

LOS OSOS COMMUNITY SERVICES DISTRICT

**CONSTRUCTION OF
LOS OSOS WASTEWATER PROJECT
AREA A, AREA B, AREA C, & AREA D AND WWTF**

**STATE REVOLVING FUND LOAN PROGRAM
PROJECT NO. C – 06 – 4014 - 110**

**ADDENDUM NO. 1
March 17, 2004**



MWH
MONTGOMERY WATSON HARZA

**Addendum No. 1
to the
Los Osos Wastewater Project**

March 15, 2004

Los Osos Community Services District
2122 9th Street, Los Osos, CA 93402

To all prospective Bidders:

Attached herein are addendum items that shall be incorporated into the Contract Documents for the Los Osos Wastewater Project. These changes shall be considered as part of the Contract Documents, as if they were originally provided therein, and as such shall be used as Contract Documents. All other terms, conditions, requirements, and specifications of the Contract Documents shall remain unchanged.

Bidders must acknowledge receipt of this addendum on the Bid Forms. Failure to acknowledge receipt of this addendum may be considered non-responsive by the OWNER and may be cause for rejection of your Bid.

All communications relative to this addendum shall be directed to the ENGINEER prior to opening of the Bids.

For Area construction contact:

MWH Americas, Inc.
1340 Treat Blvd., Suite 300
Walnut Creek, CA 94597-7966
Telephone: (925) 274 - 2245
Attention: John Bergen

For WWTF construction contact:

MWH Americas, Inc.
1340 Treat Blvd., Suite 300
Walnut Creek, CA 94597-7966
Telephone: (925) 274 - 2201
Attention: Steve Hyland

The Contract Documents for the Los Osos Wastewater Project shall be modified by this addendum in accordance with the following changes:

No.	Ref.	Description
	Vol. I	
1.01	Title Pages	Delete the references to "April 14, 2004" for Receipt of Bids and replace with the following: "April 28, 2004".
1.02	00030	Delete the references to "April 14, 2004" in the Paragraph RECEIPT OF BIDS and Paragraph OPENING OF BIDS and replace with the following: "April 28, 2004".
1.03	00030	Delete "Kirkwood-Bly, Inc." under the heading <u>WWTF General Contractors</u> in the Paragraph GENERAL CONTRACTORS AND SELECTED SUBCONTRACTORS PREQUALIFICATION.
1.04	00030	Delete the second sentence under the Paragraph COMPLETION OF WORK and replace with the following: "Partial Utilization of Area A and Area B must be achieved within 550 successive calendar days after the commencement date stated in the Notice to Proceed."
1.05	00500	Delete Section 00500CA – Agreement in its entirety and replace with the five attached Section 00500CA – Agreement sections that correspond to the five Bid Schedules, respectively.
1.06	00800	Add the following new paragraph in Section 00800CA, "SGC-2.2 Contract Documents that incorporate addendum items into the as-bid set will be issued for the convenience of the CONTRACTOR and other project participants and will be designated "Conformed Documents". In the event of a conflict or dispute regarding Contract requirements, the ENGINEER's decision will be made based upon reference to the as-bid contract documents and addenda only. Similarly, electronic pdf files of the Contract Drawings may be made available to the CONTRACTOR. In the event of a conflict or dispute regarding the pdf Contract Drawings, the ENGINEER's decision will be made based upon reference to the as-bid contract drawings and addenda only."
1.07	00800	Add the following: "SGC-14.3 APPLICATION FOR PROGRESS PAYMENT Add the following to Paragraph B: The CONTRACTOR shall complete and submit with the Application for Payment for each designated reporting quarter the State Water

