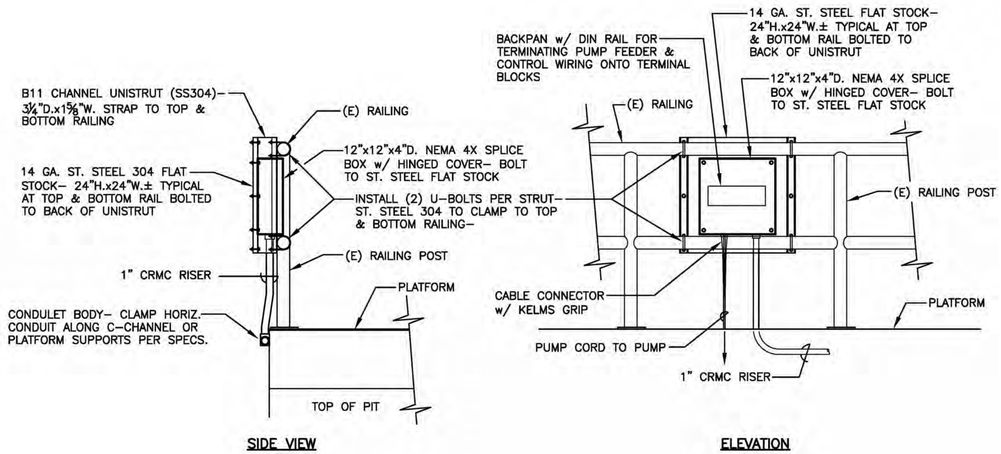
CKT	DESCRIPTION	BRKR	TYPE	LOAD	A (va)		B (va)	LOAD	TYPE	BRKR	DESCRIPTION	CKT
1	LTS –STANCHION	20/1		500	3500			3000		50/2	(E) LIFT STATION	2
3	LTS –STREET POLE	20/1		80			3080	3000		/		4
5	MCC –RECP	20/1		180	360			180		20/1	RECP –STORAGE BLDG	6
7	MCC –(F) PLC/SCADA	20/1					0			20/1	SPARE	8
9	MCC –HTR & LTS	20/1		800	800					20/1	SPARE	10
11	MCC –CONTROL	20/1		250			250			20/1	SPARE	12
13	SPARE	20/1			0					20/1	SPARE	14
15	SPARE	20/1					0			20/1	SPARE	16
17	SPARE	20/1			0					20/1	SPARE	18
19	SPARE	20/1					0			20/1	SPARE	20
21					0							22
23							0					24
					4680		3310					

CONTINUOUS (C):	9963 VA
NON–CONTINUOUS (N):	0 VA
RECEP. (R):	0 VA
MOTOR (M) OR (M1):	0 VA
LIGHTING (L):	0 VA
KITCHEN >1750W (K):	0 VA

MCB: 100/2
MLO: –

DEMAND CALC. PER ART 220

MAX. PHASE @125% =	48.5 A.
DEMAND TOTAL =	10.0 kVA
=	41.5 A.
@125% =	51.9 A.



2 PUMP TERMINAL BOX MOUNTED AT PLATFORM RAILING – TYPICAL

SCALE: N.T.S.

MILLER PEZZONI & ASSOCIATES, INC.
CONSULTING ELECTRICAL ENGINEERS
999 FIFTEENTH ST., STE 7
MODESTO, CA. 95354
PHONE (209) 575-0312
FAX (209) 575-0813
795 FOLSOM ST., 1ST FLOOR
SAN FRANCISCO, CA. 94107
PHONE (415) 652-6592

REGISTERED PROFESSIONAL ENGINEER — KEVIN L. PEZZONI — NO. 16286 — EXP. 12/19 — ELECTRICAL — STATE OF CALIFORNIA

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	DATE	100% SUBMITTAL	SCALE
DESIGNED: KLP	11-30-2016		AS SHOWN
DRAWN: CAL	11-30-2016		
CHECKED: KLP	11-10-2017		

FOR RIGHT OF WAY DATA AND ACCURATE ACCESS DETERMINATION, SEE DOCUMENTS IN THE DEPARTMENT OF PUBLIC WORKS AND PLANNING.

SUPERVISING ENGINEER — DATE

WASTEWATER TREATMENT FACILITY DESIGN
FRESNO COUNTY

ROAD NO. N/A — BRIDGE NO. N/A

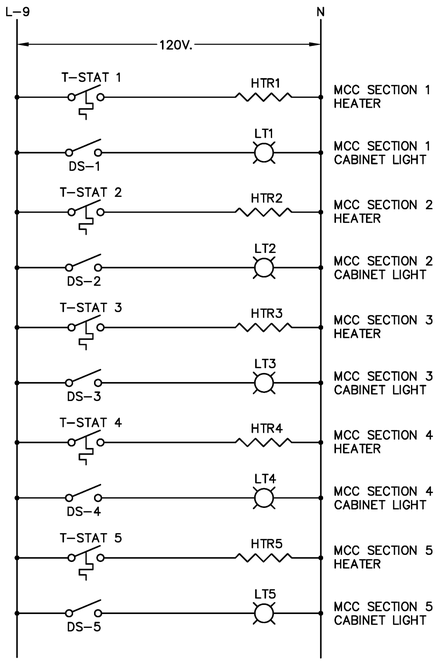
THE COUNTY OF FRESNO — 1856

DEPARTMENT OF PUBLIC WORKS AND PLANNING

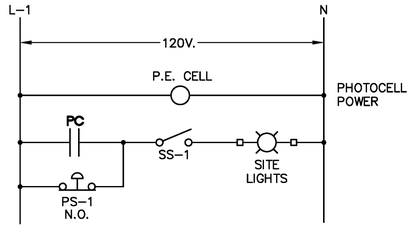
SINGLE LINE DIAGRAM

DRAWING NO. — SHEET NO. E4.0 — TOTAL 13

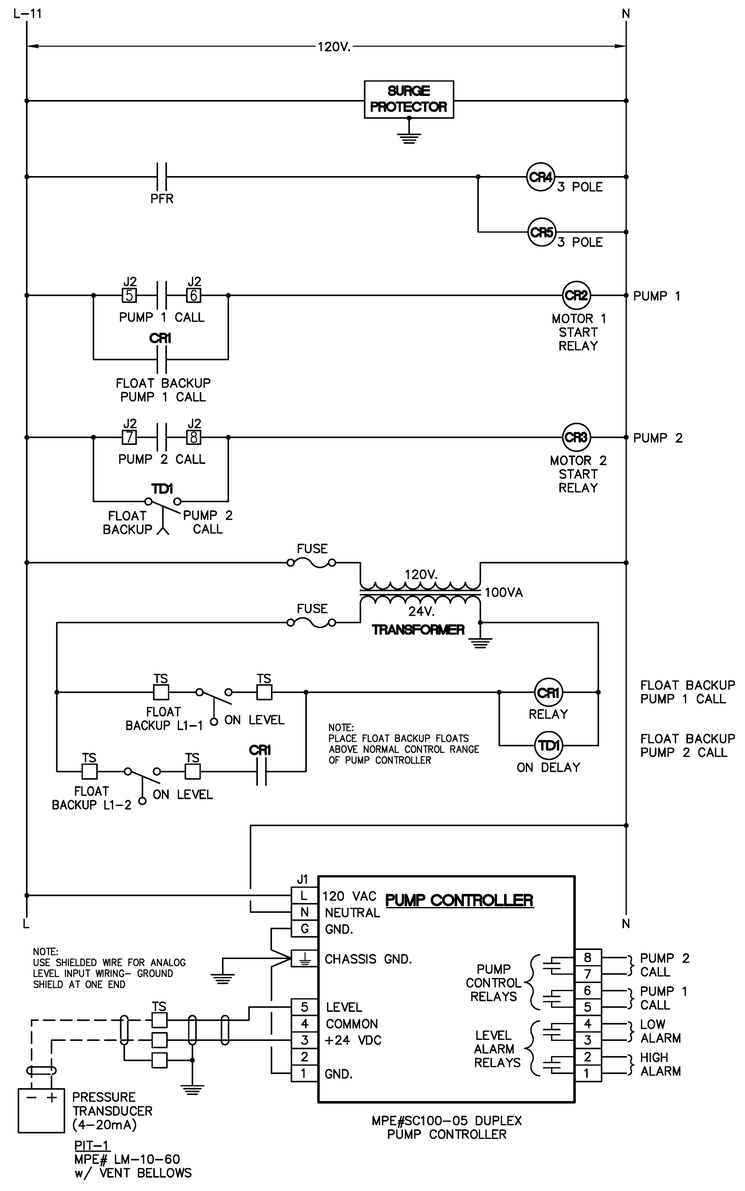
02/08/18 6:01:14 PM F:\16\607 FRESNO COUNTY WWD38 SKY HARBOR\ENGR\SHEETS\607_SLD.DWG KPezzoni



2 MCC LIGHTING & HEATER CONTROL DIAGRAM
SCALE: NONE



3 SITE LIGHTING CONTROL DIAGRAM
SCALE: NONE



1 EFFLUENT PUMP MASTER CONTROL DIAGRAM
SCALE: NONE

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FAX (209) 575-0813
795 FOLSOM ST., 1ST FLOOR
SAN FRANCISCO, CA. 94107
PHONE (415) 652-6592

REGISTERED PROFESSIONAL ENGINEER
KEVIN L. PEZZONI
NO. 16268
EXP. 12/19
ELECTRICAL
STATE OF CALIFORNIA
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	DATE	100% SUBMITTAL	SCALE
DESIGNED: KLP	11-30-2016		AS SHOWN
DRAWN: CAL	11-30-2016		
CHECKED: KLP	11-10-2017		

FOR RIGHT OF WAY DATA AND ACCURATE ACCESS DETERMINATION, SEE DOCUMENTS IN THE DEPARTMENT OF PUBLIC WORKS AND PLANNING.

SUPERVISING ENGINEER _____ DATE _____

WASTEWATER TREATMENT FACILITY DESIGN
FRESNO COUNTY

ROAD NO. N/A BRIDGE NO. N/A

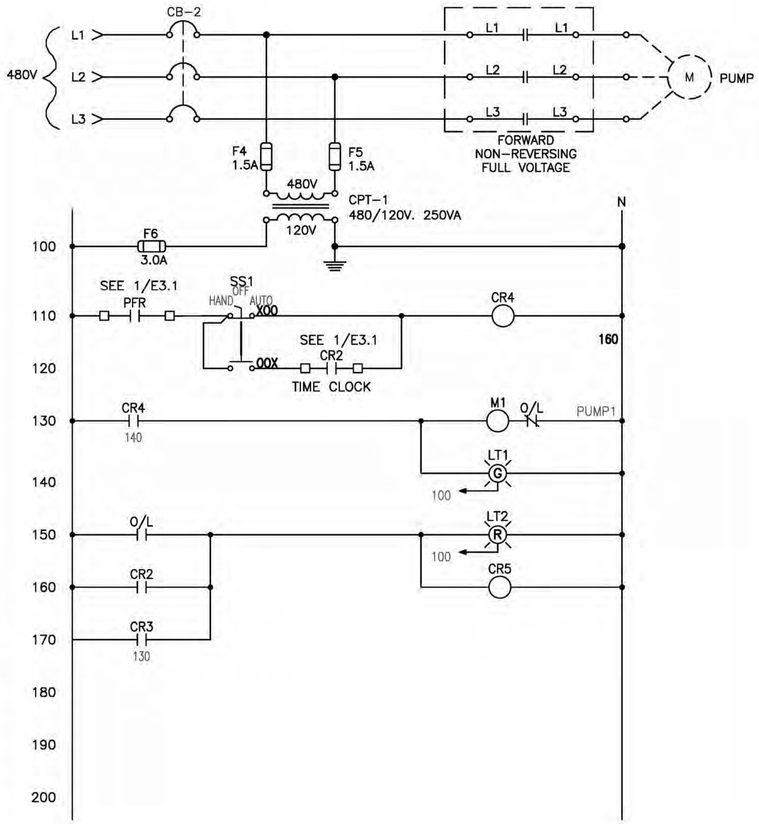
THE COUNTY OF FRESNO 1856

DEPARTMENT OF PUBLIC WORKS AND PLANNING

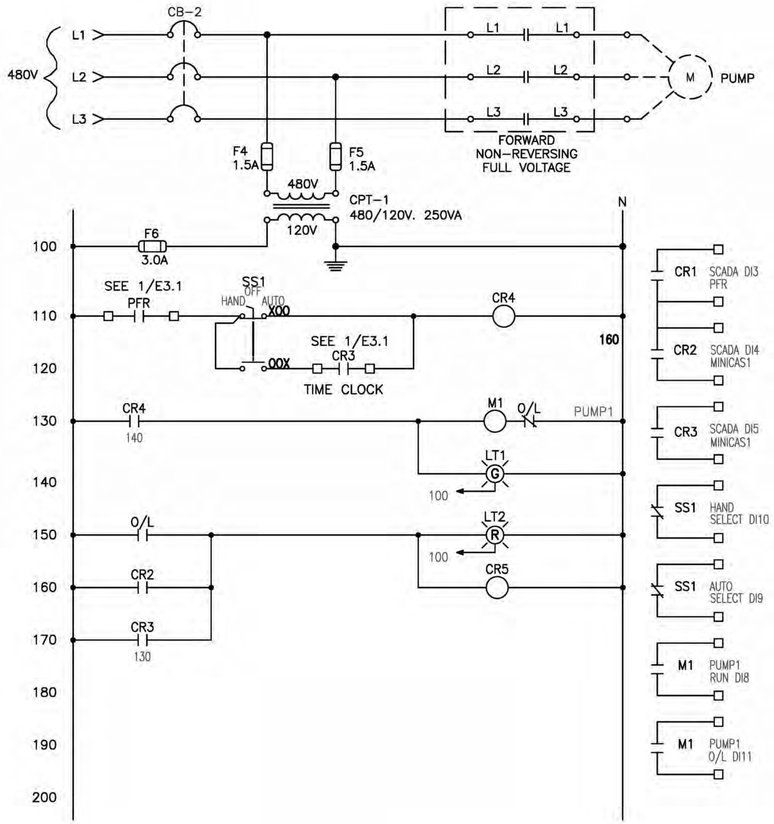
ELECTRICAL DIAGRAMS

DRAWING NO. SHEET NO. E4.1 TOTAL 13

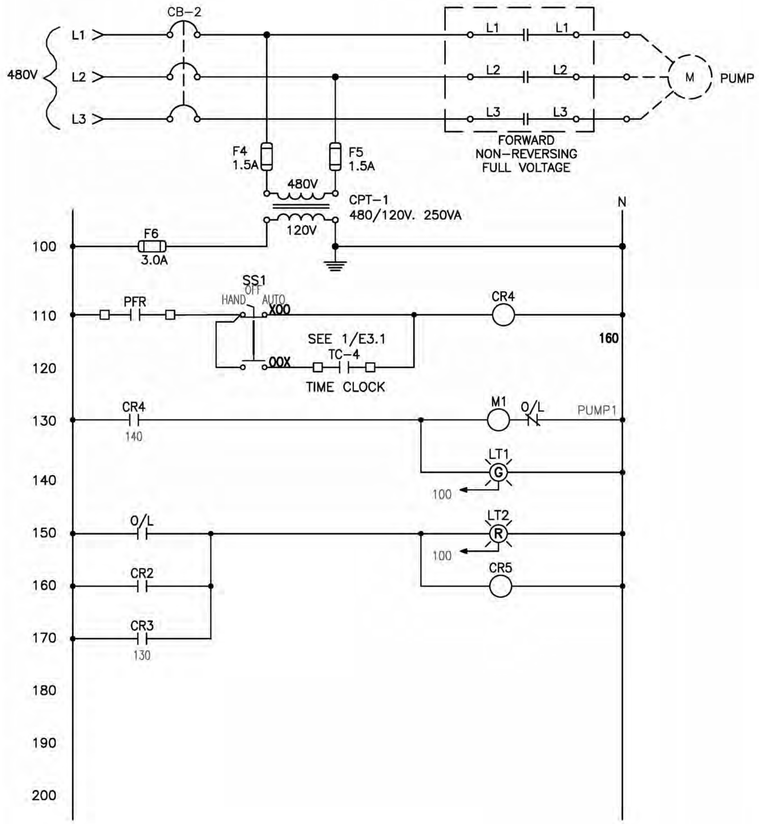
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1 **EFFLUENT PUMP #1 CONTROL DIAGRAM**
SCALE: NONE



2 **EFFLUENT PUMP #2 CONTROL DIAGRAM**
SCALE: NONE



3 **CLARIFIER CONTROL DIAGRAM**
SCALE: NONE

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FAX (209) 575-0813
795 FOLSOM ST., 1ST FLOOR
SAN FRANCISCO, CA. 94107
PHONE (415) 652-6592

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REGISTERED PROFESSIONAL ENGINEER
KEVIN L. PEZZONI
NO. 16266
EXP. 12/18
ELECTRICAL
STATE OF CALIFORNIA

	DATE	100% SUBMITTAL		SCALE
DESIGNED: KLP	11-30-2016			AS SHOWN
DRAWN: CAL	11-30-2016			
CHECKED: KLP	11-10-2017			

FOR RIGHT OF WAY DATA AND ACCURATE ACCESS DETERMINATION, SEE DOCUMENTS IN THE DEPARTMENT OF PUBLIC WORKS AND PLANNING.

SUPERVISING ENGINEER _____ DATE _____

WASTEWATER TREATMENT FACILITY DESIGN
FRESNO COUNTY

ROAD NO. N/A BRIDGE NO. N/A

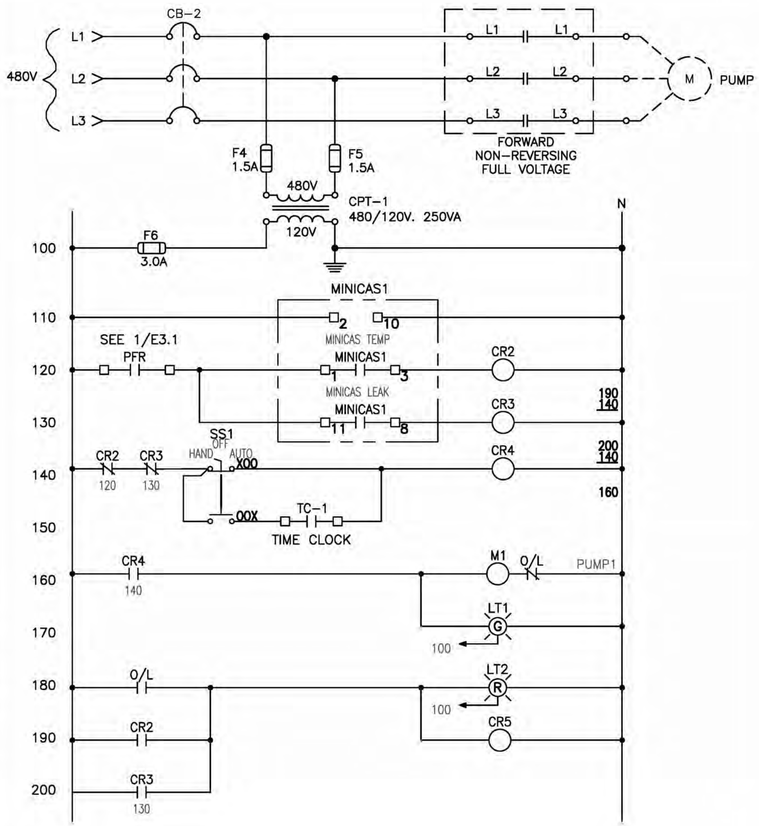
THE COUNTY OF FRESNO 1856

DEPARTMENT OF PUBLIC WORKS AND PLANNING

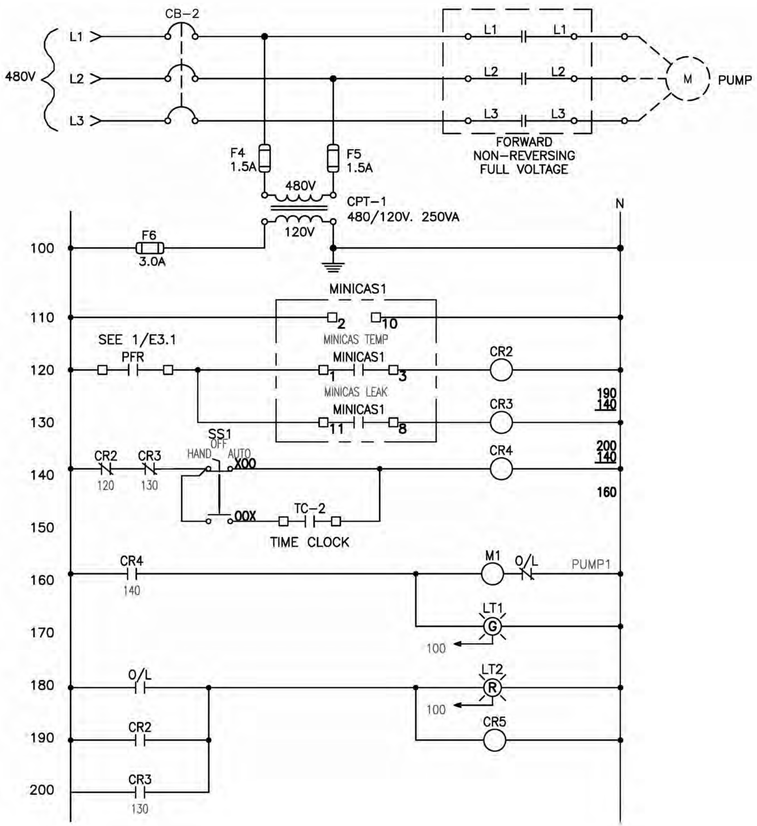
ELECTRICAL DIAGRAMS

DRAWING NO. SHEET NO. E4.2 TOTAL 13

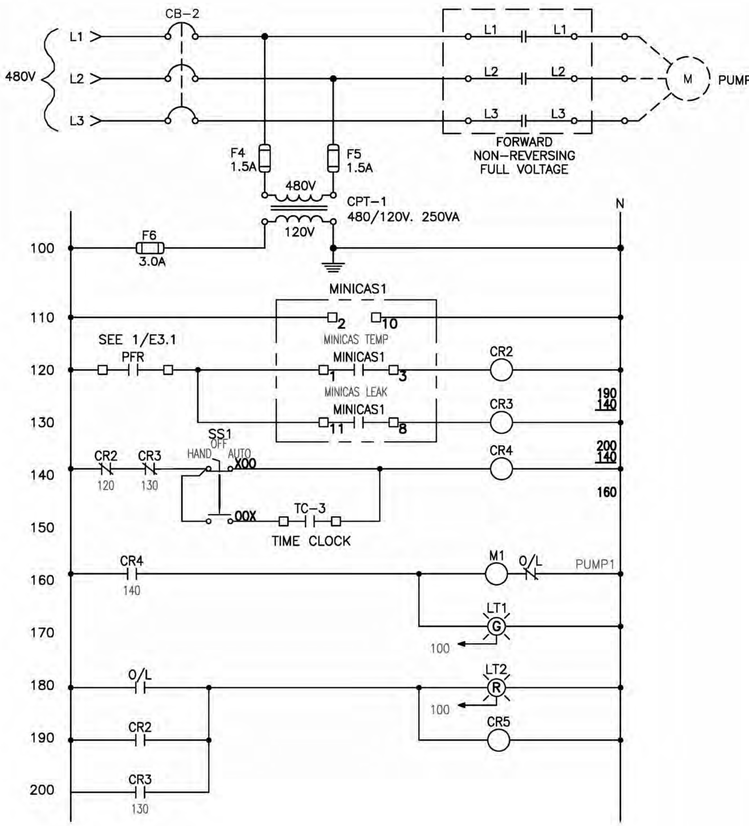
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1 **RAS PUMP CONTROL DIAGRAM**
SCALE: NONE



2 **MIXER CONTROL DIAGRAM**
SCALE: NONE



3 **AERATOR CONTROL DIAGRAM**
SCALE: NONE

MILLER PEZZONI & ASSOCIATES, INC.
CONSULTING ELECTRICAL ENGINEERS
999 FIFTEENTH ST., STE 7
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FAX (209) 575-0613
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REGISTERED PROFESSIONAL ENGINEER
KEVIN L. PEZZONI
NO. 16286
EXP. 12/19
ELECTRICAL
STATE OF CALIFORNIA

	DATE	100% SUBMITTAL		SCALE
DESIGNED: KLP	11-30-2016			AS SHOWN
DRAWN: CAL	11-30-2016			
CHECKED: KLP	11-10-2017			

FOR RIGHT OF WAY DATA AND ACCURATE ACCESS DETERMINATION, SEE DOCUMENTS IN THE DEPARTMENT OF PUBLIC WORKS AND PLANNING.