		Resources Control Board Form UR 334 (refer to attached form and instructions) regarding MBE/WBE Payments Paid by the Prime Contractor.”
1.08	00800	Add the following in Section 0800CA: “SGC-14.3 E. With each application for progress payment, the CONTRACTOR shall submit certified payroll records for its forces and its subcontractor’s forces. Certified payroll records shall be in accordance with the requirements of Section 00850CA.”
1.09	00850	Add the following to the first paragraph under PART 1 – GENERAL: “Each Bidder shall also comply with the Compliance Guidelines for State Revolving Fund (SRF) Loan Program (refer to attached 15 pages of guidelines including Forms 1 - 6) regarding “good faith” MBE/WBE effort. The Bidder shall complete and submit Form 4 with the Bid Forms (included therein). The Bidder shall complete and submit Forms 1, 2, 3, and 5 within 10 working days of Bid Opening. The OWNER will be responsible to prepare and submit Form 6.”
1.10	01025	Add the following in Paragraph 1.2.24 after the words “Work shall include ...” : “replacement of concrete vee-ditch/valley gutter when removed for or damaged by construction, dewatering, saw cutting, pavement removal and disposal, sewer bypass pumping and flow control including standby equipment, excavation, installation of bedding, filter fabric, furnishing and installation of pipe and fittings, backfill and compaction, testing, cleaning, temporary plating, traffic control, permit compliance, temporary and permanent fencing, construction signs, utility potholing, crossings, protection and coordination, temporary paving, record drawings, surface restoration of all public and private improvements including asphalt paving, concrete paving, striping, curb and gutter, sidewalks, landscaping and irrigation system protection, removal and restoration and all incidentals, complete as specified and shown.”
1.11	01025	Delete the existing subparagraph numbers under Paragraph 1.2 starting with BID ITEM 27 and ending with BID ITEM 61 (Pages 01025-8 through 01025-15) and replace with a new number to match the bid item number, e.g. “27. BID ITEM 27: Electrical or Instrumentation Pull Box.”.
1.12	01025	Add the following in Paragraphs (note the following applies to <u>corrected</u> paragraph numbers, see above) 1.2.8, 1.2.9, 1.2.10, 1.2.12, 1.2.13, 1.2.12, 1.2.15, 1.2.16, 1.2.17, 1.2.19, 1.2.20, 1.2.21, 1.2.22, 1.2.23, 1.2.25, 1.2.26, 1.2.28, 1.2.34, 1.2.40, 1.2.41, 1.2.42, 1.2.43, 1.2.44, 1.2.45 and 1.2.46 after the words “Work shall include...”: “replacement of concrete vee-ditch/valley gutter when removed for or damaged by construction,”

1.13	01060	<p>Add new paragraph D in Paragraph 1.1:</p> <p>“D. While protection of all existing utilities is important, the CONTRACTOR is hereby advised that the presence of major transcontinental fiber optic duct facilities within the project area will require the CONTRACTOR’s special care when working adjacent to them. The cost for damaging these facilities is on the order of millions of dollars per minute.”</p>
1.14	01240	<p>Add new Specification Section 01240 - Value Engineering attached to this Contract Addendum.</p>
1.15	01313	<p>Delete the second and third sentence under Paragraph 1.1.1.2 Phased Area Construction and replace with the following:</p> <p>“Partial Utilization of Area A and Area B must be achieved within 550 successive calendar days after the commencement date stated in the Notice to Proceed. The underground pipeline and conduit work for sewer mains, manholes, sewer laterals, force mains, disposal mains, harvest mains, electrical ductbank, fiber optic conduit, and associated appurtenances in Area A and Area B must be completed before the corresponding underground pipeline and conduit work in Area D and Area C, respectively, can started.”</p>
1.16	01313	<p>Add the following to Paragraph 1.1.1:</p> <p>“9. Process Control and Instrumentation Systems. The factory acceptance testing of PLC hardware as specified in Section 17100, Paragraph 2.4 and Section 17510, Paragraph 3.2 shall be completed within 365 successive calendar days after the commencement date stated in the Notice to Proceed. The precommissioning of the process control and instrumentation systems as specified in Section 17100, Paragraph 3.6 shall be completed within 490 successive calendar days after the commencement date stated in the Notice to Proceed. These interim milestones shall be integrated into the CPM Construction Schedule.”</p>
1.17	01566	<p>Add the following to Paragraph 3.1.D:</p> <p>“9. In the event of a job site accident, the CONTRACTOR’s Project Safety Supervisor shall immediately contact the PIPS representative. In the event of private property damage caused by the CONTRACTOR, the CONTRACTOR’s Project Public Liaison shall immediately contact the PIPS staff.”</p>
	Vol. IIA	
1.18	02340	<p>Delete the first and second sentences in Paragraph 1.5.A and add the following in the remaining sentence after the words “conformance with”:</p> <p>“its Safety Plan and”.</p>
1.19	02345	<p>Delete the last sentence in Paragraph 3.2.A.2.e.</p>

1.20	02347	<p>Add the following paragraph in Paragraph 1.1, B:</p> <p>“At the CONTRACTOR’s option and cost, horizontal directional drilling may be used as an alternative to open cut installation for sanitary sewer laterals and water services only. Horizontal directional drilling shall not be used for the installation of other pipelines.”</p>
1.21	02597	<p>Delete Paragraph 2.3, D.1 and replace with the following:</p> <p>“1. Fully restrain all bell joints using Romac Industries Inc. “GripRing”, CertainTeed “Certa-Loc C-900/RJ”, or equal.”</p>
1.22	02630	<p>Delete Section 02630 - Montioring Wells in its entirety and replace with new Section 02630 - Monitoring Wells attached to this Addendum.</p>
	Vol. IIB	
1.23	16050	<p>Add the following to Paragraph 1.1 A:</p> <p>“The electrical WORK shall be performed by an electrical subcontractor that has been pre-qualified by the OWNER as identified in Section 00030 – Notice Inviting Bids.”</p>
1.24	16050	<p>Add the following to Paragraph 1.1:</p> <p>“E. The electrical subcontractor for Area A and Area D shall furnish designated electrical equipment and gear for installation by the electrical subcontractor for Area B and Area C to provide commonality for the OWNER. The designated equipment and gear by facility is summarized as follows:</p> <p><u>Lupine Pump Station</u> Outdoor Meter Enclosure (Drawing B-E-202) ATS (Drawing B-E-202) MCC with pump VFDs and MPC (Drawing B-E-202) RTU Enclosure (Drawing BC-E-200) Engine-Generator Set (Section 16621)</p> <p><u>Sunny Oaks Pump Station</u> Outdoor Meter Enclosure (Drawing C-E-202) ATS (Drawing C-E-202) MCC with MPC (Drawing C-E-202) RTU Enclosure (Drawing BC-E-200) Engine-Generator Set (Section 16621)</p> <p><u>Loma Harvest Well</u> Service Pedestal (Drawing B-E-204) Control Panel with RTU (Drawing B-E-204)</p>

		<p><u>Palisades Harvest Well</u> Distribution Panel (Drawing B-E-206) MPC (Drawing B-E-206) Control Panel with RTU (Drawing B-E-206)</p> <p><u>Broderson Effluent Disposal Vault</u> Distribution Panel with RTU (Drawing C-E-301)"</p>
1.25	17100	<p>Add the following to Paragraph 1.1 A:</p> <p>"It is the intent of these Contract Documents that the pre-qualified Instrument Supplier for the Wastewater Treatment Facility (WWTF) shall provide all of the instrumentation devices, hardware, and software included in Division 17 of the Area A, Area B, Area C, & Area D construction as well as the Wastewater Treatment Facility. The Area CONTRACTOR(s) shall be responsible to coordinate with the WWTF CONTRACTOR to accomplish the installation of a complete and operable instrumentation and control system."</p>
	<u>Vol. IIIA</u>	
1.26	02820	<p>Delete the gate operator model number "222-STA" in Paragraph 2.4.A.1 and replace with the following: "220A-ST".</p>
	<u>Vol. IIIB</u>	
1.27	11132	Delete Section 11132 – Projection Screens in its entirety.
	11289	<p>Add the following to Paragraph 1.4.C:</p> <p>"20. If ballasts are install in or directly above the UV Channel, contractor shall provide a letter confriming that the ballasts can withstand temporary submergence under emergency conditions without causing an increased rate of failure in the future."</p>
1.28	15450	Delete paragraph section 2.6 for "Circulating Pumps (Domestic Hot Water)".
1.29	15450	<p>Add Section 2.3 as follows:</p> <p>"2.3 Gas Water Heater Sequence of Operation</p> <p>A. The water heater shall function as follows:</p> <ol style="list-style-type: none"> 1. The water heater controls shall maintain the hot water Leaving water temperature. 2. A separate thermostat with element located in the hot water supply downstream shall be provided. 3. Hot Water Boiler controls shall be approved by the boiler manufacturer in writing, by notation on control diagram shop drawings."

1.30	15500	Delete Section 15500 - Heating, Ventilating, and Air Conditioning in its entirety and replace with new Section 15500 - Heating, Ventilating, and Air Conditioning attached to this Addendum.
1.31	17100	Add the following to Paragraph 1.1 A: "It is the intention of these Contract Documents that the pre-qualified Instrument Supplier for the Wastewater Treatment Facility (WWTF) provide all of the instrumentation devices, hardware, and software included in Division 17 of the Area A, Area B, Area C, & Area D construction as well as the Wastewater Treatment Facility. The WWTF CONTRACTOR shall be responsible to coordinate with the Area CONTRACTOR(s) to accomplish the installation of a complete and operable instrumentation and control system."
1.32	17202	Delete Section 17202 – PLC Enclosures and replace with new Section 17202 – PLC Enclosures attached to this addendum.
1.33	17510	Delete Paragraph 1.1 THE REQUIREMENT and replace with the following: 1.1 "THE REQUIREMENT A. General: The CONTRACTOR, through the use of an Instrumentation Supplier and electrical installers, shall furnish, supervise installation, assemble, configure, the PLC-based Control System specified under this Section, and in Section 17520 - PLC-Based Control System-Software, all in accordance with the requirements of the Contract Documents. The OWNER shall provide the PLC and workstation programming. 1. The control system equipment consists of a number of RTU/LCP's located at Pump Stations/Standby Power Facilities, Harvest Wells, and Effluent Disposal Facilities throughout Los Osos. Each PLC shall be provided with power supply module(s), communication interface device(s), peripheral equipment, and UPS. 2. It is the intention of this project that the communication with the Los Osos Wastewater Treatment Facility be seamless as possible. Therefore it is the intention of these contract documents that the supplied PLC system hardware for Areas A, B, C & D shall be provided by the same PLC manufacturer that is provided at the Wastewater Treatment Facility project. B. Instrumentation Supplier: The Instrumentation Supplier for the Los Osos Wastewater Facility shall be responsible for the selection, purchasing, assembling and providing for installation