SUPERVISING ENGINEER _____ DATE _____

WASTEWATER TREATMENT FACILITY DESIGN
FRESNO COUNTY

ROAD NO. N/A BRIDGE NO. N/A

THE COUNTY OF FRESNO

DEPARTMENT OF PUBLIC WORKS AND PLANNING

ELECTRICAL DIAGRAMS

DRAWING NO. SHEET NO. E4.3 TOTAL 13

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W.M. Lyles. Co.
Proposal

BID BOOK

Waterworks District 38
Wastewater Treatment Facility Improvements

CLEAN WATER STATE REVOLVING FUND PROJECT NUMBER: C-06-7109-110

BUDGET / ACCOUNT: 0890 / 8400

Department of Public Works and Planning

CONTRACT NUMBER: 18-08-C
COPY NUMBER:

BID BOOK TABLE OF CONTENTS

Waterworks District 38
Wastewater Treatment Facility Improvements

CONTRACT NUMBER: 18-08-C

PROPOSAL NUMBER	TITLE
NOT APPLICABLE	INSTRUCTIONS FOR COMPLETING THE BID BOOK
1	PROPOSAL TO THE BOARD OF SUPERVISORS OF THE COUNTY OF FRESNO
2	BID ITEM LIST/BID SHEET
3	EVALUATION OF BID PROPOSAL SHEETS
4	BID SECURITY
5	NONCOLLUSION AFFIDAVIT
6	PUBLIC CONTRACT CODE SECTION 10285.1 STATEMENT
7	PUBLIC CONTRACT CODE SECTION 10162 QUESTIONNAIRE AND PUBLIC CONTRACT CODE 10232 STATEMENT
8(A) – 8(D)	SUBCONTRACTORS
9	CERTIFICATION WITH REGARD TO THE PERFORMANCE OF PREVIOUS CONTRACTS OR SUBCONTRACTS SUBJECT TO THE EQUAL OPPORTUNITY CLAUSE AND THE FILING OF REQUIRED REPORTS
10	TITLE 40, CODE OF FEDERAL REGULATIONS, PART 32 DEBARMENT AND SUSPENSION CERTIFICATION
11	NONLOBBYING CERTIFICATION FOR FEDERAL-AID CONTRACTS
12(A) – 12(B)	DISCLOSURE OF LOBBYING ACTIVITIES
13(A) – 13(B)	EXHIBIT 15-G LOCAL AGENCY BIDDER DBE COMMITMENT (CONSTRUCTION CONTRACTS)
14(A) – 14(C)	EXHIBIT 15-H DBE INFORMATION — GOOD FAITH EFFORTS
15	OPT OUT OF PAYMENT ADJUSTMENTS FOR PRICE INDEX FLUCTUATIONS
16	GUARANTY
17	GUIDELINES FOR MEETING THE CALIFORNIA STATE REVOLVING FUND PROGRAMS DISADVANTAGED BUSINESS ENTERPRISE REQUIREMENTS

INSTRUCTIONS FOR COMPLETING THE BID BOOK FOR FEDERAL AID PROJECTS

General

Complete forms in the *Bid* book.

Submit your bid:

1. Under sealed cover
2. Marked as a bid
3. Identifying the contract number and the bid opening date

Certain bid forms must be submitted with the bid and properly executed.

Certain other forms and information must be submitted either with the bid or within the prescribed period after bid opening as specified elsewhere in these special provisions.

Failure to submit the forms and information as specified results in a nonresponsive bid.

If an agent other than the authorized corporation officer or a partnership member signs the bid, file a Power of Attorney with the Department either before opening bids or with the bid. Otherwise, the bid may be nonresponsive.

Bid Item List and Bid Comparison

Submit a bid based on the bid item quantities the Department shows on the Bid Item List. Bids will be evaluated and the low bidder determined as indicated in the *Notice to Bidders*.

Bid Document Completion

Proposal sheets are identified by title and by the letter "P" followed by the number assigned to the proposal sheet in question. Proposal sheets are included in the *Bid Book*.

Proposal 1 - Proposal to the Board of Supervisors of Fresno County

Provided for information.

Proposal 2 - Bid Proposal Sheet

One or more sheet(s) upon which the bidder completes the bid.

Fill out completely including a unit price and total for each unit price-based item and a total for each lump sum item.

Do not make any additions such as "plus tax", "plus freight", or conditions such as "less 2% if paid by 15th".

Use ink or typewriter.

Proposal 3 - Evaluation of Bid Proposal Sheet

Describes how inconsistences and irregularities are evaluated and corrected when Design Services reviews the Bid Item List.

Proposal 4 - Bid Security and Signature

Submit one of the following forms of bidder's security equal to at least 10 percent of the bid:

- Cash
- Cashier's check
- Certified check
- Signed bidder's bond by an admitted surety insurer

Indicate type of bid security provided.

- Cash – Acceptable but not recommended. Cash is deposited in a clearing account and is returned to bidders by County warrant. This process may take several weeks.
- Cashier's or Certified Checks. This type of security is held until the bid is no longer under consideration. If submitted by a potential awardee, they will be returned when the contract is fully executed by the bidder and bonds and insurance have been approved.
- Bid Bonds - Must be signed by the bidder and by the attorney-in-fact for the bonding company. Provide notarized signature of attorney-in-fact accompanied by bonding company's affidavit authorizing attorney-in-fact to execute bonds. An unsigned bid bond will be cause for rejection.

Acknowledge Addenda

Provide contractor's license information.

State business name and if business is a:

- Corporation - list officers
- Partnership - list partners
- Joint Venture - list members; if members are corporations or partnerships, list their officers or partners.
- Individual - list Owner's name and firm name style

Signature of Bidder - the following lists types of companies and corresponding authorized signers.

- Corporation - by an officer
- Partnership - by a partner
- Joint Venture - by a member
- Individual - by the Owner

If signature is by a Branch Manager, Estimator, Agent, etc., the bid must be accompanied by a power of attorney authorizing the individual to sign the bid in question or to sign bids more generally, otherwise the bid may be rejected.

- Business Address - Firm's Street Address
- Mailing Address - P.O. Box or Street Address
- Complete, sign, and return with bid.

Proposal 5 - Noncollusion Affidavit

Must be completed, signed, and returned with bid.

Proposal 6 - Public Contract Code Section 10285.1 Statement

Check "has" or "has not" in accordance with instructions on form, return with completed for with bid. Note that signing the bid constitutes signing this statement.

Proposal 7 - Public Contract Code Section 10162 Questionnaire And Public Contract Code 10232 Statement

Check: "yes" or "no" accordance with instructions on form, include explanation if "yes" is checked. Return completed form with bid. Note that signing the bid constitutes signing this questionnaire and statement.

Proposal 8(a) through Proposal 8(f) - Subcontractors

Sheet(s) upon which bidders list subcontractors. List each subcontractor to perform work in an amount in excess of 1/2 of 1 percent of the total bid or $10,000, whichever is greater (Pub Cont Code § 4100 et seq.).

The *Subcontractor List* submitted with the bid must show the name, location of business, work portions to be performed, and the contractor's license number for each subcontractor listed.

- Use subcontractor's business name style as registered with the License Board.
- Specify the city in which the subcontractor's business is located and the state if other than California.

- Description of the work to be performed by the subcontractor. Indicate with bid item numbers from the bid sheet and/or work descriptions similar to those on bid sheet.
- List license number for each subcontractror.

Upon request from Design Services, provide the following additional information within 24 hours of bid opening if not included on the *Subcontractor List* submitted with the bid:

- Complete physical address for each subcontractor listed.
- Percentage of the total bid or dollar amount associated with each subcontractor listed.
- Department of Industrial Relations registration number

Proposal 9 - *Certification With Regard To The Performance Of Previous Contracts Or Subcontracts Subject To The Equal Opportunity Clause And The Filing Of Required Reports*

For a Federal-aid contract, complete, sign, and return with bid.

Proposal 10 - *Title 49, Code Of Federal Regulations, Part 29 Debarment And Suspension Certification*

For a Federal-aid contract, complete, sign, and return with bid.

Proposal 11 - *Nonlobbying Certification For Federal-Aid Contracts*

For a Federal-aid contract, complete, sign, and return with bid.

Proposal 12(a) through Proposal 12(b) - *Disclosure Of Lobbying Activities*

For a Federal-aid contract, complete, sign, and return with bid.

Proposal 13 - *Not used*

Proposal 14(a) through propsoal 14(c) - *Exhibit 15-H DBE Information — Good Faith Efforts*

For a Federal-aid contract, the apparent low, second-low, and third-low bidders must complete and submit so that it is received by Design Services no later than 4:00 PM on the fourth business day after the bid opening if not submitted with the bid.

Proposal 15 - *Not used*

Proposal 16 - *Guaranty*

Does not need to be signed with the bid. Part of the contract which must be signed by the contractor when contract is executed.

Proposal 17 - Guidelines for Meeting the California State Revolving Fund Programs Disadvantaged Business Enterprise Requirements

Instructions and Forms required by the Federal and State agencies financing the project, together with instructions for their completion. To be completed and submitted per the instructions.

PROPOSAL TO THE BOARD OF SUPERVISORS OF THE COUNTY OF FRESNO

hereinafter called the Owner

WATERWORKS DISTRICT 38
Wastewater Treatment Facility Improvements

Clean Water State Revolving Fund
Project No. C-06-7109-110

The work embraced herein shall be done in accordance with the 2006 Standard Specifications and with the 2006 Standard Plans, of the State of California, Department of Transportation insofar as the same may apply and in accordance with these special provisions.

Except to the extent that they may conflict with these special provisions, revised Standard Specifications apply to the extent included in the section entitled "Project Details" of the book entitled "Specifications."

The work to be done is shown on a set of Plans, Department File No. 11267, entitled: "WATERWORKS DISTRICT 38 – SKY HARBOR-MILLERTON LAKE WASTEWATER TREATMENT FACILTY IMPROVEMENTS."

The undersigned, as bidder, declares that the only persons, or parties interested in this proposal as principals are those named herein, that this proposal is made without collusion with any other person, firm or corporation; that he has carefully examined the location of the proposed work, the annexed proposed form of contract, and the plans therein referred to; and he proposes and agrees if this proposal is accepted, that he will contract with the Owner to provide all necessary machinery, tools, apparatus and other means of construction, and to do all the work and furnish all the materials specified in the contract in the manner and time therein prescribed, and according to the requirements of the Engineer as therein set forth, and that he will take in full payment therefor the following unit prices, to-wit:

W.M. Lyles Co.
#1-low bidder

COUNTY OF FRESNO
DEPARTMENT OF PUBLIC WORKS AND PLANNING
PROJECT: WWD 38 - WASTEWATER TREATMENT FACILITY IMPROVEMENTS
CWSRF PROJECT NUMBER: C-06-7109-110

ITEM No.	QUANTITY	F/P/S	UNIT OF	ITEM	ITEM PRICE	TOTAL PRICE
1	1		EA	CONSTRUCTION PROJECT INFORMATION SIGN	2,050.00	2,050.00
2	1		LS	PREPARE WATER POLLUTION CONTROL PROGRAM	LS	1,080.00
3	1		LS	WATER POLLUTION CONTROL	LS	6,950.00
4	1		LS	CONSTRUCTION SITE MANAGEMENT	LS	21,690.00
5	1	S	LS	TRAFFIC CONTROL SYSTEM	LS	2,160.00
6	1		LS	CLEARING AND GRUBBING	LS	3,170.00
7	1		LS	MOBILIZATION	LS	16,200.00
8	1		LS	MISCELLANEOUS FACILITIES AND OPERATIONS	LS	21,530.00
9	1		LS	SUBMERSIBLE JET AERATOR	LS	20,900.00
10	1		LS	SUBMERSIBLE MIXER	LS	30,680.00
11	1		LS	CHAIN AND SCRAPER SLUDGE COLLECTOR UNIT	LS	127,390.00
12	1		LS	EFFLUENT PUMPS	LS	80,630.00
13	1		LS	AERATION BASIN EQUIPMENT REMOVAL AND CLEANING	LS	18,110.00
14	60		LF	CRACK REPAIR UNIT COST	160.00	9,600.00
15	1		LS	SEPTIC WASTE REMOVAL	LS	28,080.00
16	1	S	LS	ELECTRICAL	LS	223,280.00
17	1		LS	FINISH PROJECT SITE	LS	3,570.00
TOTAL						617,070.00

EVALUATION OF BID PROPOSAL SHEETS

Abbreviations used in the bid proposal sheet are identified in Section 1-1.06, "Abbreviations," of these special provisions.

Bids are required for the entire work. Bids will be compared on the basis indicated in the Notice to Bidders. The bidder shall set forth for each unit basis item of work a unit price and a total for the item, and for each lump sum item a total for the item, all in clearly legible figures in the respective spaces provided for that purpose. In the case of unit basis items, the amount set forth under the "Item Total" column shall be the product of the unit price bid and the estimated quantity for the item.

In case of discrepancy between the unit price and the total set forth for a unit basis item, the unit price shall prevail, except as provided in (a) or (b), as follows:

(a) If the amount set forth as a unit price is unreadable or otherwise unclear, or is omitted, or is the same as the amount as the entry in the item total column, then the amount set forth in the item total column for the item shall prevail and shall be divided by the estimated quantity for the item and the price thus obtained shall be the unit price;

(b) (Decimal Errors) If the product of the entered unit price and the estimated quantity is exactly off by a factor of ten, one hundred, etc., or one-tenth, or one-hundredth, etc. from the entered total, the discrepancy will be resolved by using the entered unit price or item total, whichever most closely approximates percentage-wise the unit price or item total in the Owner's Final Estimate of cost.

If both the unit price and the item total are unreadable or otherwise unclear, or are omitted, the bid may be deemed irregular. Likewise if the item total for a lump sum item is unreadable or otherwise unclear, or is omitted, the bid may be deemed irregular unless the project being bid has only a single item and a clear, readable total bid is provided.

Symbols such as commas and dollar signs will be ignored and have no mathematical significance in establishing any unit price or item total or lump sums. Written unit prices, item totals and lump sums will be interpreted according to the number of digits and, if applicable, decimal placement. Cents symbols also have no significance in establishing any unit price or item total since all figures are assumed to be expressed in dollars and/or decimal fractions of a dollar. Bids on lump sum items shall be item totals only; if any unit price for a lump sum item is included in a bid and it differs from the item total, the items total shall prevail.

The foregoing provisions for the resolution of specific irregularities cannot be so comprehensive as to cover every omission, inconsistency, error or other irregularity which may occur in a bid. Any situation not specifically provided for will be determined in the discretion of the Owner , and that discretion will be exercised in the manner deemed by the Owner to best protect the public interest in the prompt and economical completion of the work. The decision of the Owner respecting the amount of a bid, or the existence or treatment of an irregularity in a bid, shall be final.

If this proposal shall be accepted and the undersigned shall fail to contract, as aforesaid, and to give the two bonds in the sums to be determined as aforesaid, with surety satisfactory to the Owner, within eight (8) days not including Saturdays, Sundays and legal holidays, after the bidder has received notice of award of the contract, the Owner, at its option, may determine that the bidder has abandoned the contract, and thereupon this proposal and the acceptance thereof shall be null and void, and the forfeiture of such security accompanying this proposal shall operate and the same shall be the property of the Owner.

Accompanying this proposal is security (check one only) in amount equal to at least ten percent (10%) of the total amount of the bid:

Bid Bond (X); Certified Check ( ); Cashier's Check ( ); Cash ($)

Bidder has and acknowledges the following addenda: 1, 2

The names of all persons interested in the foregoing proposal as principals are as follows:

IMPORTANT NOTICE: If bidder or other interested person is a corporation, state legal name of corporation, also names of the president, secretary, treasurer and manager thereof; if a co-partnership, state true name of firm, also names of all individual co-partners composing firm; if bidder or other interested person is an individual, state first and last name in full.

FIRM NAME W. M. Lyles Co., a California Corporation

David B. Dawson - President/Treasurer/Manager

Kevin R. Shigematsu - Asst. Vice President

Ruben Moreno, Jr. - Secretary

Licensed in accordance with an act providing for the registration of Contractors,
Class A, B License No. 422390 Expires 5/31/2020

(Furnishing Contractor License information as part of this proposal is optional and is requested to facilitate verification of licensure)

W. M. Lyles Co.

Signature of Bidder — Dated 8/1/18

Kevin R. Shigematsu, Asst. Vice President

NOTE: If bidder is a corporation, the legal name of the corporation shall be set forth above together with the signature of the officer or officers authorized to sign contracts on behalf of the corporation; if bidder is a co-partnership, the true name of the firm shall be set forth above together with the signature of the partner or partners authorized to sign contracts on behalf of the co-partnership; and if bidder is an individual, his signature shall be placed above. If signature is by an agent, other than an officer of a corporation or a member of a partnership, a Power of Attorney must be on file with the Owner prior to opening bids or submitted with the bid; otherwise, the bid will be disregarded as irregular and unauthorized.

BUSINESS ADDRESS: 1210 W. Olive Avenue, Fresno, CA 93728
Zip Code

MAILING ADDRESS: P.O. Box 4377, Fresno, CA 93744
Zip Code

BUSINESS PHONE: (559) 441-1900 FAX NUMBER: (559) 487-7949

EMAIL ADDRESS kshigematsu@wmlylesco.com

Proposal 4
Contract Number 18-08-C

CWSRF PROJECT NUMBER C-06-7109-110

To the Board of Supervisors, County of Fresno:

NONCOLLUSION AFFIDAVIT

TO BE EXECUTED BY BIDDER AND SUBMITTED WITH BID *

Kevin R. Shigematsu
(Printed or Typed Name)

being first duly sworn, deposes and says that he or she is

Asst. Vice President
(Owner, Partner, Corporate Officer (list title), Co-Venturer)

of W. M. Lyles Co.
(Bidding Entity)

In accordance with Title 23 United States Code Section 112 and Public Contract Code 7106 the bidder declares that the bid is not made in the interest of, or on behalf of, any undisclosed person, partnership, company, association, organization, or corporation; that the bid is genuine and not collusive or sham; that the bidder has not directly or indirectly induced or solicited any other bidder to put in a false or sham bid, and has not directly or indirectly colluded, conspired, connived, or agreed with any bidder or anyone else to put in a sham bid, or that anyone shall refrain from bidding; that the bidder has not in any manner, directly or indirectly, sought by agreement, communication, or conference with anyone to fix the bid price of the bidder or any other bidder, or to fix any overhead, profit, or cost element of the bid price, or of that of any other bidder, or to secure any advantage against the public body awarding the contract of anyone interested in the proposed contract; that all statements contained in the bid are true; and, further, that the bidder has not, directly or indirectly, submitted his or her bid price or any breakdown thereof, or the contents thereof, or divulged information or data relative thereto, or paid, and will not pay, any fee to any corporation, partnership, company association, organization, bid depository, or to any member or agent thereof to effectuate a collusive or sham bid.