and testing of compatible hardware and base software for the Areas A & D and Areas B & C projects to provide a functional Control System. The instrumentation supplier shall supply the software and appropriate hardware to the OWNER to enable the system to be programmed prior to system testing.

C. A Control System block diagram showing the communication medium that will be used for each location is provided on contract drawings AD-GI-202 and BC-GI-202.

D. The control system installation shall consist of the following:

1. The Instrument Supplier shall be responsible for furnishing all of the equipment for Area A, Area B, Area C, and Area D to ensure that the products are the same for all of the Los Osos projects. The CONTRACTOR for each project shall be responsible for installing and testing the radio, modem, and fiber optic equipment required to communicate with the new SCADA system located at the Wastewater Treatment Facility as follows:

a. All of the Pocket Pump Stations will communicate via dial-up modem. The Instrument Supplier shall provide each Pocket Pump Station with the instrumentation equipment that will become part of a combined Instrument and Electrical LCP located in close proximity to the pump station. The CONTRACTOR shall coordinate with the Electrical Contractor to provide a new PLC, modem, UPS and associated power supplies, with the associated level transmitter specified in section 17106 of the Contract Documents, on a single backpanel that will mount on the instrument side of a combined LCP. The Electrical Contractor will be responsible for providing the enclosure for the combined LCP. See electrical contract drawing AD-E-200 for sizing requirements and locations.

b. The Pismo and Santa Maria Effluent Disposal Facilities will communicate via dial-up modem. The Instrument Supplier shall provide each a new PLC, modem, UPS and associated power supplies on a single backpanel that will mount in a weatherproof LCP. The Electrical Contractor will be responsible for providing the enclosure for the LCP.

c. The Instrument Supplier shall provide a new PLC, fiber optic modem, UPS and associated power supplies, with the associated level transmitter (specified in Section 17106 of the Contract Documents), on a single backpanel that will mount on the instrument side of a