(Signature) Kevin R. Shigematsu, Asst. Vice President

8/1/18
(Dated)

(Title 23 United States Code Section 112)

(Calif Public Contract Code Section 7106; Stats.1988, c. 1548, Section 1.)

* NOTE: Completing, signing, and returning the Noncollusion Affidavit is a required part of the Proposal. Bidders are cautioned that making a false certification may subject the certifier to criminal prosecution.

Proposal 5
Contract Number 18-08-C

CALIFORNIA JURAT WITH AFFIANT STATEMENT **GOVERNMENT CODE § 8202**

☒ See Attached Document (Notary to cross out lines 1–6 below)
☐ See Statement Below (Lines 1–6 to be completed only by document signer[s], *not* Notary)

1
2
3
4
5
6

Signature of Document Signer No. 1 *Signature of Document Signer No. 2 (if any)*

A notary public or other officer completing this certificate verifies only the identity of the individual who signed the document to which this certificate is attached, and not the truthfulness, accuracy, or validity of that document.

State of California
County of Kern

Subscribed and sworn to (or affirmed) before me on this 1st day of August, 2018,
Date *Month* *Year*
by
(1) Kevin R. Shigematsu
~~(and (2)~~),
Name(s) of Signer(s)

proved to me on the basis of satisfactory evidence to be the person(s) who appeared before me.

CHANEL L.A. PRINCE
Commission # 2081062
Notary Public - California
Kern County
My Comm. Expires Sep 8, 2018

Signature Chanel Prince
Signature of Notary Public

Seal
Place Notary Seal Above

OPTIONAL

Though this section is optional, completing this information can deter alteration of the document or fraudulent reattachment of this form to an unintended document.

Description of Attached Document
Title or Type of Document: Non-Collusion Affidavit / Declaration: The County of Fresno - Department of Public Works & Planning: Waterworks District 38 Wastewater Treatment Facility Improvements **Document Date:** 08/01/18
Number of Pages: One **Signer(s) Other Than Named Above:** None

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PUBLIC CONTRACT CODE

Public Contract Code Section 10285.1 Statement

In conformance with Public Contract Code Section 10285.1 (Chapter 376, Stats. 1985), the bidder hereby declares under penalty of perjury under the laws of the State of California that the bidder has ___ , has not X___been convicted within the preceding three years of any offenses referred to in that section, including any charge of fraud, bribery, collusion, conspiracy, or any other act in violation of any state or Federal antitrust law in connection with the bidding upon, award of, or performance of, any public works contract, as defined in Public Contract Code Section 1101, with any public entity, as defined in Public Contract Code Section 1100, including the Regents of the University of California or the Trustees of the California State University. The term "bidder" is understood to include any partner, member, officer, director, responsible managing officer, or responsible managing employee thereof, as referred to in Section 10285.1.

Note: The bidder must place a check mark after "has" or "has not" in one of the blank spaces provided. The above Statement is part of the Bid. Signing this Bid on the signature portion thereof shall also constitute signature of this Statement. Bidders are cautioned that making a false certification may subject the certifier to criminal prosecution.

Public Contract Code Section 10162 Questionnaire

In conformance with Public Contract Code Section 10162, the Bidder shall complete, under penalty of perjury, the following questionnaire:

Has the bidder, any officer of the bidder, or any employee of the bidder who has a proprietary interest in the bidder, ever been disqualified, removed, or otherwise prevented from bidding on, or completing a federal, state, or local government project because of a violation of law or a safety regulation?

Yes _____ No X

If the answer is yes, explain the circumstances in the following space.

Public Contract Code 10232 Statement

In conformance with Public Contract Code Section 10232, the Contractor, hereby states under penalty of perjury, that no more than one final unappealable finding of contempt of court by a federal court has been issued against the Contractor within the immediately preceding two year period because of the Contractor's failure to comply with an order of a federal court which orders the Contractor to comply with an order of the National Labor Relations Board.

Note: The above Statement and Questionnaire are part of the Bid. Signing this Bid on the signature portion thereof shall also constitute signature of this Statement and Questionnaire.

Bidders are cautioned that making a false certification may subject the certifier to criminal prosecution.

BIDDER: W. M. Lyles Co.

SUBCONTRACTORS:

The following named subcontractor(s) will perform with labor, or otherwise render services to the general contractor in or about the construction of the work or improvement. Please fill out as completely as possible when submitting your bid. Use subcontractor's business name style as registered with the License Board. Submission of subcontractor's name, location of business and description of work, and their contractor's license number is REQUIRED, by Section 4104 of the California Public Contract Code, to be submitted prior to bid opening. (The "location of business" must specify the city in which the subcontractor's business is located, and the state if other than California.) All other requested information shall be submitted, either with the bid or within 24 hours after bid opening.

Please fill out as completely as possible when submitting your bid. Use subcontractor's business name style as registered with the License Board.

FAILURE TO LIST SUBCONTRACTORS AS DIRECTED MAY RENDER THE BID NON-RESPONSIVE, OR MAY RESULT IN ASSESSMENT OF A PENALTY AGAINST THE BIDDER IN ACCORDANCE WITH SECTION 4110 OF THE CALIFORNIA PUBLIC CONTRACT CODE.

SUBCONTRACTOR: A-C Electric

Business Address: 2560 S. East Ave., Fresno, CA 93706

Class C 10 License No. 99849 DIR Registration No. 1000000365

Item No. or Description of Work: Electrical

Dollar Amount or Percentage of Total Bid 30%

Email Address mikewolfe@a-celectric.com

SUBCONTRACTOR: _____

Business Address: _____

Class _____ License No. _____ DIR Registration No. _____

Item No. or Description of Work: _____

Dollar Amount or Percentage of Total Bid _____

Email Address _____

BIDDER: W. M. Lyles Co.

SUBCONTRACTOR: _____

Business Address: _____

Class _____ License No. _____ DIR Registration No. _____

Item No. or Description of Work: _____

Dollar Amount or Percentage of Total Bid _____

Email Address _____

SUBCONTRACTOR: _____

Business Address: _____

Class _____ License No. _____ DIR Registration No. _____

Item No. or Description of Work: _____

Dollar Amount or Percentage of Total Bid _____

Email Address _____

SUBCONTRACTOR: _____

Business Address: _____

Class _____ License No. _____ DIR Registration No. _____

Item No. or Description of Work: _____

Dollar Amount or Percentage of Total Bid _____

Email Address _____

SUBCONTRACTOR: _____

Business Address: _____

Class _____ License No. _____ DIR Registration No. _____

Item No. or Description of Work: _____

Dollar Amount or Percentage of Total Bid _____

Email Address _____

BIDDER: W. M. Lyles Co.

SUBCONTRACTOR: _____

Business Address: _____

Class _____ License No. _____ DIR Registration No. _____

Item No. or Description of Work: _____

Dollar Amount or Percentage of Total Bid _____

Email Address _____

SUBCONTRACTOR: _____

Business Address: _____

Class _____ License No. _____ DIR Registration No. _____

Item No. or Description of Work: _____

Dollar Amount or Percentage of Total Bid _____

Email Address _____

SUBCONTRACTOR: _____

Business Address: _____

Class _____ License No. _____ DIR Registration No. _____

Item No. or Description of Work: _____

Dollar Amount or Percentage of Total Bid _____

Email Address _____

SUBCONTRACTOR: _____

Business Address: _____

Class _____ License No. _____ DIR Registration No. _____

Item No. or Description of Work: _____

Dollar Amount or Percentage of Total Bid _____

Email Address _____

SUBCONTRACTOR: _____

Business Address: _____

Class _____ License No. _____ DIR Registration No. _____

Item No. or Description of Work: _____

Dollar Amount or Percentage of Total Bid _____

Email Address _____

BIDDER: W. M. Lyles Co.

SUBCONTRACTOR: _____

Business Address: _____

Class _____ License No. _____ DIR Registration No. _____

Item No. or Description of Work: _____

Dollar Amount or Percentage of Total Bid _____

Email Address _____

SUBCONTRACTOR: _____

Business Address: _____

Class _____ License No. _____ DIR Registration No. _____

Item No. or Description of Work: _____

Dollar Amount or Percentage of Total Bid _____

Email Address _____

SUBCONTRACTOR: _____

Business Address: _____

Class _____ License No. _____ DIR Registration No. _____

Item No. or Description of Work: _____

Dollar Amount or Percentage of Total Bid _____

Email Address _____

SUBCONTRACTOR: _____

Business Address: _____

Class _____ License No. _____ DIR Registration No. _____

Item No. or Description of Work: _____

Dollar Amount or Percentage of Total Bid _____

Email Address _____

SUBCONTRACTOR: _____

Business Address: _____

Class _____ License No. _____ DIR Registration No. _____

Item No. or Description of Work: _____

Dollar Amount or Percentage of Total Bid _____

Email Address _____

BIDDER: W. M. Lyles Co.

SUBCONTRACTOR: _____

Business Address: _____

Class _____ License No. _____ DIR Registration No. _____

Item No. or Description of Work: _____

Dollar Amount or Percentage of Total Bid _____

Email Address _____

SUBCONTRACTOR: _____

Business Address: _____

Class _____ License No. _____ DIR Registration No. _____

Item No. or Description of Work: _____

Dollar Amount or Percentage of Total Bid _____

Email Address _____

SUBCONTRACTOR: _____

Business Address: _____

Class _____ License No. _____ DIR Registration No. _____

Item No. or Description of Work: _____

Dollar Amount or Percentage of Total Bid _____

Email Address _____

SUBCONTRACTOR: _____

Business Address: _____

Class _____ License No. _____ DIR Registration No. _____

Item No. or Description of Work: _____

Dollar Amount or Percentage of Total Bid _____

Email Address _____

BIDDER: W. M. Lyles Co.

SUBCONTRACTOR: _____

Business Address: _____

Class _____ License No. _____ DIR Registration No. _____

Item No. or Description of Work: _____

Dollar Amount or Percentage of Total Bid _____

Email Address _____

SUBCONTRACTOR: _____

Business Address: _____

Class _____ License No. _____ DIR Registration No. _____

Item No. or Description of Work: _____

Dollar Amount or Percentage of Total Bid _____

Email Address _____

SUBCONTRACTOR: _____

Business Address: _____

Class _____ License No. _____ DIR Registration No. _____

Item No. or Description of Work: _____

Dollar Amount or Percentage of Total Bid _____

Email Address _____

SUBCONTRACTOR: _____

Business Address: _____

Class _____ License No. _____ DIR Registration No. _____

Item No. or Description of Work: _____

Dollar Amount or Percentage of Total Bid _____

Email Address _____

CERTIFICATION WITH REGARD TO THE PERFORMANCE OF PREVIOUS CONTRACTS OR SUBCONTRACTS SUBJECT TO THE EQUAL OPPORTUNITY CLAUSE AND THE FILING OF REQUIRED REPORTS.

The bidder X, proposed subcontractor __, hereby certifies that he has X, has not __, participated in a previous contract or subcontract subject to the equal opportunity clause, as required by Executive Orders 10925, 11114, or 11246, and that he has X, has not __, filed with the Joint Reporting Committee, the Director of the Office of Federal Contract Compliance, a Federal Government contracting or administering agency, or the former President's Committee on Equal Employment Opportunity, all reports due under the applicable filing requirements.

W. M. Lyles Co.
(Company)

By: K Shig
Kevin R. Shigematsu

Asst. Vice President
(Title)

Date: 8/1/18

NOTE: The above certification is required by the Equal Employment Opportunity Regulations of the Secretary of Labor (41 CFR 60-1.7(b) (1), and must be submitted by bidders and proposed subcontractors only in connection with contracts and subcontracts which are subject to the equal opportunity clause. Contracts and subcontracts which are exempt from the equal opportunity clause are set forth in 41 CFR 60-1.5. (Generally only contracts or subcontracts of $10,000 or under are exempt.)

Currently, Standard Form 100 (EEO-1) is the only report required by the Executive Orders or their implementing regulations.

Proposed prime contractors and subcontractors who have participated in a previous contract or subcontract subject to the Executive Orders and have not filed the required reports should note that 41 CFR 60-1.7(b) (1) prevents the award of contracts and subcontracts unless such contractor submits a report covering the delinquent period or such other period specified by the Director, Office of Federal Contract Compliance, U. S. Department of Labor.

TITLE 40, CODE OF FEDERAL REGULATIONS, PART 32
DEBARMENT AND SUSPENSION CERTIFICATION

Certification Regarding Debarment, Suspension, and Other Responsibility Matters

CLEAN WATER STATE REVOLVING FUND PROJECT NUMBER: C-06-7109-110

The prospective participant certifies to the best of its knowledge and belief that it and its principals:

(a) Are not presently debarred, suspended, proposed for debarment, declared ineligible, or voluntarily excluded from covered transactions by any Federal department or agency;

(b) Have not within a three year period preceding this proposal been convicted of or had a civil judgement rendered against them for commission of fraud or a criminal offense in connection with obtaining, attempting to obtain, or performing a public (Federal, State, or local) transaction or contract under a public transaction; violation of Federal or State antitrust statutes or commission of embezzlement, theft, forgery, falsification or destruction of records, making false statements, or receiving stolen property;

(c) Are not presently indicted for or otherwise criminally or civilly charged by a government entity (Federal, State, or local) with commission of any of the offenses enumerated in paragraph (1)(b) of this certification; and

(d) Have not within a three-year period preceding this application/proposal had one or more public transactions (Federal, State, or local) terminated for cause or default.

I understand that a false statement on this certification may be grounds for rejection of this proposal or termination of the award. In addition, under 18 USC Sec. 1001, a false statement may result in a fine of up to $10,000 or imprisonment for up to 5 years, or both.

W. M. Lyles Co.

Kevin R. Shigematsu, Asst. Vice President — 6/1/18

Name & Title of Authorized Representative — Date

Signature of Authorized Representative

☐ I am unable to certify to the above statements. My explanation is attached.

Proposal 10
Contract Number 18-08-C

NONLOBBYING CERTIFICATION FOR FEDERAL-AID CONTRACTS

The prospective participant certifies, by signing and submitting this bid or proposal, to the best of his or her knowledge and belief, that:

(1) No Federal appropriated funds have been paid or will be paid, by or on behalf of the undersigned, to any person for influencing or attempting to influence an officer or employee of any Federal agency, a Member of Congress, an officer or employee of Congress, or an employee of a Member of Congress in connection with awarding of any cooperative agreement, and the extension, continuation, renewal, amendment, or modification of any Federal contract, grant, loan, or cooperative agreement.

(2) If any funds other than Federal appropriated funds have been paid or will be paid to any person for influencing or attempting to influence an officer of any Federal agency, a Member of Congress, an officer or employee of Congress, or an employee of a Member of Congress in connection with this Federal contract, grant, loan, or cooperative agreement, the undersigned shall complete and submit Standard Form-LLL, "Disclosure of Lobbying Activities," in accordance with its instructions.

(3) The undersigned shall require that the language of this certification shall be included in the award documents for all subawards at all tiers (including subcontracts, subgrants, and contract under grants, loans, and cooperative agreements) and that all subrecipients shall certify and disclose accordingly.

This certification is a material representation of fact upon which reliance was placed when this transaction was made or entered into. Submission of this certification is a prerequisite for making or entering into this transaction imposed by Section 1352, Title 31, U.S. Code. Any person who fails to file the required certification shall be subject to a civil penalty of not less than $10,000 and not more than $100,000 for each such failure.

The prospective participant also agrees by submitting his or her bid or proposal that he or she shall require that the language of this certification be included in all lower tier subcontracts, which exceed $100,000 and that all such subrecipients shall certify and disclose accordingly.

Bidder: W. M. Lyles Co.

By: _____
Kevin R. Shigematsu

Date: 8/1/18

Title: Asst. Vice President

Proposal 11
Contract Number 18-08-C

approved by OMB
0348-0046

Disclosure of Lobbying Activities

Complete this form to disclose lobbying activities pursuant to 31 U.S.C. 1352
(See reverse for public burden disclosure)

1. **Type of Federal Action:** a. contract a b. grant c. cooperative agreement d. loan e. loan guarantee f. loan insurance	2. **Status of Federal Action:** a. bid/offer/application a b. initial award c. post-award	3. **Report Type:** N/A a. initial filing _____ b. material change **For material change only:** Year _____ quarter _____ Date of last report_____

4. **Name and Address of Reporting Entity:** X Prime _____ Subawardee Tier_____, if Known: W. M. Lyles Co. P.O. Box 4377 Fresno, CA 93744 **Congressional District,** *if known*:	5. **If Reporting Entity in No. 4 is Subawardee,** Enter Name and Address of Prime: N/A **Congressional District,** *if known*:
6. **Federal Department/Agency:** N/A	7. **Federal Program Name/Description:** N/A CFDA Number, *if applicable*: _____
8. **Federal Action Number,** *if known:* N/A	9. **Award Amount,** *if known:* $ N/A
10. a. **Name and Address of Lobbying Registrant** *(if individual, last name, first name, MI):* N/A	b. **Individuals Performing Services** *(including address if different from No. 10a)* *(last name, first name, MI):* N/A
11. Information requested through this form is authorized by title 31 U.S.C. section 1352. This disclosure of lobbying activities is a material representation of fact upon which reliance was placed by the tier above when this transaction was made or entered into. This disclosure is required pursuant to 31 U.S.C. 1352. This information will be reported to the Congress semi-annually and will be available for public inspection. Any person who fails to file the required disclosure shall be subject to a civil penalty of not less than $10,000 and not more than $100,000 for each such failure.	W. M. Lyles Co. **Signature:** K R Shigematsu **Print Name:** Kevin R. Shigematsu **Title:** Asst. Vice President **Telephone No.:** (559) 441-1900 **Date:** 8/1/18
Federal Use Only	**Authorized for Local Reproduction** **Standard Form - LLL (Rev. 7-97)**

Proposal 12(a)
Contract Number: 18-08-C

INSTRUCTIONS FOR COMPLETION OF SF-LLL, DISCLOSURE OF LOBBYING ACTIVITIES

This disclosure form shall be completed by the reporting entity, whether subawardee or prime Federal recipient, at the initiation or receipt of a covered Federal action, or a material change to a previous filing, pursuant to title 31 U.S.C. section 1352. The filing of a form is required for each payment or agreement to make payment to any lobbying entity for influencing or attempting to influence an officer or employee of any agency, a Member of Congress, an officer or employee of Congress, or an employee of a Member of Congress in connection with a covered Federal action. Complete all items that apply for both the initial filing and material change report. Refer to the implementing guidance published by the Office of Management and Budget for additional information.

1. Identify the type of covered Federal action for which lobbying activity is and/or has been secured to influence the outcome of a covered Federal action.

2. Identify the status of the covered Federal action.

3. Identify the appropriate classification of this report. If this is a followup report caused by a material change to the information previously reported, enter the year and quarter in which the change occurred. Enter the date of the last previously submitted report by this reporting entity for this covered Federal action.

4. Enter the full name, address, city, State and zip code of the reporting entity. Include Congressional District, if known. Check the appropriate classification of the reporting entity that designates if it is, or expects to be, a prime or subaward recipient. Identify the tier of the subawardee, e.g., the first subawardee of the prime is the 1st tier. Subawards include but are not limited to subcontracts, subgrants and contract awards under grants.

5. If the organization filing the report in item 4 checks "Subawardee," then enter the full name, address, city, State and zip code of the prime Federal recipient. Include Congressional District, if known.

6. Enter the name of the federal agency making the award or loan commitment. Include at least one organizational level below agency name, if known. For example, Department of Transportation, United States Coast Guard.

7. Enter the Federal program name or description for the covered Federal action (item 1). If known, enter the full Catalog of Federal Domestic Assistance (CFDA) number for grants, cooperative agreements, loans, and loan commitments.

8. Enter the most appropriate Federal identifying number available for the Federal action identified in item 1 (e.g., Request for Proposal (RFP) number; Invitations for Bid (IFB) number; grant announcement number; the contract, grant, or loan award number; the application/proposal control number assigned by the Federal agency). Included prefixes, e.g., "RFP-DE-90-001."

9. For a covered Federal action where there has been an award or loan commitment by the Federal agency, enter the Federal amount of the award/loan commitment for the prime entity identified in item 4 or 5.

10. (a) Enter the full name, address, city, State and zip code of the lobbying registrant under the Lobbying Disclosure Act of 1995 engaged by the reporting entity identified in item 4 to influence the covered Federal action.

    (b) Enter the full names of the individual(s) performing services, and include full address if different from 10(a). Enter Last Name, First Name, and Middle Initial (MI).

11. The certifying official shall sign and date the form, print his/her name, title, and telephone number.

According to the Paperwork Reduction Act, as amended, no persons are required to respond to a collection of information unless it displays a valid OMB control Number. The valid OMB control number for this information collection is OMB No. 0348-0046. Public reporting burden for this collection of information is estimated to average 10 minutes per response, including time for reviewing instructions, searching existing data sources, gathering and maintaining the data needed, and completing and reviewing the collection of information. Send comments regarding the burden estimate or any other aspect of this collection of information, including suggestions for reducing this burden, to the Office of Management and Budget, Paperwork Reduction Project (0348-0046), Washington, DC 20503

California State Water Resources Control Board
Division of Financial Assistance
1001 I Street • Sacramento, California 95814 • (916) 341-5700 FAX (916) 341-5707
Mailing Address: P. O. Box 944212 • Sacramento, California • 94244-2120
Internet Address: http://www.waterboards.ca.gov

Guidelines for Meeting the California State Revolving Fund (CASRF) Programs (Clean Water and Drinking Water SRF) Disadvantaged Business Enterprise Requirements

The Disadvantaged Business Enterprise (DBE) Program is an outreach, education, and objectives program designed to increase the participation of DBEs in the Clean Water State Revolving Fund (CWSRF) and Drinking Water State Revolving Fund (DWSRF) Programs.

How to Achieve the Purpose of the Program

Recipients of CWSRF/DWSRF financing that are subject to the DBE requirements (recipients) are required to seek, and are encouraged to use, DBEs for their procurement needs. Recipients should award a "fair share" of sub-agreements to DBEs. This applies to all sub-agreements for equipment, supplies, construction, and services.

The key functional components of the DBE Program are as follows:

- Fair Share Objectives
- DBE Certification
- Six Good Faith Efforts
- Contract Administration Requirements
- DBE Reporting

Disadvantaged Business Enterprises are:

- Entities owned and/or controlled by socially and economically disadvantaged individuals as described by Title X of the Clean Air Act Amendments of 1990 (42 U.S.C. 7601 note) (10% statute), and Public Law 102-389 (42 U.S.C. 4370d) (8% statute), respectively;
- Minority Business Enterprise (MBE) - entities that are at least 51% owned and/or controlled by a socially and economically disadvantaged individual as described by Title X of the Clean Air Act Amendments of 1990 (42 U.S.C. 7601 note), and Public Law 102-389 (42 U.S.C. 4370d), respectively;
- Women Business Enterprise (WBE) - entities that are at least 51% owned and/or controlled by women;
- Small Business Enterprise (SBE);
- Small Business in a Rural Area (SBRA);
- Labor Surplus Area Firm (LSAF); or
- Historically Underutilized Business (HUB) Zone Small Business Concern or a concern under a successor program.

Certifying DBE Firms:

Under the DBE Program, entities can no longer self-certify and contractors and sub-contractors must be certified at bid opening. Contractors and sub-contractors must provide to the CASRF recipient proof of DBE certification. Certifications will be accepted from the following:

- The U.S. Environmental Protection Agency (USEPA)
- The Small Business Administration(SBA)
- The Department of Transportation's State implemented DBE Certification Program (with U.S. citizenship)
- Tribal, State and Local governments
- Independent private organization certifications

If an entity holds one of these certifications, it is considered acceptable for establishing status under the DBE Program.

Six Good Faith Efforts (GFE)

All CWSRF/DWSRF financing recipients are required to complete and ensure that the prime contractor complies with the GFE below to ensure that DBEs have the opportunity to compete for financial assistance dollars.

1. Ensure DBEs are made aware of contracting opportunities to the fullest extent practical through outreach and recruitment activities. For Tribal, State and Local Government Recipients, this will include placing DBEs on solicitation lists and soliciting them whenever they are potential sources.
2. Make information on forthcoming opportunities available to DBEs. Posting solicitations for bids or proposals for a minimum of 30 calendar days in a local newspaper, before the bid opening date.
3. Consider in the contracting process whether firms competing for large contracts could subcontract with DBEs.
4. Encourage contracting with a group of DBEs when a contract is too large for one firm to handle individually.
5. Use the services of the SBA **and/or** Minority Business Development Agency (MBDA) of the US Department of Commerce.
6. If the prime contractor awards subcontracts, require the prime contractor to take the above steps.

The forms listed in the table below and attached to these guidelines; must be completed and submitted with the GFE:

FORM NUMBER	FORM NAME	REQUIREMENT	PROVIDED BY	COMPLETED BY	SUBMITTED TO
SWRCB Form 4500-2 or EPA Form	DBE Sub-Contractor Participation Form	As Needed to Report Issues	Recipient	Sub-contractor	EPA DBE Coordinator
SWRCB Form 4500-3 or EPA Form	DBE Sub-Contractor Performance Form	Include with Bid or Proposal Package	Prime Contractor	Sub-Contractor	SWRCB by Recipient
SWRCB Form 4500-4 or EPA Form	DBE Sub-Contractor Utilization Form	Include with Bid or Proposal Package	Recipient	Prime Contractor	SWRCB by Recipient

The completed forms must be submitted with each Bid or Proposal. The recipient shall review the bidder's documents closely to determine that the GFE was performed **prior** to bid or proposal opening date. Failure to complete the GFE and to substantiate completion of the GFE before the bid opening date could jeopardize CWSRF/DWSRF financing for the project. The following situations and circumstances require action as indicated:

1. If the apparent successful low bidder was rejected, a complete explanation must be provided.
2. Failure of the apparent low bidder to **perform** the GFE **prior** to bid opening constitutes a non-responsive bid. The construction contract may then be awarded to the next low, responsive, and responsible bidder that meets the requirements or the Recipient may re-advertise the project.
3. If there is a bid dispute, all disputes shall be settled **prior** to submission of the Final Budget Approval Form.

Administration Requirements

- A recipient of CWSRF/DWSRF financing must require entities receiving funds to create and maintain a Bidders List if the recipient of the financing agreement is subject to, or chooses to follow, competitive bidding requirements.
- The Bidders list must include all firms that bid or quote on prime contracts, or bid or quote on subcontracts, including both DBEs and non-DBEs.

- Information retained on the Bidder's List must include the following:
    1. Entity's name with point of contact;
    2. Entity's mailing address and telephone number;
    3. The project description on which the entity bid or quoted and when;
    4. Amount of bid/quote; and
    5. Entity's status as a DBE or non-DBE.
- The Bidders List must be kept until the recipient is no longer receiving funding under the agreement.
- The recipient shall include Bidders List as part of the Final Budget Approval Form.
- A recipient must require its prime contractor to pay its subcontractor for satisfactory performance no more than 30 days from the prime contractor's receipt of payment from the Recipient.
- A recipient must be notified in writing by its prime contractor prior to any termination of a DBE subcontractor by the prime contractor.
- If a DBE subcontractor fails to complete work under the subcontract for any reason, the recipient must require the prime contractor to employ the six GFEs if soliciting a replacement subcontractor.
- A recipient must require its prime contractor to employ the six GFEs even if the prime contractor has achieved its fair share objectives.

Reporting Requirements

For the duration of the construction contract(s), the recipient is required to submit to the State Water Resources Control Board DBE reports annually by October 10 of each fiscal year on the attached Utilization Report form (UR-334). Failure to provide this information as stipulated in the financial agreement language may be cause for withholding disbursements.

CONTACT FOR MORE INFORMATION

SWRCB, CASRF – Barbara August (916) 341-6952 barbara.august@waterboards.ca.gov

US EPA, Region 9 – Joe Ochab (415) 972-3761 ochab.joe@epa.gov

California Water Boards

Disadvantaged Business Enterprise (DBE) Program

DBE Subcontractor Utilization Form

This form is intended to capture the prime contractor's actual and/or anticipated use of identified certified DBE[1] subcontractor's[2] and the estimated dollar amount of each subcontract. A Financial Assistance Agreement Recipient must require its prime contractors to complete this form and include it in the bid or proposal package. Prime contractors should also maintain a copy of this form on file.

Prime Contractor Name W. M. Lyles Co.		**Project Name** Waterworks District 38 Wastewater Treatment Facility Improvements
Bid / Proposal No.	**Assistance Agreement ID No. (if known)**	**Point of Contact**
Address P.O. Box 4377, Fresno, CA 93744		
Telephone No. (559) 441-1900		**Email Address** kshigematsu@wmlylesco.com
Issuing/Funding Entity		

I have identified potential DBE certified subcontractors. YES (NO)

If *yes*, please complete the table below. If *no*, please explain:

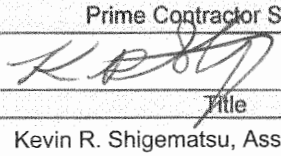
Subcontractor Name/ Company Name	Company Address / Phone / Email	Estimated Dollar Amount	Currently DBE Certified?

--Continue on back if needed--

[1] A DBE is a Disadvantaged, Minority, or Woman Business Enterprise that has been certified by an entity from which EPA accepts certifications as described in 40 CFR 33.204-33.2015 or certified by EPA. EPA accepts certifications from entities that meet or exceed EPA certification standards as described in 40 CFR 33.202.

[2] Subcontractor is defined as a company, firm, joint venture, or individual who enters into an agreement with a contractor to provide services pursuant to an award of financial assistance.

I certify under penalty of perjury that the forgoing statements are true and correct. Signing this form does not signify a commitment to utilize the subcontractors above. I am aware that in the event of a replacement of a subcontractor, I will adhere to the replacement requirements set forth in 40 CFR Part 33 Section 33.302 (c).

Prime Contractor Signature	Print Name
	W. M. Lyles Co.
Title	Date
Kevin R. Shigematsu, Asst. Vice President	8/2/18

The public reporting and record keeping burden for this collection of information is estimated to average three (3) hours per response. Send comments on the Agency's need for this information, the accuracy of the provided burden estimates, and any suggested methods for minimizing respondent burden, including through the use of automated collection techniques to the Director, Collection Strategies Division, U.S. Environmental Protection Agency (2822T), 1200 Pennsylvania Ave., NW, Washington, D.C. 20460. Do not send the completed form to this address.

Liberty Mutual SURETY

2200 Renaissance Blvd. Ste. 400
King of Prussia, PA 19406-2755
Ph. (610) 832-8240

BID BOND

Bond Number: Bid Bond

KNOW ALL MEN BY THESE PRESENTS, that we W.M. Lyles Co.

_____, as principal (the "Principal"), and
Liberty Mutual Insurance Company, as surety (the "Surety"), are held and firmly bound unto County of Fresno
_____, as obligee (the "Obligee"), in the penal sum of Ten Percent of Amount Bid
_____ Dollars ($ 10%), for the payment of which sum well and truly to be made, the said Principal and the said Surety, bind ourselves, our heirs, executors, administrators, successors and assigns, jointly and severally, firmly by these presents.

WHEREAS, the Principal has submitted a bid for: WATERWORKS DISTRICT 38 WASTEWATER TREATMENT FACILITY IMPROVEMENTS,CLEAN WATER STATE REVOLVING FUND PROJECT No. C-06-7109-110, CONTRACT NUMBER : 18-08-C

NOW, THEREFORE, if the Obligee shall accept the bid of the Principal within the period specified therein, or, if no period be specified, within sixty (60) days after opening, and the Principal shall enter into a contract with the Obligee in accordance with the terms of such bid, and give such bond or bonds as may be specified in the bidding or contract documents, or in the event of the failure of the Principal to enter into such contract and give such bond or bonds, if the Principal shall pay to the Obligee the difference in money not to exceed the penal sum hereof between the amount specified in said bid and such larger amount for which the Obligee may in good faith contract with another party to perform the work covered by said bid, then this obligation shall be null and void; otherwise to remain in full force and effect. In no event shall the liability hereunder exceed the penal sum thereof.

PROVIDED AND SUBJECT TO THE CONDITION PRECEDENT, that any claim by Obligee under this bond must be submitted in writing by registered mail, to the attention of the Surety Law Department at the address above, within 120 days of the date of this bond. Any suit under this bond must be instituted before the expiration of one (1) year from the date of this bond. If the provisions of this paragraph are void or prohibited by law, the minimum period of limitation available to sureties as a defense in the jurisdiction of the suit shall apply.

DATED as of this 30th day of July, 2018.

WITNESS / ATTEST

Scott R. Fults, Asst. Secretary

W.M. Lyles Co.
(Principal)

By: _____ (Seal)
Name: Kevin R. Shigematsu
Title: Asst. Vice President

Liberty Mutual Insurance Company
(Surety)

By: _____ (Seal)
Bonnie Gonzalez Attorney-in-Fact

LIBERTY MUTUAL INSURANCE COMPANY INCORPORATED 1912 MASSACHUSETTS

CALIFORNIA ALL-PURPOSE ACKNOWLEDGMENT **CIVIL CODE § 1189**

A notary public or other officer completing this certificate verifies only the identity of the individual who signed the document to which this certificate is attached, and not the truthfulness, accuracy, or validity of that document.

State of California)
County of Kern)

On August 1, 2018 before me, Chanel L.A. Prince, Notary Public,
Date *Here Insert Name and Title of the Officer*

personally appeared Kevin R. Shigematsu
Name(s) of Signer(s)

,

who proved to me on the basis of satisfactory evidence to be the person~~(s)~~ whose name~~(s)~~ is~~/are~~ subscribed to the within instrument and acknowledged to me that he~~/she/they~~ executed the same in his~~/her/their~~ authorized capacity~~(ies)~~, and that by his~~/her/their~~ signature~~(s)~~ on the instrument the person~~(s)~~, or the entity upon behalf of which the person~~(s)~~ acted, executed the instrument.

I certify under PENALTY OF PERJURY under the laws of the State of California that the foregoing paragraph is true and correct.

WITNESS my hand and official seal.

Signature Chanel Prince
Signature of Notary Public

CHANEL L.A. PRINCE
Commission # 2081062
Notary Public - California
Kern County
My Comm. Expires Sep 8, 2018

Place Notary Seal Above

OPTIONAL

Though this section is optional, completing this information can deter alteration of the document or fraudulent reattachment of this form to an unintended document.

Description of Attached Document
Title or Type of Document: Bid Bond: County of Fresno - Department of Public Works & Planning Waterworks District 38 - Wastewater Treatment Facility Improvements Document Date: 07/30/18
Number of Pages: One Signer~~(s)~~ Other Than Named Above: None

Capacity~~(ies)~~ Claimed by Signer~~(s)~~

Signer's Name: Kevin R. Shigematsu	Signer's Name:
☒ Corporate Officer — Title~~(s)~~: Asst. Vice President	☐ Corporate Officer — Title(s):
☐ Partner — ☐ Limited ☐ General	☐ Partner — ☐ Limited ☐ General
☐ Individual ☐ Attorney in Fact	☐ Individual ☐ Attorney in Fact
☐ Trustee ☐ Guardian or Conservator	☐ Trustee ☐ Guardian or Conservator
☐ Other:	☐ Other:
Signer Is Representing: W.M. Lyles Co.	Signer Is Representing:

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CALIFORNIA ALL-PURPOSE ACKNOWLEDGMENT **Civil Code § 1189**

A notary public or other officer completing this certificate verifies only the identity of the individual who signed the document to which this certificate is attached, and not the truthfulness, accuracy, or validity of that document.

State of California)
) ss
County of Fresno)

On July 30, 2018, before me, Lyn Genito, Notary Public, personally appeared Bonnie Gonzalez, who proved to me on the basis of satisfactory evidence to be the person~~(s)~~ whose name~~(s)~~ is~~/are~~ subscribed to the within instrument and acknowledged to me that ~~he~~/she/~~they~~ executed the same in ~~his~~/her/~~their~~ authorized capacity~~(ies)~~, and that by ~~his~~/her/~~their~~ signature~~(s)~~ on the instrument the person~~(s)~~, or the entity upon behalf of which the person~~(s)~~ acted, executed the instrument.

I certify under PENALTY OF PERJURY under the laws of the State of California that the foregoing paragraph is true and correct.

WITNESS my hand and official seal.

LYN GENITO
Commission # 2094223
Notary Public - California
Fresno County
My Comm. Expires Jan 16, 2019

Signature: _____

(Seal) Lyn Genito, Notary Public

This Power of Attorney limits the acts of those named herein, and they have no authority to bind the Company except in the manner and to the extent herein stated. Not valid for mortgage, note, loan, letter of credit, bank deposit, currency rate, interest rate or residual value guarantees. To confirm the validity of this Power of Attorney call 610-832-8240 between 9:00 am and 4:30 pm EST on any business day.

Liberty Mutual Insurance Company
The Ohio Casualty Insurance Company
West American Insurance Company

POWER OF ATTORNEY

KNOWN ALL PERSONS BY THESE PRESENTS: That The Ohio Casualty Insurance Company is a corporation duly organized under the laws of the State of New Hampshire, that Liberty Mutual Insurance Company is a corporation duly organized under the laws of the State of Massachusetts, and West American Insurance Company is a corporation duly organized under the laws of the State of Indiana (herein collectively called the "Companies"), pursuant to and by authority herein set forth, does hereby name, constitute and appoint, Bonnie Gonzalez of the city of Fresno, state of CA its true and lawful attorney-in-fact, with full power and authority hereby conferred to sign, execute and acknowledge the following surety bond:

Principal Name: W.M. Lyles Co.

Obligee Name: County of Fresno

Surety Bond Number: Bid Bond **Bond Amount:** See Bond Form

IN WITNESS WHEREOF, this Power of Attorney has been subscribed by an authorized officer or official of the Companies and the corporate seals of the Companies have been affixed thereto this 6th day of March, 2017.

The Ohio Casualty Insurance Company
Liberty Mutual Insurance Company
West American Insurance Company

By: _____
David M. Carey, Assistant Secretary

STATE OF PENNSYLVANIA ss
COUNTY OF MONTGOMERY

On this 6th day of March, 2017, before me personally appeared David M. Carey, who acknowledged himself to be the Assistant Secretary of Liberty Mutual Insurance Company, The Ohio Casualty Company, and West American Insurance Company, and that he, as such, being authorized so to do, execute the foregoing instrument for the purposes therein contained by signing on behalf of the corporations by himself as a duly authorized officer.

IN WITNESS WHEREOF, I have hereunto subscribed my name and affixed my notarial seal at King of Prussia, Pennsylvania, on the day and year first above written.

COMMONWEALTH OF PENNSYLVANIA
Notarial Seal
Teresa Pastella, Notary Public
Upper Merion Twp., Montgomery County
My Commission Expires March 28, 2021
Member, Pennsylvania Association of Notaries

By: _____
Teresa Pastella, Notary Public

This Power of Attorney is made and executed pursuant to and by authority of the following By-laws and Authorizations of The Ohio Casualty Insurance Company, Liberty Mutual Insurance Company, and West American Insurance Company which resolutions are now in full force and effect reading as follows:

ARTICLE IV – OFFICERS – Section 12. Power of Attorney. Any officer or other official of the Corporation authorized for that purpose in writing by the Chairman or the President, and subject to such limitation as the Chairman or the President may prescribe, shall appoint such attorneys-in-fact, as may be necessary to act in behalf of the Corporation to make, execute, seal, acknowledge and deliver as surety any and all undertakings, bonds, recognizances and other surety obligations. Such attorneys-in-fact, subject to the limitations set forth in their respective powers of attorney, shall have full power to bind the Corporation by their signature and execution of any such instruments and to attach thereto the seal of the Corporation. When so executed, such instruments shall be as binding as if signed by the President and attested to by the Secretary. Any power or authority granted to any representative or attorney-in-fact under the provisions of this article may be revoked at any time by the Board, the Chairman, the President or by the officer or officers granting such power or authority.

ARTICLE XIII – Execution of Contracts – SECTION 5. Surety Bonds and Undertakings. Any officer of the Company authorized for that purpose in writing by the chairman or the president, and subject to such limitations as the chairman or the president may prescribe, shall appoint such attorneys-in-fact, as may be necessary to act in behalf of the Company to make, execute, seal, acknowledge and deliver as surety any and all undertakings, bonds, recognizances and other surety obligations. Such attorneys-in-fact subject to the limitations set forth in their respective powers of attorney, shall have full power to bind the Company by their signature and execution of any such instruments and to attach thereto the seal of the Company. When so executed such instruments shall be as binding as if signed by the president and attested by the secretary.

Certificate of Designation – The President of the Company, acting pursuant to the Bylaws of the Company, authorizes David M. Carey, Assistant Secretary to appoint such attorneys-in-fact as may be necessary to act on behalf of the Company to make, execute, seal, acknowledge and deliver as surety any and all undertakings, bonds, recognizances and other surety obligations.

Authorization – By unanimous consent of the Company's Board of Directors, the Company consents that facsimile or mechanically reproduced signature of any assistant secretary of the Company, wherever appearing upon a certified copy of any power of attorney issued by the Company in connection with surety bonds, shall be valid and binding upon the Company with the same force and effect as though manually affixed.

I, Renee C. Llewellyn, the undersigned, Assistant Secretary, The Ohio Casualty Insurance Company, Liberty Mutual Insurance Company, and West American Insurance Company do hereby certify that the original power of attorney of which the foregoing is a full, true and correct copy of the Power of Attorney executed by said Companies, is in full force and effect and has not been revoked.

IN TESTIMONY WHEREOF, I have hereunto set my hand and affixed the seals of said Companies this 30th day of July, 2018.

By: _____
Renee C. Llewellyn, Assistant Secretary

Fresno County Department of Public Works and Planning
Project: WWD 38 Wastewater Treatment Facility Improvements
Contract No.: 18-08-C

Bid Opening: 8/2/2018
Scheduled Award Date: 10/9/2018

Bidders
1 **W.M. Lyles Co.**

W.M. Lyles Co.