		<p>combined LCP for the Baywood and West Paso Submersible Pump Station Facilities. The West Paso LCP shall also contain a patch panel to route an incoming 24-fiber cable from the Wastewater Treatment Plant that will be provided and installed as part of the Wastewater Treatment Facility project. Four fibers shall be dedicated to the West Paso Pump Station, 16 fibers shall be routed to the Standby Power Facility at 8th and El Moro and four fibers shall be routed to the Baywood Pump Station. Eight of the fibers routed to the 8TH and El Moro Facility shall be reserved for future SCADA purposes. The Electrical Contractor will be responsible for providing the enclosure for the LCP. See electrical contract drawing A-E-200 for locations.</p> <p>d. The Instrument Supplier shall provide a new PLC, fiber optic modem, UPS and associated power supplies on a single backpanel that will be installed in an LCP enclosure provided by the electrical contractor inside the Palisades Harvest Well Facility. The fiber optic cable shall be provided and installed by the Wastewater Treatment Facility project.</p> <p>e. The Instrument Supplier shall provide a new PLC, radio, UPS and associated power supplies, with the associated level transmitter (specified in Section 17106 of the Contract Documents), on a single backpanel that will be installed in an LCP enclosure provided by the electrical contractor inside the Standby Power Building for the East Paso and East Ysabel Submersible Pump Station Facilities and the Mountain View Standby Power Facility. The East Paso Harvest well instrumentation and control will be connected to the East Paso Submersible Pump Station RTU. The LCP shall be used for both the pump station and the associated standby power facility I/O. A separate LCP shall be provided next to the Mountain View Submersible Pump Station for mounting of the instruments only. The instrument signals shall be routed to the RTU/PLC located at the standby power facility. The Instrument Supplier shall also provide the antenna cable, surge suppressor, antenna and antenna pole for these facilities.</p> <p>f. The Instrument Supplier shall provide a new PLC, radio, UPS, and associated power supplies on a single backpanel that will be installed in an LCP enclosure provided by the electrical contractor at the Loma Harvest well Facility. The Instrument Supplier shall also</p>
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		<p>provide the antenna cable, surge suppressor, antenna and antenna pole for these facilities.</p> <p>g. The Instrument Supplier shall provide a new PLC, radio, UPS and associated power supplies, with the associated level transmitter (specified in section 17106 of the Contract Documents), on a single backpanel that will be installed in an LCP enclosure provided by the electrical contractor inside the Standby Power Building for the Sunny Oaks and Lupine Submersible Pump Station Facilities. The LCP shall be used for both the pump station and the associated standby power facility I/O. The Instrument Supplier shall also provide the antenna cable, surge suppressor, antenna and antenna pole for these facilities.</p> <p>h. The Instrument Supplier shall provide a new PLC, radio, UPS and associated power supplies on a single backpanel that will be installed in an LCP enclosure provided by the electrical contractor at the Broderson Effluent Disposal Facility. The Instrument Supplier shall also provide the antenna cable, surge suppressor, antenna and antenna pole for the facility.</p> <p>i. The Instrument Supplier shall reconfigure the Mountain View Standby Power Facility to be a repeater station for the radio signal from the Sunny Oaks Facility.</p> <p>j. The Instrument Supplier shall provide two operator workstations for LOCSD use. The workstations shall be located at LOCSD's office on 9th Street and the Water Yard offices. The workstation will allow remote monitoring/operation of the combined Wastewater project.</p> <p>E. Scope of Work: The CONTRACTOR through the Instrument Supplier shall furnish, install, and test the Control System as specified within these Contract Documents. The CONTRACTOR shall be responsible for all equipment selection and supply, hardware and software material submittal preparation, total system integration, supervision of installation, testing, training, start-up and implementation activities for the entire Control System being furnished under this Contract. The OWNER REPRESENTATIVE shall provide the programming effort for the PLC's and also will provide assistance for control system testing and start-up. The Control System hardware and software being furnished under this Contract shall be a standardized system that utilizes off-the-shelf commercially available configurations of hardware and software modules.</p>
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		<p>F. The CONTRACTOR shall provide all installation, all labor supervision, and all engineering required to assure the proper installation and operation of the entire Control System. The CONTRACTOR shall be responsible for providing and installing a complete and operational system, to meet all the requirements of the Contract Documents. The following work, equipment, and services shall be included in this Contract but not be limited to:</p> <ol style="list-style-type: none"> 1. Prepare and submit for approval Control System hardware shop drawings. 2. Furnish and install a complete and operational Control System, including all peripherals and other equipment specified herein. 3. Perform all required Control System tests, including a full fiber optic code test to ensure a fully functional system, adjustments, and calibrations. 4. Furnish labor to perform Control System, installation, testing and start-up. 5. Furnish qualified instructors to provide Control System instruction and training. 6. Furnish all required Control System tools, test equipment, spare parts, supplies, operations and maintenance manuals, reproducible "as-built" drawings as specified herein. <p>The CONTRACTOR's attention is directed to the construction sequencing requirements contained within the Contract Documents. The CONTRACTOR shall provide on-loan, any and all Control System equipment required for the OWNER REPRESENTATIVE to program the required PLC's and workstations.</p> <p>G. System Responsibility: All Control System hardware and software furnished in accordance with the Contract Documents shall be done so by the CONTRACTOR. The CONTRACTOR shall have responsibility for providing a fully integrated Control System. The CONTRACTOR shall coordinate the WORK of his personnel and the Instrumentation Supplier's personnel for the installation, interconnection, testing, calibration, and operation of all Control System equipment and coordinate the scheduling along with the programming work of the OWNER REPRESENTATIVE. The CONTRACTOR shall be responsible for providing equipment that properly meets the functional intent of the Contract Documents. Substitutions for Control System</p>
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		functions specified are not permitted.”
	Vol. IV	
1.34	BC-G-006A	Add manhole symbol and callout “MH-WW-FA02A” on Ferrell Ave. between “MH-WW-FA01” and “MH-WW-FA02”.
1.35	BC-G-010	Add the following to the General Notes: “56) Property lines shown are approximate.”
1.36	BC-G-010	Add to the following to the General Notes: “57) Street restoration shall include replacement of concrete vee-ditch/valley gutter when removed for or damaged by construction.”
1.37	BC-GC-061	Add the following asphalt concrete and Class 2 aggregate base thickness information to Detail C-120: “Arterial Roads: 8-inches AC, 8-inches AB Collector Roads: 6-inches AC, 6-inches AB Minor Roads: 4-inches AC, 6-inches AB”
1.38	B-PP-154	Delete callout “10” SS” on the pipeline profile and replace with the following: “12” SS”.
1.39	B-PP-154	Add the following on the pipeline profile under the callout “427.64 LF”: “Sewer main in this reach shall be installed by microtunneling only.”
1.40	C-PP-117	Delete lateral callout “STA 39+62, INV 175.00” on plan and replace with the following: “STA 40+05, INV 177.60, Lateral shall be constructed of DIP per specifications to account for minimal cover.”
1.41	C-PP-130	Add new manhole at Station 6+31. Add the following callout at the new manhole on the plan: “MH-WW-FA02A” Add the following callout at the new manhole on the profile: “MH-WW-FA02A STA 6+31 RIM EL +/-113.7 ft INV IN“108.25 INV OUT108.33” Delete the lateral callout “STA 6+31” (6” LAT), INV 109.6” on the plan and replace with the following: “STA 6+31 (8” LAT), “INV 108.43, Lateral at 0.0033 slope, invert elevation 108.43 ft at right-of-way”.