A-C Electric

					Engineer's Estimate		1	
ITEM NO.	**QUANTITY**	**UNIT OF MEASURE**	**F, S**	**ITEM DESCRIPTION**	**ITEM PRICE (IN FIGURES)**	**TOTAL PRICE (IN FIGURES)**	**ITEM PRICE (IN FIGURES)**	**TOTAL PRICE (IN FIGURES)**
1	1	EA		CONSTRUCTION PROJECT INFORMATION SIGN	1,000.00	$1,000.00	2,050.00	$2,050.00
2	1	LS		PREPARE WATER POLLUTION CONTROL PROGRAM	1,500.00	$1,500.00	1,080.00	$1,080.00
3	1	LS		WATER POLLUTION CONTROL	3,000.00	$3,000.00	6,950.00	$6,950.00
4	1	LS		CONSTRUCTION SITE MANAGEMENT	10,000.00	$10,000.00	21,690.00	$21,690.00
5	1	LS	S	TRAFFIC CONTROL SYSTEM	1,500.00	$1,500.00	2,160.00	$2,160.00
6	1	LS		CLEARING AND GRUBBING	5,000.00	$5,000.00	3,170.00	$3,170.00
7	1	LS		MOBILIZATION	30,000.00	$30,000.00	16,200.00	$16,200.00
8	1	LS		MISCELLANEOUS FACILITIES AND OPERATIONS	24,310.00	$24,310.00	21,530.00	$21,530.00
9	1	LS		SUBMERSIBLE JET AERATOR	40,600.00	$40,600.00	20,900.00	$20,900.00
10	1	LS		SUBMERSIBLE MIXER	17,200.00	$17,200.00	30,680.00	$30,680.00
11	1	LS		CHAIN AND SCRAPER SLUDGE COLLECTOR UNIT	123,900.00	$123,900.00	127,390.00	$127,390.00
12	1	LS		EFFLUENT PUMPS	84,820.00	$84,820.00	80,630.00	$80,630.00
13	1	LS		AERATION BASIN EQUIPMENT REMOVAL AND CLEANING	14,200.00	$14,200.00	18,110.00	$18,110.00
14	60	LF		CRACK REPAIR UNIT COST	100.00	$6,000.00	160.00	$9,600.00
15	1	LS		SEPTIC WASTE REMOVAL	45,000.00	$45,000.00	28,080.00	$28,080.00
16	1	LS	S	ELECTRICAL	186,875.00	$186,875.00	223,280.00	$223,280.00
17	1	LS		FINISH PROJECT SITE	6,350.00	$6,350.00	3,570.00	$3,570.00
TOTAL BID (ITEMS 1-17)					**$601,255.00**		**$617,070.00**	

F - Final Pay Item
S - Specialty Item

LYLEDIR-01 MMENG

CERTIFICATE OF LIABILITY INSURANCE

DATE (MM/DD/YYYY) 01/03/2019

THIS CERTIFICATE IS ISSUED AS A MATTER OF INFORMATION ONLY AND CONFERS NO RIGHTS UPON THE CERTIFICATE HOLDER. THIS CERTIFICATE DOES NOT AFFIRMATIVELY OR NEGATIVELY AMEND, EXTEND OR ALTER THE COVERAGE AFFORDED BY THE POLICIES BELOW. THIS CERTIFICATE OF INSURANCE DOES NOT CONSTITUTE A CONTRACT BETWEEN THE ISSUING INSURER(S), AUTHORIZED REPRESENTATIVE OR PRODUCER, AND THE CERTIFICATE HOLDER.

IMPORTANT: If the certificate holder is an ADDITIONAL INSURED, the policy(ies) must have ADDITIONAL INSURED provisions or be endorsed. If SUBROGATION IS WAIVED, subject to the terms and conditions of the policy, certain policies may require an endorsement. A statement on this certificate does not confer rights to the certificate holder in lieu of such endorsement(s).

PRODUCER License # 0C36861 Fresno CSG-Alliant Insurance Services, Inc. 9 E. River Park Place East Ste 310 Fresno, CA 93720	CONTACT NAME: Nicolette Limon PHONE (A/C, No, Ext): FAX (A/C, No): E-MAIL ADDRESS: nlimon@alliant.com
INSURED W.M. Lyles Co P.O. Box 4377 Fresno, CA 93744-4377	INSURER(S) AFFORDING COVERAGE — NAIC # INSURER A : Old Republic Insurance Company — 24147 INSURER B : Allied World Assurance Company (U.S.) Inc — 19489 INSURER C : INSURER D : INSURER E : INSURER F :

COVERAGES **CERTIFICATE NUMBER:** **REVISION NUMBER:**

THIS IS TO CERTIFY THAT THE POLICIES OF INSURANCE LISTED BELOW HAVE BEEN ISSUED TO THE INSURED NAMED ABOVE FOR THE POLICY PERIOD INDICATED. NOTWITHSTANDING ANY REQUIREMENT, TERM OR CONDITION OF ANY CONTRACT OR OTHER DOCUMENT WITH RESPECT TO WHICH THIS CERTIFICATE MAY BE ISSUED OR MAY PERTAIN, THE INSURANCE AFFORDED BY THE POLICIES DESCRIBED HEREIN IS SUBJECT TO ALL THE TERMS, EXCLUSIONS AND CONDITIONS OF SUCH POLICIES. LIMITS SHOWN MAY HAVE BEEN REDUCED BY PAID CLAIMS.

INSR LTR	TYPE OF INSURANCE	ADDL INSD	SUBR WVD	POLICY NUMBER	POLICY EFF (MM/DD/YYYY)	POLICY EXP (MM/DD/YYYY)	LIMITS	
A	X COMMERCIAL GENERAL LIABILITY CLAIMS-MADE X OCCUR X XCU Included GEN'L AGGREGATE LIMIT APPLIES PER: POLICY X PRO-JECT LOC OTHER:	X		MWZY313342	05/31/2018	05/31/2019	EACH OCCURRENCE DAMAGE TO RENTED PREMISES (Ea occurrence) MED EXP (Any one person) PERSONAL & ADV INJURY GENERAL AGGREGATE PRODUCTS - COMP/OP AGG EBL EACH EMPLOY	$ 2,000,000 $ 750,000 $ 10,000 $ 2,000,000 $ 4,000,000 $ 4,000,000 $ 2,000,000
A	AUTOMOBILE LIABILITY X ANY AUTO OWNED AUTOS ONLY SCHEDULED AUTOS X HIRED AUTOS ONLY X NON-OWNED AUTOS ONLY X 1,000 Comp Ded X 1,000 Coll Ded			MWTB313343	05/31/2018	05/31/2019	COMBINED SINGLE LIMIT (Ea accident) BODILY INJURY (Per person) BODILY INJURY (Per accident) PROPERTY DAMAGE (Per accident)	$ 2,000,000 $ $ $
B	X UMBRELLA LIAB X OCCUR EXCESS LIAB CLAIMS-MADE DED X RETENTION $ 10,000			0308-3900	05/31/2018	05/31/2019	EACH OCCURRENCE AGGREGATE	$ 5,000,000 $ 5,000,000 $
A	WORKERS COMPENSATION AND EMPLOYERS' LIABILITY ANY PROPRIETOR/PARTNER/EXECUTIVE OFFICER/MEMBER EXCLUDED? (Mandatory in NH) Y / N If yes, describe under DESCRIPTION OF OPERATIONS below	N / A		MWC31334100	05/31/2018	05/31/2019	X PER STATUTE OTH-ER E.L. EACH ACCIDENT E.L. DISEASE - EA EMPLOYEE E.L. DISEASE - POLICY LIMIT	$ 1,000,000 $ 1,000,000 $ 1,000,000

DESCRIPTION OF OPERATIONS / LOCATIONS / VEHICLES (ACORD 101, Additional Remarks Schedule, may be attached if more space is required)

Re: Project No. C-06-7109-110, Contract Number: 18-08-C, Waterworks District 38 Wastewater Treatment Facility Improvements, Clean Water State Revolving Fund, Near Friant, CA

County of Fresno, its officers, agents, and employees, individually and collectively are included as Additional Insured as respect to General Liability on Primary and Non-Contributory basis.

Endorsements Attached:
General Liability Additional Insured
SEE ATTACHED ACORD 101

CERTIFICATE HOLDER

County of Fresno
2220 Tulare Street, Seventh Floor
Fresno, CA 93721

CANCELLATION

SHOULD ANY OF THE ABOVE DESCRIBED POLICIES BE CANCELLED BEFORE THE EXPIRATION DATE THEREOF, NOTICE WILL BE DELIVERED IN ACCORDANCE WITH THE POLICY PROVISIONS.

AUTHORIZED REPRESENTATIVE

Nicolette Limon

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AGENCY CUSTOMER ID: LYLEDIR-01 MMENG

LOC #: 1

ADDITIONAL REMARKS SCHEDULE

AGENCY	License # 0C36861	NAMED INSURED
Fresno CSG-Alliant Insurance Services, Inc.		W.M. Lyles Co P.O. Box 4377 Fresno, CA 93744-4377
POLICY NUMBER		
SEE PAGE 1		
CARRIER	NAIC CODE	EFFECTIVE DATE: SEE PAGE 1
SEE PAGE 1	SEE P 1	

ADDITIONAL REMARKS

THIS ADDITIONAL REMARKS FORM IS A SCHEDULE TO ACORD FORM,

FORM NUMBER: ACORD 25 FORM TITLE: Certificate of Liability Insurance

Description of Operations/Locations/Vehicles:
General Liability Completed Operations
General Liability Primary and Non-Contributory
General Liability Cancellation
Auto Cancellation
Workers Compensation Cancellation

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THIS ENDORSEMENT CHANGES THE POLICY. PLEASE READ IT CAREFULLY.

ADDITIONAL INSURED – OWNERS, LESSEES OR CONTRACTORS – SCHEDULED PERSON OR ORGANIZATION

This endorsement modifies insurance provided under the following:

COMMERCIAL GENERAL LIABILITY COVERAGE PART

SCHEDULE

Name Of Additional Insured Person(s) Or Organization(s)	Location(s) Of Covered Operations
Any person or organization contractually requiring status as an additional insured for ongoing operations that you perform for them	The locations as specified in the written contracts or agreements
Information required to complete this Schedule, if not shown above, will be shown in the Declarations.	

A. Section II – Who Is An Insured is amended to include as an additional insured the person(s) or organization(s) shown in the Schedule, but only with respect to liability for "bodily injury", "property damage" or "personal and advertising injury" caused, in whole or in part, by:

1. Your acts or omissions; or
2. The acts or omissions of those acting on your behalf;

in the performance of your ongoing operations for the additional insured(s) at the location(s) designated above.

However:

1. The insurance afforded to such additional insured only applies to the extent permitted by law; and
2. If coverage provided to the additional insured is required by a contract or agreement, the insurance afforded to such additional insured will not be broader than that which you are required by the contract or agreement to provide for such additional insured.

B. With respect to the insurance afforded to these additional insureds, the following additional exclusions apply:

This insurance does not apply to "bodily injury" or "property damage" occurring after:

1. All work, including materials, parts or equipment furnished in connection with such work, on the project (other than service, maintenance or repairs) to be performed by or on behalf of the additional insured(s) at the location of the covered operations has been completed; or
2. That portion of "your work" out of which the injury or damage arises has been put to its intended use by any person or organization other than another contractor or subcontractor engaged in performing operations for a principal as a part of the same project.

© Insurance Services Office, Inc., 2012

C. With respect to the insurance afforded to these additional insureds, the following is added to **Section III – Limits Of Insurance:**

If coverage provided to the additional insured is required by a contract or agreement, the most we will pay on behalf of the additional insured is the amount of insurance:

1. Required by the contract or agreement; or

2. Available under the applicable Limits of Insurance shown in the Declarations;

whichever is less.

This endorsement shall not increase the applicable Limits of Insurance shown in the Declarations.

© Insurance Services Office, Inc., 2012

THIS ENDORSEMENT CHANGES THE POLICY. PLEASE READ IT CAREFULLY.

ADDITIONAL INSURED – OWNERS, LESSEES OR CONTRACTORS – COMPLETED OPERATIONS

This endorsement modifies insurance provided under the following:

COMMERCIAL GENERAL LIABILITY COVERAGE PART
PRODUCTS/COMPLETED OPERATIONS LIABILITY COVERAGE PART

SCHEDULE

Name Of Additional Insured Person(s) Or Organization(s)	Location And Description Of Completed Operations
As required by written contract or agreement	The locations as specified in the written contracts or agreements
Information required to complete this Schedule, if not shown above, will be shown in the Declarations.	

A. **Section II – Who Is An Insured** is amended to include as an additional insured the person(s) or organization(s) shown in the Schedule, but only with respect to liability for "bodily injury" or "property damage" caused, in whole or in part, by "your work" at the location designated and described in the Schedule of this endorsement performed for that additional insured and included in the "products-completed operations hazard".

However:

1. The insurance afforded to such additional insured only applies to the extent permitted by law; and
2. If coverage provided to the additional insured is required by a contract or agreement, the insurance afforded to such additional insured will not be broader than that which you are required by the contract or agreement to provide for such additional insured.

B. With respect to the insurance afforded to these additional insureds, the following is added to **Section III – Limits Of Insurance:**

If coverage provided to the additional insured is required by a contract or agreement, the most we will pay on behalf of the additional insured is the amount of insurance:

1. Required by the contract or agreement; or
2. Available under the applicable Limits of Insurance shown in the Declarations;

whichever is less.

This endorsement shall not increase the applicable Limits of Insurance shown in the Declarations.

© Insurance Services Office, Inc., 2012

THIS ENDORSEMENT CHANGES THE POLICY. PLEASE READ IT CAREFULLY.

PRIMARY AND NONCONTRIBUTORY – OTHER INSURANCE CONDITION

This endorsement modifies insurance provided under the following:

COMMERCIAL GENERAL LIABILITY COVERAGE PART
PRODUCTS/COMPLETED OPERATIONS LIABILITY COVERAGE PART

The following is added to the **Other Insurance** Condition and supersedes any provision to the contrary:

Primary And Noncontributory Insurance

This insurance is primary to and will not seek contribution from any other insurance available to an additional insured under your policy provided that:

(1) The additional insured is a Named Insured under such other insurance; and

(2) You have agreed in writing in a contract or agreement that this insurance would be primary and would not seek contribution from any other insurance available to the additional insured.

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IL 02 70 09 12

THIS ENDORSEMENT CHANGES THE POLICY. PLEASE READ IT CAREFULLY.

CALIFORNIA CHANGES – CANCELLATION AND NONRENEWAL

This endorsement modifies insurance provided under the following:

CAPITAL ASSETS PROGRAM (OUTPUT POLICY) COVERAGE PART
COMMERCIAL AUTOMOBILE COVERAGE PART
COMMERCIAL GENERAL LIABILITY COVERAGE PART
COMMERCIAL INLAND MARINE COVERAGE PART
COMMERCIAL PROPERTY COVERAGE PART
CRIME AND FIDELITY COVERAGE PART
EMPLOYMENT-RELATED PRACTICES LIABILITY COVERAGE PART
EQUIPMENT BREAKDOWN COVERAGE PART
FARM COVERAGE PART
LIQUOR LIABILITY COVERAGE PART
MEDICAL PROFESSIONAL LIABILITY COVERAGE PART
POLLUTION LIABILITY COVERAGE PART
PRODUCTS/COMPLETED OPERATIONS LIABILITY COVERAGE PART

A. Paragraphs **2.** and **3.** of the **Cancellation** Common Policy Condition are replaced by the following:

2. All Policies In Effect For 60 Days Or Less

If this policy has been in effect for 60 days or less, and is not a renewal of a policy we have previously issued, we may cancel this policy by mailing or delivering to the first Named Insured, at the mailing address shown in the policy, and to the producer of record, advance written notice of cancellation, stating the reason for cancellation, at least:

a. 10 days before the effective date of cancellation if we cancel for:

(1) Nonpayment of premium; or

(2) Discovery of fraud by:

(a) Any insured or his or her representative in obtaining this insurance; or

(b) You or your representative in pursuing a claim under this policy.

b. 30 days before the effective date of cancellation if we cancel for any other reason.

3. All Policies In Effect For More Than 60 Days

a. If this policy has been in effect for more than 60 days, or is a renewal of a policy we issued, we may cancel this policy only upon the occurrence, after the effective date of the policy, of one or more of the following:

(1) Nonpayment of premium, including payment due on a prior policy we issued and due during the current policy term covering the same risks.

(2) Discovery of fraud or material misrepresentation by:

(a) Any insured or his or her representative in obtaining this insurance; or

(b) You or your representative in pursuing a claim under this policy.

(3) A judgment by a court or an administrative tribunal that you have violated a California or Federal law, having as one of its necessary elements an act which materially increases any of the risks insured against.

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(4) Discovery of willful or grossly negligent acts or omissions, or of any violations of state laws or regulations establishing safety standards, by you or your representative, which materially increase any of the risks insured against.

(5) Failure by you or your representative to implement reasonable loss control requirements, agreed to by you as a condition of policy issuance, or which were conditions precedent to our use of a particular rate or rating plan, if that failure materially increases any of the risks insured against.

(6) A determination by the Commissioner of Insurance that the:

(a) Loss of, or changes in, our reinsurance covering all or part of the risk would threaten our financial integrity or solvency; or

(b) Continuation of the policy coverage would:

(i) Place us in violation of California law or the laws of the state where we are domiciled; or

(ii) Threaten our solvency.

(7) A change by you or your representative in the activities or property of the commercial or industrial enterprise, which results in a materially added, increased or changed risk, unless the added, increased or changed risk is included in the policy.

b. We will mail or deliver advance written notice of cancellation, stating the reason for cancellation, to the first Named Insured, at the mailing address shown in the policy, and to the producer of record, at least:

(1) 10 days before the effective date of cancellation if we cancel for nonpayment of premium or discovery of fraud; or

(2) 30 days before the effective date of cancellation if we cancel for any other reason listed in Paragraph **3.a.**

B. The following provision is added to the **Cancellation** Common Policy Condition:

7. Residential Property

This provision applies to coverage on real property which is used predominantly for residential purposes and consisting of not more than four dwelling units, and to coverage on tenants' household personal property in a residential unit, if such coverage is written under one of the following:

Commercial Property Coverage Part

Farm Coverage Part – Farm Property – Farm Dwellings, Appurtenant Structures And Household Personal Property Coverage Form

a. If such coverage has been in effect for 60 days or less, and is not a renewal of coverage we previously issued, we may cancel this coverage for any reason, except as provided in **b.** and **c.** below.

b. We may not cancel this policy solely because the first Named Insured has:

(1) Accepted an offer of earthquake coverage; or

(2) Cancelled or did not renew a policy issued by the California Earthquake Authority (CEA) that included an earthquake policy premium surcharge.

However, we shall cancel this policy if the first Named Insured has accepted a new or renewal policy issued by the CEA that includes an earthquake policy premium surcharge but fails to pay the earthquake policy premium surcharge authorized by the CEA.

c. We may not cancel such coverage solely because corrosive soil conditions exist on the premises. This restriction **(c.)** applies only if coverage is subject to one of the following, which exclude loss or damage caused by or resulting from corrosive soil conditions:

(1) Commercial Property Coverage Part – Causes Of Loss – Special Form; or

(2) Farm Coverage Part – Causes Of Loss Form – Farm Property, Paragraph **D.** Covered Causes Of Loss – Special.

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C. The following is added and supersedes any provisions to the contrary:

Nonrenewal

1. Subject to the provisions of Paragraphs **C.2.** and **C.3.** below, if we elect not to renew this policy, we will mail or deliver written notice, stating the reason for nonrenewal, to the first Named Insured shown in the Declarations, and to the producer of record, at least 60 days, but not more than 120 days, before the expiration or anniversary date.

We will mail or deliver our notice to the first Named Insured, and to the producer of record, at the mailing address shown in the policy.

2. Residential Property

This provision applies to coverage on real property used predominantly for residential purposes and consisting of not more than four dwelling units, and to coverage on tenants' household property contained in a residential unit, if such coverage is written under one of the following:

Commercial Property Coverage Part

Farm Coverage Part – Farm Property – Farm Dwellings, Appurtenant Structures And Household Personal Property Coverage Form

a. We may elect not to renew such coverage for any reason, except as provided in **b., c.** and **d.** below.

b. We will not refuse to renew such coverage solely because the first Named Insured has accepted an offer of earthquake coverage.

However, the following applies only to insurers who are associate participating insurers as established by Cal. Ins. Code Section 10089.16. We may elect not to renew such coverage after the first Named Insured has accepted an offer of earthquake coverage, if one or more of the following reasons applies:

(1) The nonrenewal is based on sound underwriting principles that relate to the coverages provided by this policy and that are consistent with the approved rating plan and related documents filed with the Department of Insurance as required by existing law;

(2) The Commissioner of Insurance finds that the exposure to potential losses will threaten our solvency or place us in a hazardous condition. A hazardous condition includes, but is not limited to, a condition in which we make claims payments for losses resulting from an earthquake that occurred within the preceding two years and that required a reduction in policyholder surplus of at least 25% for payment of those claims; or

(3) We have:

(a) Lost or experienced a substantial reduction in the availability or scope of reinsurance coverage; or

(b) Experienced a substantial increase in the premium charged for reinsurance coverage of our residential property insurance policies; and

the Commissioner has approved a plan for the nonrenewals that is fair and equitable, and that is responsive to the changes in our reinsurance position.

c. We will not refuse to renew such coverage solely because the first Named Insured has cancelled or did not renew a policy, issued by the California Earthquake Authority, that included an earthquake policy premium surcharge.

d. We will not refuse to renew such coverage solely because corrosive soil conditions exist on the premises. This restriction **(d.)** applies only if coverage is subject to one of the following, which exclude loss or damage caused by or resulting from corrosive soil conditions:

(1) Commercial Property Coverage Part – Causes Of Loss – Special Form; or

(2) Farm Coverage Part – Causes Of Loss Form – Farm Property, Paragraph **D.** Covered Causes Of Loss – Special.

3. We are not required to send notice of nonrenewal in the following situations:

a. If the transfer or renewal of a policy, without any changes in terms, conditions or rates, is between us and a member of our insurance group.