1.42	BC-M-203	Add the following line entries to the "Standby Power Facility" Table: "Lupine 90KW Natural Gas"
1.43	BC-GE-002	Add the following under General Notes: "25. All outdoor enclosures shall be padlockable. Furnish, install, and connect padlock with two keys."
1.44	BC-E-200	Delete callout "1 1/2 CO" adjacent to outdoor meter and replace with the following: "1 1/2" CO (Conduit and wire per PG&E Requirements)."
1.45	B-E-201	On "Notes 1" delete "4"C" and replace with the following: "5" CO w/ pull rope".
1.46	B-E-206	Add the following under Notes: "6. Contractor shall provide 3" conduit only from PB-5S to Control Panel."
	<u>Vol. V</u>	
1.47	AD-G-010	Add the following under General Notes: "56) Property lines shown are approximate."
1.48	AD-G-010	Add to the following under General Notes: "57) Street restoration shall include replacement of concrete vee-ditch/valley gutter when removed for or damaged by construction."
1.49	AD-GC-061	Add the following asphalt concrete and Class 2 aggregate base thickness information to Detail C-120: "Arterial Roads: 6-inches AC, 10-inches AB Collector Roads: 4-inches AC, 8-inches AB Minor Roads: 3-inches AC, 6-inches AB"
1.50	AD-GE-002	Add to the following under General Notes: "25. All outdoor enclosures shall be padlockable. Furnish, install, and connect padlock with two keys."
1.51	AD-GE-002	Add to the following under General Notes: "26. Contractor shall coordinate all telephone utility work. Contractor shall obtain telephone utility approval for all work and equipment prior to commencing or purchasing materials. Contractor shall furnish, install and connect all substructures, conduits, pull ropes, poles and concrete pads necessary to install telephone utility equipment. Telephone utility shall pull and terminate all necessary conductors. Contractor shall coordinate both power and telephone utilities for a joint trench for power and telephone service."
1.52	AD-E-202	Delete callout "1 1/2 CO" adjacent to the outdoor meter and replace with the following:

		"1 1/2" CO (Conduit and wire per PG&E Requirements)".
1.53	A-E-201	Add the following to Note 2: "Contractor shall provide 1-2"CO w/ pull rope from telephone service pole to LCP for telephone service. Contractor shall coordinate with telephone utility prior to construction."
1.54	A-E-202	Add the following to Note 2: "Contractor shall provide 1-2"CO w/ pull rope from telephone service pole to LCP for telephone service. Contractor shall coordinate with telephone utility prior to construction."
1.55	A-E-205	Delete "4" C" in Notes 1 and replace with the following: "2 - 5" CO w/ pull rope".
1.56	A-E-207	Delete "4" C" in Notes 1 and replace with the following: "5" CO w/ pull rope".
1.57	D-E-201	Add the following to Note 2: "Contractor shall provide 1-2"CO w/ pull rope from telephone service pole to LCP for telephone service. Contractor shall coordinate with telephone utility prior to construction."
1.58	A-E-300	Add the following to Note 1: "Contractor shall provide 1-2"CO w/ pull ropes from telephone service pole to LCP for telephone service. Contractor shall coordinate with telephone utility prior to construction."
1.59	A-E-301	Add the following to Note 1: "Contractor shall provide 1-2"CO w/ pull ropes from telephone service pole to LCP for telephone service. Contractor shall coordinate with telephone utility prior to construction."
	Vol. VIA	
1.60	40-GC-04	Add the attached Standard Detail C-907 – Backflow Preventor.
1.61	41-C-04	Delete the FDC located south of the Operations Building. Delete Note 2 in its entirety and replace with the following: "2. (Not Used)".
1.62	41-C-13	Add the following note to the 10" PW pipeline at the north property line of the Site: "Install 10" backflow preventor per Standard Detail C-907."
1.63	41-C-13	Delete the 6" FS and 4" FS pipelines between the 10" PW pipeline and the Operations Building on either side of FDC located south of the Operations Building.
1.64	41-C-13	Add 6" PW pipeline from the buried 8" PW pipeline located south of the Residuals Building for connection to the 6" PW located at the southeast