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b. If the policy has been extended for 90 days or less, provided that notice has been given in accordance with Paragraph **C.1.**

c. If you have obtained replacement coverage, or if the first Named Insured has agreed, in writing, within 60 days of the termination of the policy, to obtain that coverage.

d. If the policy is for a period of no more than 60 days and you are notified at the time of issuance that it will not be renewed.

e. If the first Named Insured requests a change in the terms or conditions or risks covered by the policy within 60 days of the end of the policy period.

f. If we have made a written offer to the first Named Insured, in accordance with the timeframes shown in Paragraph **C.1.,** to renew the policy under changed terms or conditions or at an increased premium rate, when the increase exceeds 25%.

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THIS ENDORSEMENT CHANGES THE POLICY. PLEASE READ IT CAREFULLY.

CALIFORNIA CHANGES – CANCELLATION AND NONRENEWAL

This endorsement modifies insurance provided under the following:

CAPITAL ASSETS PROGRAM (OUTPUT POLICY) COVERAGE PART
COMMERCIAL AUTOMOBILE COVERAGE PART
COMMERCIAL GENERAL LIABILITY COVERAGE PART
COMMERCIAL INLAND MARINE COVERAGE PART
COMMERCIAL PROPERTY COVERAGE PART
CRIME AND FIDELITY COVERAGE PART
EMPLOYMENT-RELATED PRACTICES LIABILITY COVERAGE PART
EQUIPMENT BREAKDOWN COVERAGE PART
FARM COVERAGE PART
LIQUOR LIABILITY COVERAGE PART
MEDICAL PROFESSIONAL LIABILITY COVERAGE PART
POLLUTION LIABILITY COVERAGE PART
PRODUCTS/COMPLETED OPERATIONS LIABILITY COVERAGE PART

A. Paragraphs **2.** and **3.** of the **Cancellation** Common Policy Condition are replaced by the following:

2. All Policies In Effect For 60 Days Or Less

If this policy has been in effect for 60 days or less, and is not a renewal of a policy we have previously issued, we may cancel this policy by mailing or delivering to the first Named Insured, at the mailing address shown in the policy, and to the producer of record, advance written notice of cancellation, stating the reason for cancellation, at least:

a. 10 days before the effective date of cancellation if we cancel for:

(1) Nonpayment of premium; or

(2) Discovery of fraud by:

(a) Any insured or his or her representative in obtaining this insurance; or

(b) You or your representative in pursuing a claim under this policy.

b. 30 days before the effective date of cancellation if we cancel for any other reason.

3. All Policies In Effect For More Than 60 Days

a. If this policy has been in effect for more than 60 days, or is a renewal of a policy we issued, we may cancel this policy only upon the occurrence, after the effective date of the policy, of one or more of the following:

(1) Nonpayment of premium, including payment due on a prior policy we issued and due during the current policy term covering the same risks.

(2) Discovery of fraud or material misrepresentation by:

(a) Any insured or his or her representative in obtaining this insurance; or

(b) You or your representative in pursuing a claim under this policy.

(3) A judgment by a court or an administrative tribunal that you have violated a California or Federal law, having as one of its necessary elements an act which materially increases any of the risks insured against.

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(4) Discovery of willful or grossly negligent acts or omissions, or of any violations of state laws or regulations establishing safety standards, by you or your representative, which materially increase any of the risks insured against.

(5) Failure by you or your representative to implement reasonable loss control requirements, agreed to by you as a condition of policy issuance, or which were conditions precedent to our use of a particular rate or rating plan, if that failure materially increases any of the risks insured against.

(6) A determination by the Commissioner of Insurance that the:

(a) Loss of, or changes in, our reinsurance covering all or part of the risk would threaten our financial integrity or solvency; or

(b) Continuation of the policy coverage would:

(i) Place us in violation of California law or the laws of the state where we are domiciled; or

(ii) Threaten our solvency.

(7) A change by you or your representative in the activities or property of the commercial or industrial enterprise, which results in a materially added, increased or changed risk, unless the added, increased or changed risk is included in the policy.

b. We will mail or deliver advance written notice of cancellation, stating the reason for cancellation, to the first Named Insured, at the mailing address shown in the policy, and to the producer of record, at least:

(1) 10 days before the effective date of cancellation if we cancel for nonpayment of premium or discovery of fraud; or

(2) 30 days before the effective date of cancellation if we cancel for any other reason listed in Paragraph **3.a.**

B. The following provision is added to the **Cancellation** Common Policy Condition:

7. Residential Property

This provision applies to coverage on real property which is used predominantly for residential purposes and consisting of not more than four dwelling units, and to coverage on tenants' household personal property in a residential unit, if such coverage is written under one of the following:

Commercial Property Coverage Part

Farm Coverage Part – Farm Property – Farm Dwellings, Appurtenant Structures And Household Personal Property Coverage Form

a. If such coverage has been in effect for 60 days or less, and is not a renewal of coverage we previously issued, we may cancel this coverage for any reason, except as provided in **b.** and **c.** below.

b. We may not cancel this policy solely because the first Named Insured has:

(1) Accepted an offer of earthquake coverage; or

(2) Cancelled or did not renew a policy issued by the California Earthquake Authority (CEA) that included an earthquake policy premium surcharge.

However, we shall cancel this policy if the first Named Insured has accepted a new or renewal policy issued by the CEA that includes an earthquake policy premium surcharge but fails to pay the earthquake policy premium surcharge authorized by the CEA.

c. We may not cancel such coverage solely because corrosive soil conditions exist on the premises. This restriction **(c.)** applies only if coverage is subject to one of the following, which exclude loss or damage caused by or resulting from corrosive soil conditions:

(1) Commercial Property Coverage Part – Causes Of Loss – Special Form; or

(2) Farm Coverage Part – Causes Of Loss Form – Farm Property, Paragraph **D.** Covered Causes Of Loss – Special.

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C. The following is added and supersedes any provisions to the contrary:

Nonrenewal

1. Subject to the provisions of Paragraphs **C.2.** and **C.3.** below, if we elect not to renew this policy, we will mail or deliver written notice, stating the reason for nonrenewal, to the first Named Insured shown in the Declarations, and to the producer of record, at least 60 days, but not more than 120 days, before the expiration or anniversary date.

We will mail or deliver our notice to the first Named Insured, and to the producer of record, at the mailing address shown in the policy.

2. Residential Property

This provision applies to coverage on real property used predominantly for residential purposes and consisting of not more than four dwelling units, and to coverage on tenants' household property contained in a residential unit, if such coverage is written under one of the following:

Commercial Property Coverage Part

Farm Coverage Part – Farm Property – Farm Dwellings, Appurtenant Structures And Household Personal Property Coverage Form

a. We may elect not to renew such coverage for any reason, except as provided in **b., c.** and **d.** below.

b. We will not refuse to renew such coverage solely because the first Named Insured has accepted an offer of earthquake coverage.

However, the following applies only to insurers who are associate participating insurers as established by Cal. Ins. Code Section 10089.16. We may elect not to renew such coverage after the first Named Insured has accepted an offer of earthquake coverage, if one or more of the following reasons applies:

(1) The nonrenewal is based on sound underwriting principles that relate to the coverages provided by this policy and that are consistent with the approved rating plan and related documents filed with the Department of Insurance as required by existing law;

(2) The Commissioner of Insurance finds that the exposure to potential losses will threaten our solvency or place us in a hazardous condition. A hazardous condition includes, but is not limited to, a condition in which we make claims payments for losses resulting from an earthquake that occurred within the preceding two years and that required a reduction in policyholder surplus of at least 25% for payment of those claims; or

(3) We have:

(a) Lost or experienced a substantial reduction in the availability or scope of reinsurance coverage; or

(b) Experienced a substantial increase in the premium charged for reinsurance coverage of our residential property insurance policies; and

the Commissioner has approved a plan for the nonrenewals that is fair and equitable, and that is responsive to the changes in our reinsurance position.

c. We will not refuse to renew such coverage solely because the first Named Insured has cancelled or did not renew a policy, issued by the California Earthquake Authority, that included an earthquake policy premium surcharge.

d. We will not refuse to renew such coverage solely because corrosive soil conditions exist on the premises. This restriction **(d.)** applies only if coverage is subject to one of the following, which exclude loss or damage caused by or resulting from corrosive soil conditions:

(1) Commercial Property Coverage Part – Causes Of Loss – Special Form; or

(2) Farm Coverage Part – Causes Of Loss Form – Farm Property, Paragraph **D.** Covered Causes Of Loss – Special.

3. We are not required to send notice of nonrenewal in the following situations:

a. If the transfer or renewal of a policy, without any changes in terms, conditions or rates, is between us and a member of our insurance group.

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b. If the policy has been extended for 90 days or less, provided that notice has been given in accordance with Paragraph **C.1.**

c. If you have obtained replacement coverage, or if the first Named Insured has agreed, in writing, within 60 days of the termination of the policy, to obtain that coverage.

d. If the policy is for a period of no more than 60 days and you are notified at the time of issuance that it will not be renewed.

e. If the first Named Insured requests a change in the terms or conditions or risks covered by the policy within 60 days of the end of the policy period.

f. If we have made a written offer to the first Named Insured, in accordance with the timeframes shown in Paragraph **C.1.,** to renew the policy under changed terms or conditions or at an increased premium rate, when the increase exceeds 25%.

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CALIFORNIA CANCELATION ENDORSEMENT

This endorsement applies only to the insurance provided by the policy because California is shown in Item 3.A. of the INFORMATION PAGE.

The cancelation condition in Part Six (Conditions) of the policy is replaced by these conditions:

CANCELATION

1. You may cancel this policy. You must mail or deliver advance written notice to us stating when the cancelation is to take effect.

2. We may cancel this policy for one or more of the following reasons:

   a. Non-payment of premium;

   b. Failure to report payroll;

   c. Failure to permit us to audit payroll as required by the terms of this policy or of a previous policy issued by us;

   d. Failure to pay any additional premium resulting from an audit of payroll required by the terms of this policy or any previous policy issued by us;

   e. Material misrepresentation made by you or your agent;

   f. Failure to cooperate with us in the investigation of a claim;

   g. Failure to comply with Federal or State safety orders;

   h. Failure to comply with written recommendations of our designated loss control representatives;

   i. The occurrence of a material change in the ownership of your business;

   j. The occurrence of any change in your business or operations that materially increases the hazard for frequency or severity of loss;

   k. The occurrence of any change in your business or operation that requires additional or different classification for premium calculation;

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INSURED COPY

I. The occurrence of any change in your business or operation which contemplates an activity excluded by our reinsurance treaties.

3 If we cancel your policy for any of the reasons listed in (a) through (f), we will give you 10 days advance written notice, stating when the cancelation is to take effect. Mailing that notice to you at your mailing address shown in Item 1 of the Information Page will be sufficient to prove notice. If we cancel your policy for any of the reasons listed in Items (g) through (l), we will give you 30 days advance written notice; however, we agree that in the event of cancelation and reissuance of a policy effective upon a material change in ownership or operations, notice will not be provided.

4. The policy period will end on the day and hour stated in the cancelation notice.

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County of Fresno

DEPARTMENT OF PUBLIC WORKS AND PLANNING
STEVEN E. WHITE, DIRECTOR

January 22, 2019

David B. Dawson, President/Treasurer/Manager
W.M. Lyles Co., a California Corporation
P.O. Box 4377
Fresno, CA 93744

Subject: NOTICE OF APPROVAL, Waterworks District 38 Wastewater Facility Treatment Improvements; Contract No. 18-08-C

The contract between your firm and the County of Fresno for the referenced project became operative on January 22, 2019. Two copies of the executed contract are enclosed.

A "Notice to Proceed" authorizing commencement of the work will be issued by the Construction Engineer.

DIR Project ID 268444 is assigned to Contract No. 18-08-C.

The attached copy of Section 41 of the Charter of the County of Fresno is for your reference and compliance. If you have any questions contact Mitch Araki at maraki@fresnocountyca.gov or (559) 600-4501.

Sincerely,

Mohammad Alimi, Ph.D., P.E.
Design Division Engineer

Erin Haagenson,
Senior Staff Analyst

Enclosures

cc: Board of Supervisors, Auditor - Controller, Financial Services, Construction Management, Design Division – Design Services

ATTACHMENT TO NOTICE OF APPROVAL

(Portion of the Charter of the County of Fresno)

SECTION 41. No officer or employee shall be interested directly or indirectly in any contract or transaction with the County or become a surety upon any bond given to the County.

No officer or employee shall receive any commission, money, or thing of value, or derive any profit, benefit or advantage, directly or indirectly, from or by reason of any dealings with, or service for the County, by himself or otherwise, except his lawful compensation as such officer or employee.

As to members of appointive boards and commissions only, the following standards shall apply. No appointive board or commission member shall be financially interested in any contract made by any body or board of which he is a member. The meaning of the terms "financial interest" and "made" shall be consistent with state law. Nothing contained herein shall be construed to apply to a member of a board or commission which is purely advisory.

Any violation of the provisions of this section shall render the contract or transaction involved voidable at the option of the Board of Supervisors. It shall be the duty of every officer and employee who has knowledge of any violation of the provisions of this section immediately to report such violation to the Board of Supervisors. Failing to do so, he may be removed from his office or employment. (Amended June 3, 1980.)

Liberty Mutual

Interchange Corporate Center
450 Plymouth Road, Suite 400
Plymouth Meeting, PA. 19462-1644
Ph. (610) 832-8240

PERFORMANCE BOND

Premium: $2,468.00

Bond Number: 070207825

KNOW ALL MEN BY THESE PRESENTS, that we W.M. Lyles Co.

PO Box 4377 Fresno, CA 93744, as principal (the "Principal"), and LIBERTY MUTUAL INSURANCE COMPANY, a Massachusetts stock insurance company, as surety (the "Surety"), are held and firmly bound unto County of Fresno

2220 Tulare Street 7th Floor Fresno, CA 93721, as obligee (the "Obligee"), in the penal sum of Six Hundred Seventeen Thousand Seventy Dollars and No Cents

Dollars ($617,070.00), for the payment of which sum well and truly to be made, the Principal and the Surety, bind ourselves, our heirs, executors, administrators, successors and assigns, jointly and severally, firmly by these presents.

WHEREAS, the Principal has by written agreement, dated the _____ day of _____, _____, entered into a contract (the "Contract") with the Obligee for WATERWORKS DISTRICT 38 WASTEWATER TREATMENT FACILITY IMPROVEMENTS,CLEAN WATER STATE REVOLVING FUND PROJECT No. C-06-7109-110, CONTRACT NUMBER : 18-08-C

NOW, THEREFORE, THE CONDITION OF THIS OBLIGATION IS SUCH, that if the Principal shall promptly and faithfully perform the Contract, then this obligation shall be null and void; otherwise it shall remain in full force and effect.

PROVIDED AND SUBJECT TO THE CONDITIONS PRECEDENT:

1. Whenever the Principal shall be, and declared by the Obligee to be in default under the Contract, the Obligee having performed the Obligee's obligations thereunder, the Surety may promptly remedy the default, or shall promptly:

   1.1 Arrange for the Principal, with consent of the Obligee, to perform and complete the Contract; or

   1.2 Undertake to perform and complete the Contract itself, through its agents or through independent contractors; or

   1.3 Obtain a bid or bids from alternative contractors to complete the Contract in accordance with its terms and conditions, and upon determination by the Surety of the lowest responsible bidder, or if the Obligee elects, upon determination by the Obligee and the Surety jointly of the lowest responsible bidder, arrange for a contract between such bidder and the Obligee, and make available as work progresses (even though there should be a default or a succession of defaults under the contract or contracts of completion arranged under this paragraph) sufficient funds to pay the cost of completion less the balance of the contract price; but not exceeding the amount set forth in the first paragraph of this bond. The term "balance of the contract price," as used in this paragraph, shall mean the total amount payable by the Obligee to the Principal under the Contract and any amendments thereto, less the amount properly paid by the Obligee to the Principal; or

   1.4 Waive its right to perform and complete, arrange for completion, or obtain a new contractor and with reasonable promptness under the circumstances:

      a. After investigation, determine the amount for which it may be liable to the Obligee and, as soon as practicable after the amount is determined, tender payment therefore to the Obligee; or

      b. Deny liability in whole or in part and notify the Obligee citing reasons therefore.

2. Notwithstanding any other provision of this bond or the Contract, or otherwise, the Surety is not responsible for and shall not be held liable to the Obligee for any hazardous waste removal and the Surety shall not be held liable to, or in any other respect be responsible to, the Obligee by way of indemnity, claims or otherwise, or to any public authority or to any other person, firm or corporation, for or on account of any fines or claims by any public authority or for bodily injuries or property damage to any person or thing, including, but not limited to, injury or damage due to the release or threat of release of hazardous substances of any kind or damage to real estate or to the environment or clean-up costs or other damages of whatever kind or nature arising out of any act of commission or omission by the Principal, the Principal's agents, servants, employees, subcontractors or suppliers or any other person in connection with the performance of the Contract. This limitation applies regardless of when any such fine is assessed, claim is made, or injury, damage, release or threat of release occurs and without regard to any term or condition of the Contract.

3. The Surety hereby waives notice of any alteration or extension of time made by the Obligee.

4. Any suit under this bond must be instituted before the expiration of one (1) year from the date on which the Principal ceased to work on the Contract or such time period as otherwise permitted by relevant statute. If the provisions of this paragraph are void or prohibited by law, the minimum period of limitation available to sureties as a defense in the jurisdiction of the suit shall be applicable.

5. No right of action shall accrue on this bond to or for the use of any person or corporation other than the Obligee named herein or the heirs, executors, administrators or successors of the Obligee.

6. Any claims must be presented in writing to Liberty Mutual Insurance Company to the attention of the Surety Law Department at the above address.

DATED as of this 2nd day of January, 2019.

WITNESS / ATTEST

W.M. Lyles Co.
(Principal)

By: _____ (Seal)
Name: Kevin R. Shigematsu
Title: Asst. Vice President

LIBERTY MUTUAL INSURANCE COMPANY
(Surety)

By: _____
Lyn Genito, Attorney-in-Fact

LIBERTY MUTUAL INSURANCE COMPANY INCORPORATED 1912 MASSACHUSETTS

CALIFORNIA ALL-PURPOSE ACKNOWLEDGMENT **CIVIL CODE § 1189**

A notary public or other officer completing this certificate verifies only the identity of the individual who signed the document to which this certificate is attached, and not the truthfulness, accuracy, or validity of that document.

State of California)
County of Kern)

On January 8, 2019 before me, Priscilla Marie Fortson, Notary Public,
Date *Here Insert Name and Title of the Officer*

personally appeared Kevin R. Shigematsu
Name(s) of Signer(s)

,

who proved to me on the basis of satisfactory evidence to be the person~~(s)~~ whose name~~(s)~~ is~~/are~~ subscribed to the within instrument and acknowledged to me that he~~/she/they~~ executed the same in his~~/her/their~~ authorized capacity~~(ies)~~, and that by his~~/her/their~~ signature~~(s)~~ on the instrument the person~~(s)~~, or the entity upon behalf of which the person~~(s)~~ acted, executed the instrument.

PRISCILLA MARIE FORTSON
Notary Public - California
Kern County
Commission # 2259694
My Comm. Expires Sep 25, 2022

I certify under PENALTY OF PERJURY under the laws of the State of California that the foregoing paragraph is true and correct.

WITNESS my hand and official seal.

Signature _____
Signature of Notary Public

Place Notary Seal Above

OPTIONAL

Though this section is optional, completing this information can deter alteration of the document or fraudulent reattachment of this form to an unintended document.

Description of Attached Document

Title or Type of Document: Performance Bond Document Date: 1/2/19

Number of Pages: Two Signer~~(s)~~ Other Than Named Above: None

Capacity~~(ies)~~ Claimed by Signer~~(s)~~

Signer's Name: Kevin R. Shigematsu
☒ Corporate Officer — Title~~(s)~~: Asst. Vice President
☐ Partner — ☐ Limited ☐ General
☐ Individual ☐ Attorney in Fact
☐ Trustee ☐ Guardian or Conservator
☐ Other: _____
Signer Is Representing: W.M. Lyles Co.

~~Signer's Name:~~ _____
☐ Corporate Officer — Title(s): _____
☐ Partner — ☐ Limited ☐ General
☐ Individual ☐ Attorney in Fact
☐ Trustee ☐ Guardian or Conservator
☐ Other: _____
~~Signer Is Representing:~~ _____

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CALIFORNIA ALL-PURPOSE ACKNOWLEDGMENT — Civil Code § 1189

A notary public or other officer completing this certificate verifies only the identity of the individual who signed the document to which this certificate is attached, and not the truthfulness, accuracy, or validity of that document.

State of California)
) ss
County of Fresno)

On 01-02-2019, before me, Cody Lyman, Notary Public, personally appeared Lyn Genito, who proved to me on the basis of satisfactory evidence to be the person~~(s)~~ whose name~~(s)~~ is~~/are~~ subscribed to the within instrument and acknowledged to me that ~~he~~/she/~~they~~ executed the same in ~~his~~/her/~~their~~ authorized capacity~~(ies)~~, and that by ~~his~~/her/~~their~~ signature~~(s)~~ on the instrument the person~~(s)~~, or the entity upon behalf of which the person~~(s)~~ acted, executed the instrument.

I certify under PENALTY OF PERJURY under the laws of the State of California that the foregoing paragraph is true and correct.

WITNESS my hand and official seal.

CODY LYMAN
NOTARY PUBLIC - CALIFORNIA
COMMISSION # 2177131
FRESNO COUNTY
My Comm. Exp. December 25, 2020

Signature: _____
Cody Lyman, Notary Public

(Seal)

Liberty Mutual Insurance Company
SURETY COMPANY

PAYMENT BOND - PUBLIC WORK
SECTIONS 3247 - 3252, CIVIL CODE
(CALIFORNIA)

Bond No. 070207825
Premium: Included in performance

KNOW ALL MEN BY THESE PRESENTS:

THAT WHEREAS, The County of Fresno has awarded to W.M. Lyles Co.

as Contractor, a contract for the work described as follows: Waterworks District 38 Wastewater Treatment Facility Improvements, Clean Water State Revolving Fund Project No. C-06-7109-110 Contract No. 18-08-C

AND WHEREAS, Said Contractor is required to furnish a bond in connection with said contract, to secure the payment of claims of laborers, mechanics, materialmen, and other persons as provided by law.

NOW, THEREFORE, We the undersigned Contractor and Surety are held and firmly bound unto the **County of Fresno** in the amount required by law, the sum of $* see below, for which payment well and truly to be made we bind ourselves, our heirs, executors and administrators, successors and assigns, jointly and severally, firmly by these presents.

THE CONDITION OF THIS OBLIGATION IS SUCH,

That if said Contractors shall fail to pay (1) Any of the persons named in Civil Code Section 3181, (2) amounts due under the Unemployment Insurance Code for work or labor performed in connection with said contract by any such claimant, or (3) any amounts required to be deducted, withheld and paid over to the Employment Development Department and to the Franchise Tax Board from wages of the employees of Contractor and his sub-contractors with respect to such work and labor, pursuant to Section 13020 of the Unemployment Insurance Code, then the Surety or Sureties herein will pay for the same in an aggregate amount not exceeding the sum specified in this bond, and also in case suit is brought upon the bond, a reasonable attorney's fee, to be fixed by the court, otherwise the above obligation shall be void.

This bond shall inure to the benefit of any of the persons named in Civil Code Section 3181 so as to give a right of action to such persons or their assigns in any suit brought upon this bond.

This bond is executed and filed to comply with the provisions of the act of Legislature of the State of California as designated in Civil Code, Sections 3247 - 3252 inclusive, and all amendments thereto.

IN WITNESS WHEREOF, We have hereunto set our hands and seals on this 10 day of January, 2019.

W.M. Lyles Co.

Contractor
Kevin R. Shigematsu, Asst. Vice President

Liberty Mutual Insurance Company
SURETY COMPANY

By Bonnie Gonzalez
Bonnie Gonzalez Attorney In Fact

* Six Hundred Seventeen Thousand Seventy Dollars and 00/100

S-2061-B (07-97)

CALIFORNIA ALL-PURPOSE ACKNOWLEDGMENT **CIVIL CODE § 1189**

A notary public or other officer completing this certificate verifies only the identity of the individual who signed the document to which this certificate is attached, and not the truthfulness, accuracy, or validity of that document.

State of California)
County of Kern)

On January 11, 2019 before me, Priscilla Marie Fortson, Notary Public,
Date *Here Insert Name and Title of the Officer*

personally appeared Kevin R. Shigematsu
Name(~~s~~) of Signer(~~s~~)

,

who proved to me on the basis of satisfactory evidence to be the person~~(s)~~ whose name~~(s)~~ is~~/are~~ subscribed to the within instrument and acknowledged to me that he/~~she/they~~ executed the same in his/~~her/their~~ authorized capacity~~(ies)~~, and that by his/~~her/their~~ signature~~(s)~~ on the instrument the person~~(s)~~, or the entity upon behalf of which the person~~(s)~~ acted, executed the instrument.

I certify under PENALTY OF PERJURY under the laws of the State of California that the foregoing paragraph is true and correct.

WITNESS my hand and official seal.

PRISCILLA MARIE FORTSON
Notary Public - California
Kern County
Commission # 2259694
My Comm. Expires Sep 25, 2022

Signature _____
Signature of Notary Public

Place Notary Seal Above

OPTIONAL

Though this section is optional, completing this information can deter alteration of the document or fraudulent reattachment of this form to an unintended document.

Description of Attached Document

Title or Type of Document: Payment Bond Document Date: 1/10/2019
Number of Pages: One Signer~~(s)~~ Other Than Named Above: None

Capacity~~(ies)~~ Claimed by Signer~~(s)~~

Signer's Name: Kevin R. Shigematsu
☒ Corporate Officer — Title~~(s)~~: Asst. Vice President
☐ Partner — ☐ Limited ☐ General
☐ Individual ☐ Attorney in Fact
☐ Trustee ☐ Guardian or Conservator
☐ Other: _____
Signer Is Representing: W.M. Lyles Co.

~~Signer's Name:~~ _____
☐ Corporate Officer — Title(s): _____
☐ Partner — ☐ Limited ☐ General
☐ Individual ☐ Attorney in Fact
☐ Trustee ☐ Guardian or Conservator
☐ Other: _____
Signer Is Representing: _____

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CALIFORNIA ALL-PURPOSE ACKNOWLEDGMENT **Civil Code § 1189**

A notary public or other officer completing this certificate verifies only the identity of the individual who signed the document to which this certificate is attached, and not the truthfulness, accuracy, or validity of that document.

State of California)
) ss
County of Fresno)

On January 10, 2019, before me, Lyn Genito, Notary Public, personally appeared Bonnie Gonzalez, who proved to me on the basis of satisfactory evidence to be the person~~(s)~~ whose name~~(s)~~ is~~/are~~ subscribed to the within instrument and acknowledged to me that ~~he~~/she/~~they~~ executed the same in ~~his~~/her/~~their~~ authorized capacity~~(ies)~~, and that by ~~his~~/her/~~their~~ signature~~(s)~~ on the instrument the person~~(s)~~, or the entity upon behalf of which the person~~(s)~~ acted, executed the instrument.

I certify under PENALTY OF PERJURY under the laws of the State of California that the foregoing paragraph is true and correct.

WITNESS my hand and official seal.

LYN GENITO
Commission # 2094223
Notary Public - California
Fresno County
My Comm. Expires Jan 16, 2019

(Seal)

Signature: _____
Lyn Genito, Notary Public

THIS POWER OF ATTORNEY IS NOT VALID UNLESS IT IS PRINTED ON RED BACKGROUND.
This Power of Attorney limits the acts of those named herein, and they have no authority to bind the Company except in the manner and to the extent herein stated.

Certificate No. 8165520

Liberty Mutual Insurance Company
The Ohio Casualty Insurance Company West American Insurance Company

POWER OF ATTORNEY

KNOWN ALL PERSONS BY THESE PRESENTS: That The Ohio Casualty Insurance Company is a corporation duly organized under the laws of the State of New Hampshire, that Liberty Mutual Insurance Company is a corporation duly organized under the laws of the State of Massachusetts, and West American Insurance Company is a corporation duly organized under the laws of the State of Indiana (herein collectively called the "Companies"), pursuant to and by authority herein set forth, does hereby name, constitute and appoint,

Cody Lyman; Ralph B. Busch III; John C. Day; Steven P. Edwards; Lyn Genito; Bonnie Gonzalez

all of the city of Fresno, state of CA each individually if there be more than one named, its true and lawful attorney-in-fact to make, execute, seal, acknowledge and deliver, for and on its behalf as surety and as its act and deed, any and all undertakings, bonds, recognizances and other surety obligations, in pursuance of these presents and shall be as binding upon the Companies as if they have been duly signed by the president and attested by the secretary of the Companies in their own proper persons.

IN WITNESS WHEREOF, this Power of Attorney has been subscribed by an authorized officer or official of the Companies and the corporate seals of the Companies have been affixed thereto this 27th day of July, 2018.

The Ohio Casualty Insurance Company
Liberty Mutual Insurance Company
West American Insurance Company

By: David M. Carey
David M. Carey, Assistant Secretary

STATE OF PENNSYLVANIA ss
COUNTY OF MONTGOMERY

On this 27th day of July, 2018, before me personally appeared David M. Carey, who acknowledged himself to be the Assistant Secretary of Liberty Mutual Insurance Company, The Ohio Casualty Company, and West American Insurance Company, and that he, as such, being authorized so to do, execute the foregoing instrument for the purposes therein contained by signing on behalf of the corporations by himself as a duly authorized officer.

IN WITNESS WHEREOF, I have hereunto subscribed my name and affixed my notarial seal at King of Prussia, Pennsylvania, on the day and year first above written.

COMMONWEALTH OF PENNSYLVANIA
Notarial Seal
Teresa Pastella, Notary Public
Upper Merion Twp., Montgomery County
My Commission Expires March 28, 2021
Member, Pennsylvania Association of Notaries

By: Teresa Pastella
Teresa Pastella, Notary Public

This Power of Attorney is made and executed pursuant to and by authority of the following By-laws and Authorizations of The Ohio Casualty Insurance Company, Liberty Mutual Insurance Company, and West American Insurance Company which resolutions are now in full force and effect reading as follows:

ARTICLE IV – OFFICERS – Section 12. Power of Attorney. Any officer or other official of the Corporation authorized for that purpose in writing by the Chairman or the President, and subject to such limitation as the Chairman or the President may prescribe, shall appoint such attorneys-in-fact, as may be necessary to act in behalf of the Corporation to make, execute, seal, acknowledge and deliver as surety any and all undertakings, bonds, recognizances and other surety obligations. Such attorneys-in-fact, subject to the limitations set forth in their respective powers of attorney, shall have full power to bind the Corporation by their signature and execution of any such instruments and to attach thereto the seal of the Corporation. When so executed, such instruments shall be as binding as if signed by the President and attested to by the Secretary. Any power or authority granted to any representative or attorney-in-fact under the provisions of this article may be revoked at any time by the Board, the Chairman, the President or by the officer or officers granting such power or authority.

ARTICLE XIII – Execution of Contracts – SECTION 5. Surety Bonds and Undertakings. Any officer of the Company authorized for that purpose in writing by the chairman or the president, and subject to such limitations as the chairman or the president may prescribe, shall appoint such attorneys-in-fact, as may be necessary to act in behalf of the Company to make, execute, seal, acknowledge and deliver as surety any and all undertakings, bonds, recognizances and other surety obligations. Such attorneys-in-fact subject to the limitations set forth in their respective powers of attorney, shall have full power to bind the Company by their signature and execution of any such instruments and to attach thereto the seal of the Company. When so executed such instruments shall be as binding as if signed by the president and attested by the secretary.

Certificate of Designation – The President of the Company, acting pursuant to the Bylaws of the Company, authorizes David M. Carey, Assistant Secretary to appoint such attorneys-in-fact as may be necessary to act on behalf of the Company to make, execute, seal, acknowledge and deliver as surety any and all undertakings, bonds, recognizances and other surety obligations.

Authorization – By unanimous consent of the Company's Board of Directors, the Company consents that facsimile or mechanically reproduced signature of any assistant secretary of the Company, wherever appearing upon a certified copy of any power of attorney issued by the Company in connection with surety bonds, shall be valid and binding upon the Company with the same force and effect as though manually affixed.

I, Renee C. Llewellyn, the undersigned, Assistant Secretary, The Ohio Casualty Insurance Company, Liberty Mutual Insurance Company, and West American Insurance Company do hereby certify that the original power of attorney of which the foregoing is a full, true and correct copy of the Power of Attorney executed by said Companies, is in full force and effect and has not been revoked.

IN TESTIMONY WHEREOF, I have hereunto set my hand and affixed the seals of said Companies this 10 day of January, 2019.

By: Renee C. Llewellyn
Renee C. Llewellyn, Assistant Secretary

Not valid for mortgage, note, loan, letter of credit, currency rate, interest rate or residual value guarantees.

To confirm the validity of this Power of Attorney call 1-610-832-8240 between 9:00 am and 4:30 pm EST on any business day.

LMS_12873_022017

SURETY VERIFICATION

(Complete and return with Performance and Payment Bonds)

PROJECT Waterworks District 38 Wastewater Treatment Facility Improvements, Clean Water State Revolving Fund Project No. C-06-7109-110

Contract No. 18-08-C

Contractor W.M. Lyles Co.

Contact Person Kevin Shigematsu Phone No. 559-441-1900

SURETY COMPANY (Exact Name Style, Home Office Address)

Liberty Mutual Insurance Company

1340 Treat Blvd, Suite 550
Walnut Creek, CA. 94597

AGENT / BROKER

Attorney-in-fact Lyn Genito Phone No. 559-374-3560

Firm Alliant Insurance Services, Inc.

Mail Address 9 E. River Park Place East, 3rd Floor

City, State, ZIP Fresno, CA. 93720

CA Dept of Insurance License No. 0C36861 Expires 09 / 30 / 2020
(or attach copy of License)

Owner's use only

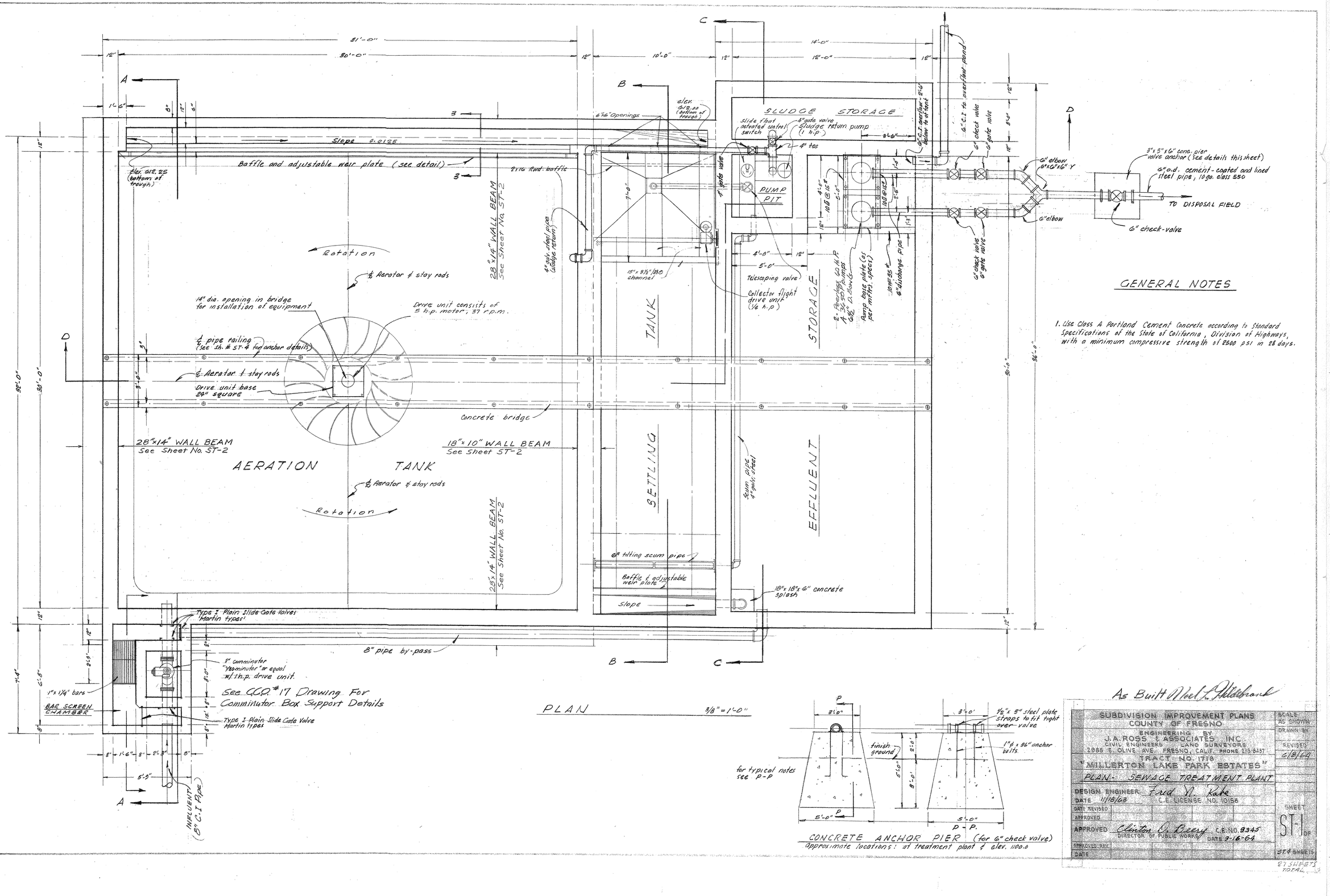
Received 1 / 15 / 2019 By MWA

Surety admitted 08 / 30 / 1929

Surety Best's Class XV Rating A

Comments

\dsform\PW180G



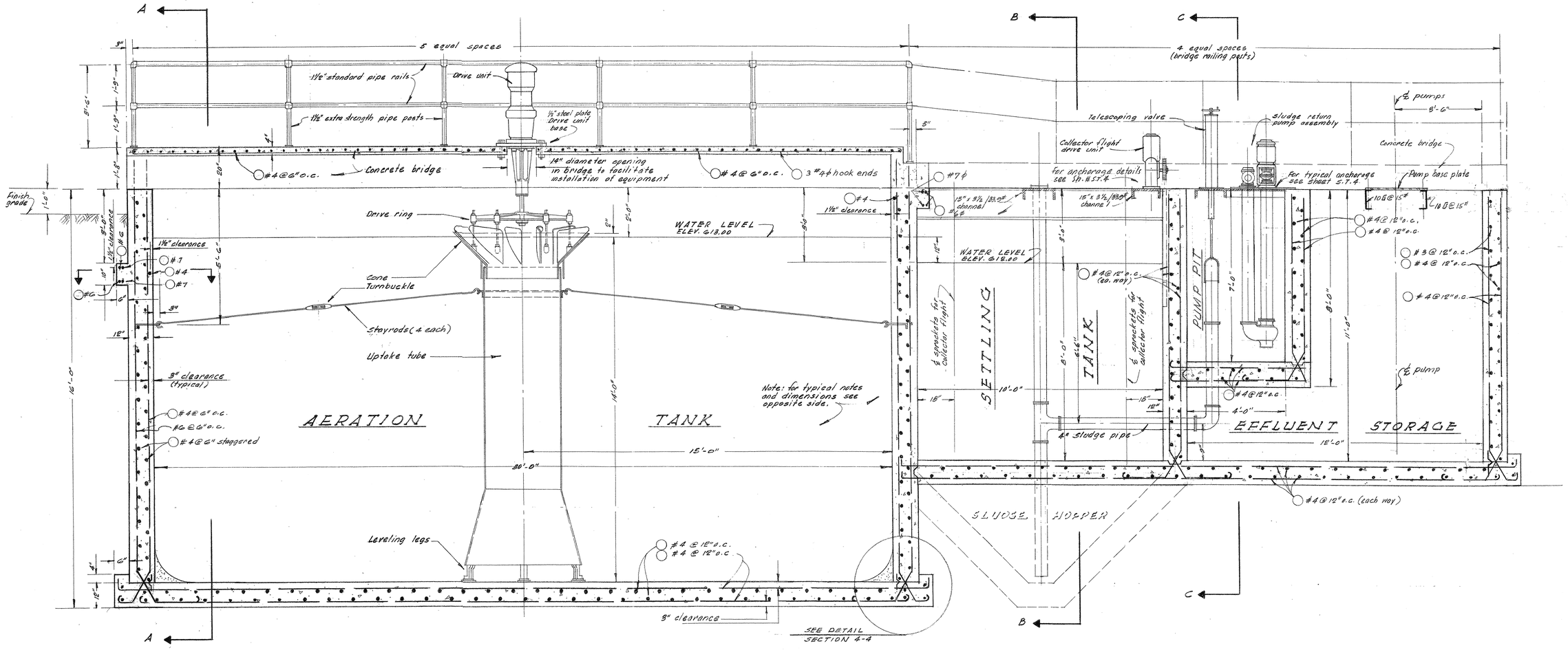
GENERAL NOTES

1. Use Class A Portland Cement Concrete according to Standard Specifications of the State of California, Division of Highways, with a minimum compressive strength of 2500 psi in 28 days.