		corner of the inside of the Residuals Building (refer to Drawing 42-M-01).
1.65	41-L-09	Delete Item 12 under the heading <u>Legend</u> on Detail B and replace with the following: "Mortise, night latch, handle with panic hardware, Von Duprin #9875NL US32D 36" and Schlage 20-001C630."
1.66	41-L-12	Delete callout "TBD" under MANUF and MODEL NO headings under the MISC title in the Irrigation Legend and replace with the following: "Flowtronics" and "#SFBV-M23XXA-XXX0X0".
1.67	41-L-13	Reverse the order of booster pump and wye strainer on plan so that pump occurs before wye strainer.
1.68	41-L-14	Delete all tree bubblers and piping serving the area of the Palisades Harvest Well. Irrigation at this location will be provided as part of Area B construction.
1.69	41-L-19	Add sizes and quantities of plant material in accordance with the listing provided in 2 pages attached to this addendum.
1.70	40-GS-11	Add the following to the Notes for Detail S-951: "8. Provide #4 ties @ 6" OC for concrete pier"
1.71	41-S-02	Add the following to Notes: "4. Wet well key sizes to be 2"x12" continuous all around"
1.72	42-S-12	Delete callout "#5 TIES @ 12" O.C." on Detail 5 and replace with the following: "#5 TIES @ 6" O.C."
1.73	42-S-12	Delete callout "#5 HORZ WITH HOOKS EA END @ 12" O.C." on Detail 6 and replace with the following: "#5 HORZ WITH HOOKS EA END @ 6" O.C."
1.74	42-S-14	Delete detail callout "6 / -" in Bridge Crane Rail Plan and replace with the following: "7 / DWG 42-S-12".
1.75	43-S-01	Add Note: "Waterstops to occur at all walls at Grid Lines - Typ S-123"
1.76	43-S-01	Delete the reference to "20 GA" in third paragraph under the <u>Metal Deck and Roofs</u> heading in the Notes and replace with the following: "18 GA".
1.77	43-S-01	Add the following under the <u>Open Web Steel Joists</u> heading in the Notes: "TOP CHORD SEISMIC AXIAL LOAD OF 5000 POUNDS DELIVERED AT TOP CHORD OF BEAM SEATS AS BOTH TENSION AND COMPRESSION INCLUDING MOMENT DUE TO ECCENTRICITY OF SEISMIC LOAD DELIVERY AT BASE OF SHOE IN WALL."

1.78	43-S-02	Delete the dimensions "22'-6\"", "29'-0\"", and "4'-0\"" at grid line A between grid lines 1 and 3 and replace with the following to move the location of the exterior doorway opening and the louver opening above the doorway 2-feet east: "24'-6\"", "27'-0\"", and "2'-0\"", respectively.
1.79	43-S-02	Delete callout "20 GA ROOF METAL DECK" on Roof Plan and replace with the following: "18 GA ROOF METAL DECK"
1.80	43-S-02	Delete one callout "S-123" at southwest corner of Floor Plan.
1.81	43-S-02	Delete the 3' x 14' concrete tote shelf shown at the intersection of grid lines 4 and B in the Floor Plan.
1.82	43-S-02	Delete all callouts "S-516" on Floor Plan and replace with the following: "S-513".
1.83	43-S-03	Delete callout "Landing EL 93.0" near intersection of grid lines 5 and E on the Floor Plan and replace with the following: "LANDING EL 94.00"
1.84	43-S-04	Delete dimension "24'-0" of wall height at right hand side on Section K.
1.85	43-S-04	Delete callout "EL 90.31" at top of buried deck at right hand side on Section K and replace with the following: "EL 91.00"
1.86	43-S-05	Delete callout "S-516" on Section C and replace with the following: "Section S-513".
1.87	43-S-07	Add the following callout at slab Elevation 75 and wall at Grid C: "EL 75.00 slab to wall detail per Section H on 43-S-08".
1.88	43-S-07	Delete callout "Hydrophilic Waterstop" at grid line C on Section F.
1.89	43-S-07	Add the following callout at grid line D: "FILL IN 13' OF GROUT FOR ENTIRE LENGTH OF AEROBIC EFFLUENT CHANNEL"
1.90	43-S-08	Delete callout "WEIR PL. DETAIL 1 SEE DRAWING 43-S-25" on Section H.
1.91	43-S-08	Delete callout "WEIR PL. DETAIL 1 SEE DRAWING 43-S-25" on Section J.
1.92	43-S-08	Delete the 2'-6" high concrete tote shelf shown at grid line B in Section J.
1.93	43-S-11	Add the following callout to the column concrete pedestal on Detail 4: "#4 DOWELS AND #3 TIES @ 6" OC".