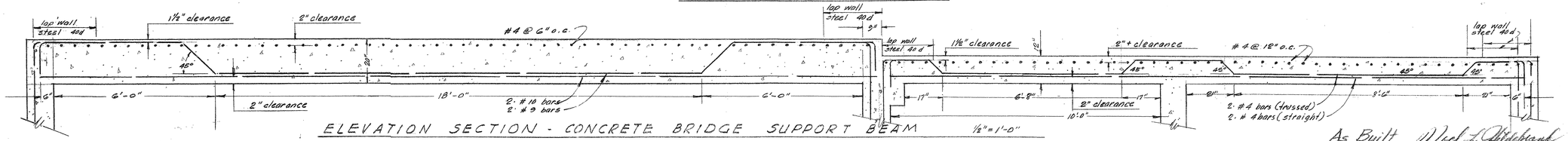
As Built Noel L. Hildebrand

SUBDIVISION IMPROVEMENT PLANS COUNTY OF FRESNO	SCALE AS SHOWN
ENGINEERING BY J.A. ROSS & ASSOCIATES INC. CIVIL ENGINEERS LAND SURVEYORS 2885 E. OLIVE AVE. FRESNO, CALIF. PHONE 255-8437	DRAWN BY
TRACT NO. 1718 "MILLERTON LAKE PARK ESTATES"	REVISED 6/8/64
PLAN - SEWAGE TREATMENT PLANT	
DESIGN ENGINEER Fred N. Rake DATE 11/18/63 C.E. LICENSE NO. 10158	
DATE REVISED	
APPROVED	
APPROVED Clinton O. Beery C.E. NO. 9345 DIRECTOR OF PUBLIC WORKS DATE 9-16-64	SHEET ST-1 OF 27 SHEETS
APPROVED REV. DATE	

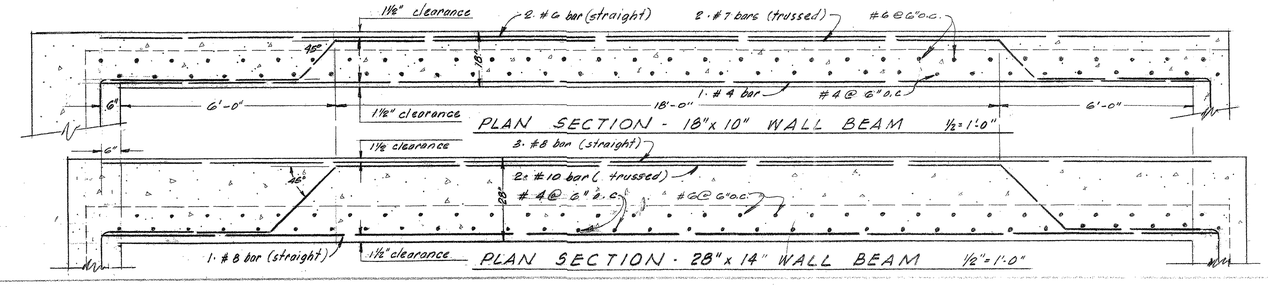
27 SHEETS TOTAL



SECTION D-D ½"=1'-0"



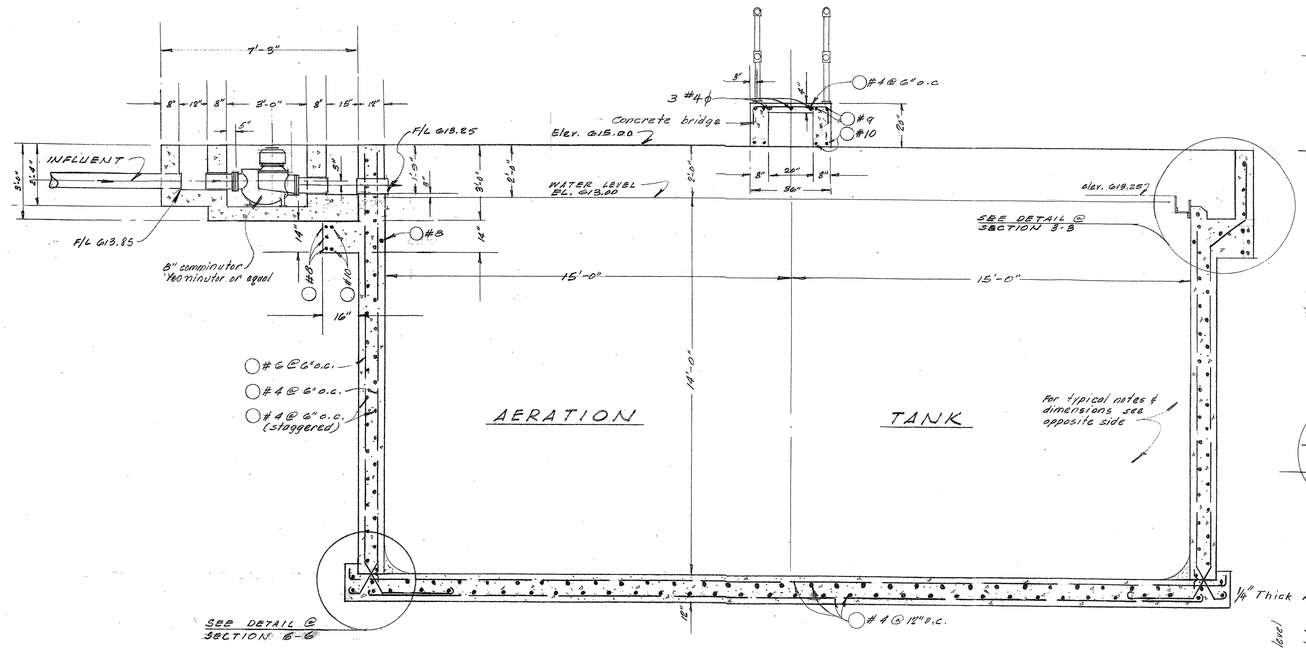
ELEVATION SECTION - CONCRETE BRIDGE SUPPORT BEAM ½"=1'-0"



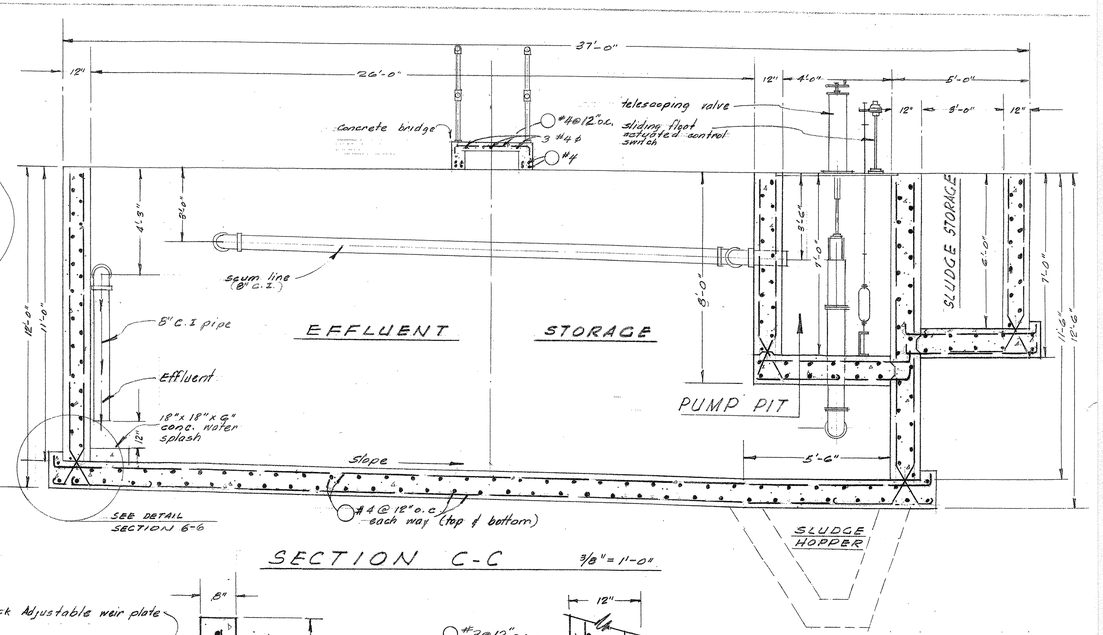
As Built Wood & Hildebrand

SUBDIVISION IMPROVEMENT PLANS COUNTY OF FRESNO	SCALE AS SHOWN
ENGINEERING BY J.A. ROSS & ASSOCIATES INC. CIVIL ENGINEERS LAND SURVEYORS 2988 E. OLIVE AVE., FRESNO, CALIF. PHONE 233-8457	DRAWN BY
TRACT NO. 1718 "MILLERTON LAKE PARK ESTATES"	REVISED 6/8/64
DETAILS - SEWAGE TREATMENT PLANT	
DESIGN ENGINEER Fred N. Rabe DATE 11/18/63 C.E. LICENSE NO. 10158	
DATE REVISED	
APPROVED	SHEET ST-2 OF
APPROVED Clinton D. Beery C.E. NO. 9345 DIRECTOR OF PUBLIC WORKS DATE 9-16-64	
APPROVED REV. DATE	ST 4 SHEETS

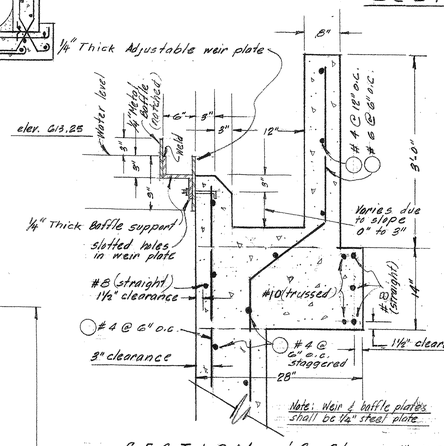
27 SHEETS TOTAL



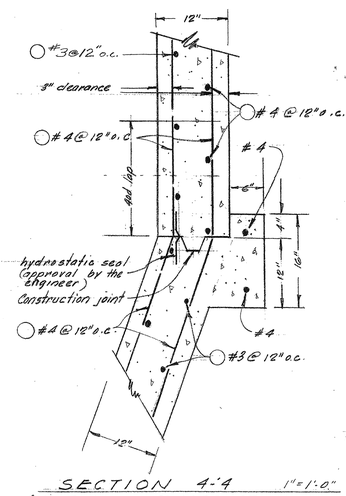
SECTION A-A 3/8"=1'-0"



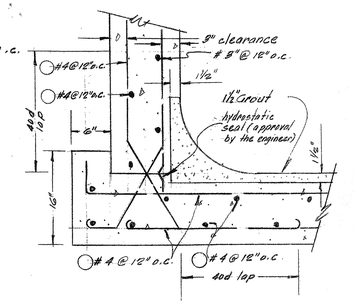
SECTION C-C 3/8"=1'-0"



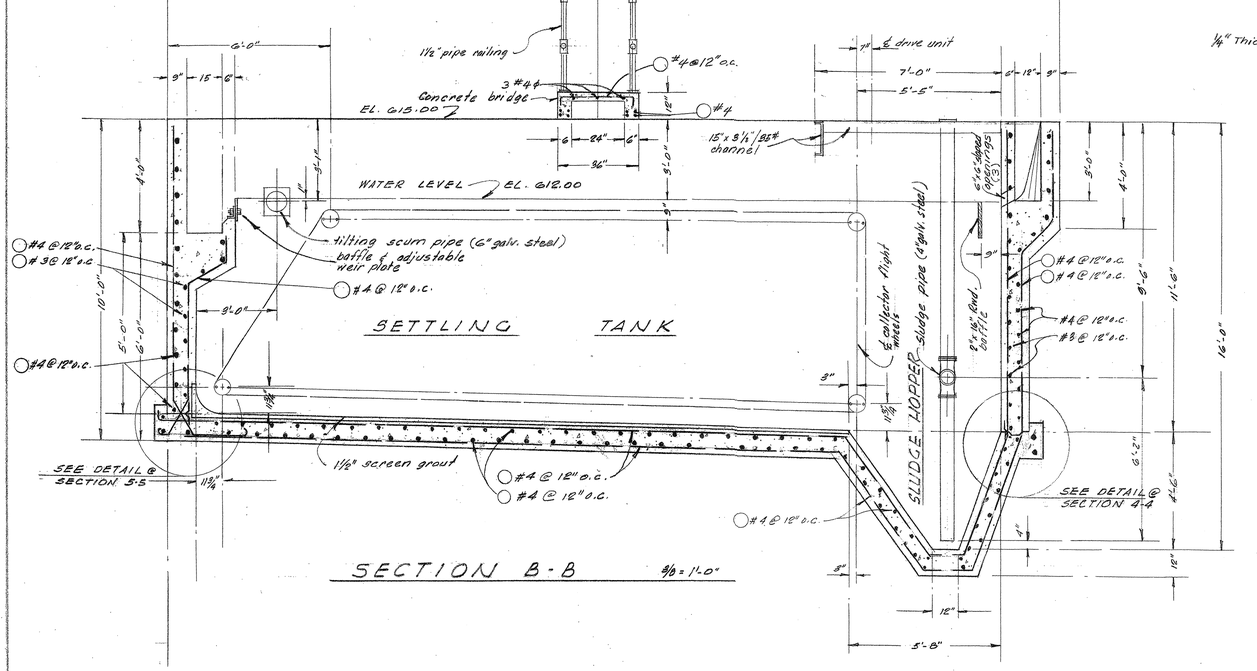
SECTION '3-3' 1"=1'-0"
(TROUGH & 14" x 28" BEAM DETAIL)



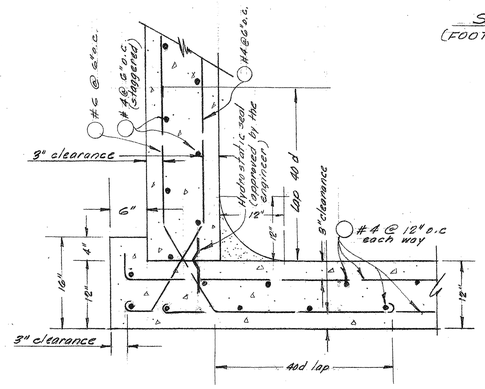
SECTION 4-4 1"=1'-0"
(FOOTING & CONSTRUCTION JOINT)
SLUDGE HOPPER



SECTION 5-5 1"=1'-0"
(FOOTING DETAIL - SETTLING TANK)



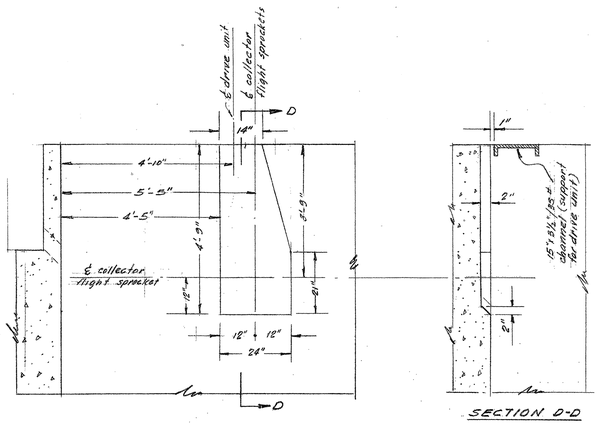
SECTION B-B 3/8"=1'-0"



SECTION 6-6 1"=1'-0"
(TYPICAL FOOTING & CONSTRUCTION JOINT)
AERATION TANK

As Built Model Subdivision

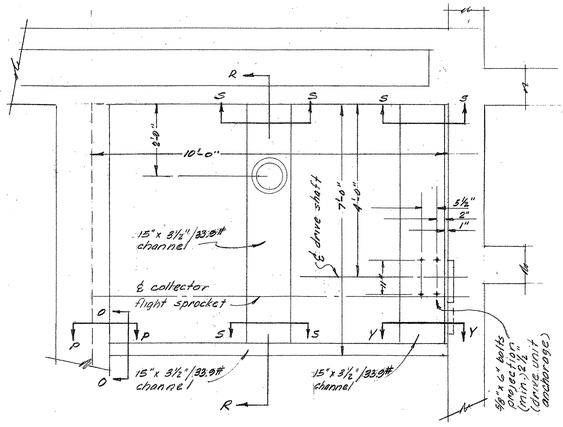
SUBDIVISION IMPROVEMENT PLANS COUNTY OF FRESNO	SCALE AS SHOWN
ENGINEERING BY J.A. ROSS & ASSOCIATES, INC. CIVIL ENGINEERS LAND SURVEYORS 2988 E. OLIVE AVE. FRESNO, CALIF. PHONE 233-8437	DRAWN BY REVISED 6/64
TRACT NO. 1718 "MILLERTON LAKE PARK ESTATES" DETAILS - SEWAGE TREATMENT PLANT	
DESIGN ENGINEER Fred N. Rabe DATE 11/18/63 C.E. LICENSE NO. 10158	
DATE REVISED	
APPROVED	
APPROVED Clinton D. Berry C.E. NO. 9345 DIRECTOR OF PUBLIC WORKS DATE 9-16-64	SHEET ST3 OF 27 SHEETS TOTAL
APPROVED REV. DATE	



SECTION D-D

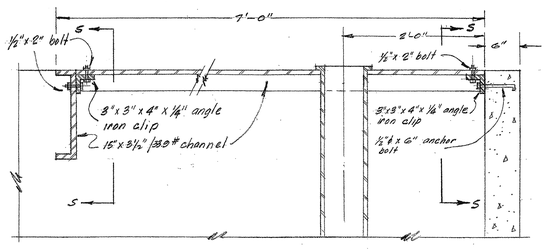
ELEVATION & SECTION SHOWING DIMENSIONS OF RECESS IN WALL ADJACENT TO COLLECTOR FLIGHT DRIVE UNIT

Scale: ½" = 1'-0"



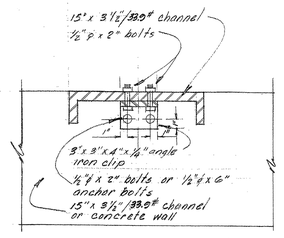
PLAN - SHOWING SUPPORT CHANNELS OVER SLUDGE HOPPER

1½" = 1'-0"



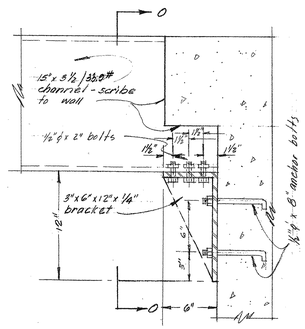
SECTION 'R'R'

½" = 1'-0"



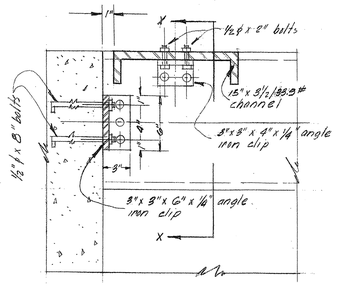
SECTION S-S

1½" = 1'-0"



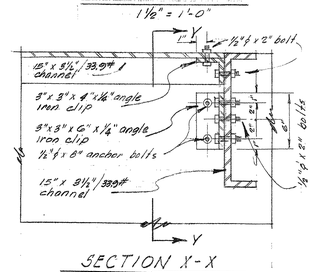
SECTION P-P

1½" = 1'-0"



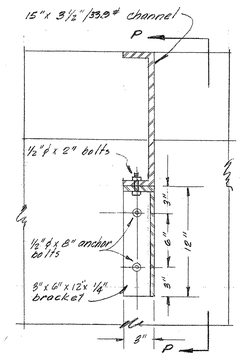
SECTION Y-Y

1½" = 1'-0"



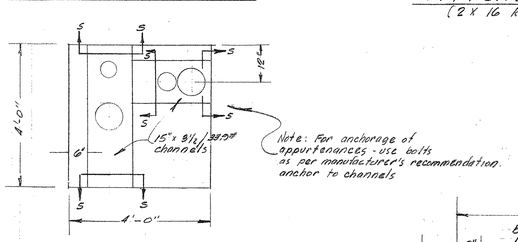
SECTION X-X

1½" = 1'-0"



SECTION O-O

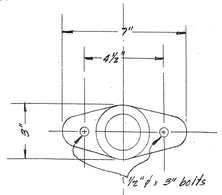
1½" = 1'-0"



Note: For anchorage of appurtenances - use bolts as per manufacturer's recommendation. anchor to channels

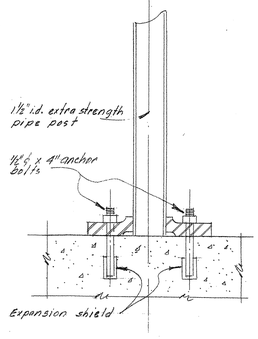
PLAN - SHOWING SUPPORT CHANNELS OVER PUMP PIT

½" = 1'-0"



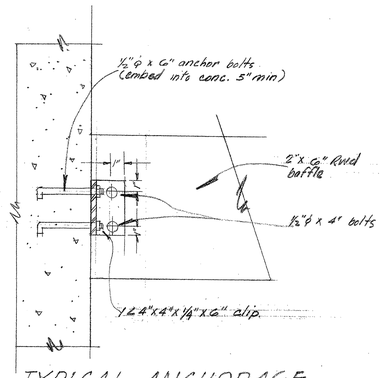
PLAN - POST ANCHORAGE

Scale: ¼" = 1"



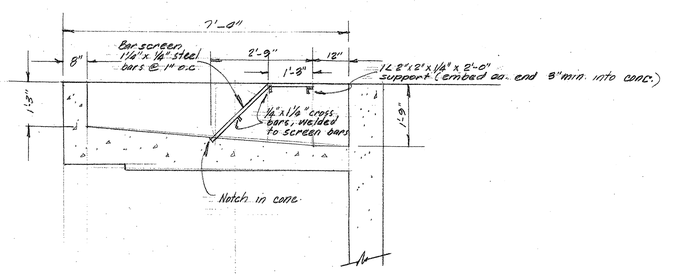
DETAIL - TYPICAL ANCHORAGE OF PIPE RAILING POST

Scale: ¼" = 1"



TYPICAL ANCHORAGE

(2 x 16 RWD BAFFLE ONLY)



TYPICAL CROSS-SECTION

(BAR SCREEN ONLY)

Note: Connections shown are typical for all beam to concrete connections & all beam to beam connections.

As Built Noel L. Hildebrand

SUBDIVISION IMPROVEMENT PLANS COUNTY OF FRESNO	SCALE: AS SHOWN
ENGINEERING BY J. A. ROSS & ASSOCIATES INC. CIVIL ENGINEERS LAND SURVEYORS 2388 E. OLIVE AVE., FRESNO, CALIF. PHONE 485-0437	DRAWN BY: R.M.E. REVISED
TRACT NO. 1718 "MILLERTON LAKE PARK ESTATES"	6/8/64
DETAILS - SEWAGE TREATMENT PLANT	
DESIGN ENGINEER Fred N. Rabe DATE 11/18/63 C.E. LICENSE NO. 10158	
DATE REVISED	SHEET
APPROVED	ST-4
APPROVED Clinton D. Beery C.E. NO. 9345 DIRECTOR OF PUBLIC WORKS DATE 9-16-64	
APPROVED, DEPT.	
DATE	4 OF 57 SHEETS

27 SHEETS TOTAL