1.94	43-S-17	Add the following callout at S-105: "EI 75.00 slab to wall detail per Section H on 43-S-08".
1.95	43-S-18	Add the following callout at slab Elevation 75 and wall at Grid C: "EL 75.00 slab to wall detail per Section H on 43-S-08".
1.96	43-S-19	Delete Concrete Shelf at S-115 on Detail 21.
1.97	44-S-02	Add Note and callout at Grid Line (2) "Wall on Line 2 will be full height with new window locations per architectural drawings."
1.98	44-S-03	Add following note at Grid Line 2: "Reinforced concrete wall on Line 2 will be full height with new window locations per architectural drawings."
1.99	44-S-04	Delete callout "Detail 2, 44-S-08" and replace with the following: "Similar to Detail 1, 44-S-08".
1.100	44-S-04	Add following note at Grid Line 2: "Reinforced concrete wall on Line 2 will be full height with new window locations per architectural drawings."
1.101	44-S-05	Replace "Detail 2, 44-S-08" callout with "Detail 1, 44-S-08"
1.102	44-S-05	Add following note at Grid Line 2: "Reinforced concrete wall on Line 2 will be full height with new window locations per architectural drawings."
1.103	44-S-06	Delete wall section shown and replace with full height concrete wall with new window locations per architectural drawings.
1.104	43-A-01	Delete the dimensions "29'-0"" at the northeast corner and replace with the following to move the location of the exterior doorway opening and the louver opening above the doorway 2-feet east: "27'-0"".
	Vol. VIB	
1.105	42-M-12	Add a second 1" UW connection with isolation valve to the Drum Screen Hopper Spray (refer to Detail B / Drawing 42-M-11) to the Utility Water Schematic For Residual Building.
1.106	43-M-01A	Delete callout "Aerobic Zone 3" and replace with the following: "Aerobic Zone 3C"
1.107	43-M-01B	Delete callout "Aerobic Zone 3" and replace with the following: "Aerobic Zone 3C"
1.108	43-M-03	Delete the last four line entries In the "Permeate Filtrate Pump Discharge Meters and Control Valves" table and replace with the following:

		"(11) 43-T-01-PF (12) 43-T-02-PF (13) 43-T-03-PF (14) 43-T-04-PF"
1.109	43-M-04	Add the following under Notes: "5. CONTRACTOR SHALL COORDINATE INTERIOR LOCATION OF OVERHEAD COILING DOOR HOOD AND OPERATOR ON NORTH WALL WITH ROUTING OF 8" BP PIPELINE TO AVOID INTERFERENCE."
1.110	43-M-04	Add the following under Notes: "5. FOR THE ACID CHEMICAL STORAGE AREA, LIQUID POLYMER BINS AND SPILL CONTAINMENT UNITS TO BE PROVIDED BY POLYMER VENDOR. PROVIDE FOR CONTAINMENT, ULTRA - IBC SPILL PALLET- 1057 OR EQUAL. PROVIDE FLEX HOSE TO CONNECT BIN TO POLYMER FEED UNIT."
1.111	42-E-01	Delete the horsepower callout "20" for Grit Pump No. 1 (MCC Cubicle 2) and Grit Pump No. 2 (MCC Cubicle 3) and replace with the following: "15".
1.112	42-E-01	Delete Grit Pump No 1: "27 A" and replace with the following: "21 A"
1.113	42-E-01	Delete Grit Pump No 2: "27 A" and replace with the following: "21 A"
1.114	42-E-01	Delete Grit Pump No 1: "50 A MCP" and replace with the following: "30 A MCP"
1.115	42-E-01	Delete Grit Pump No 2: "50 A MCP" and replace with the following: "30 A MCP"
1.116	43-E-06A	Delete callout "43-GEN-02" for the day tank LCP and replace with the following: "43-T-01-FO"

**SECTION 00500CA – AGREEMENT
BID SCHEDULE 1**

THIS AGREEMENT is dated as of the _____ day of _____ in the year 20_____
by and between Los Osos Community Services District (hereinafter called OWNER) and

(hereinafter called CONTRACTOR).

OWNER and CONTRACTOR, in consideration of the mutual covenants hereinafter set forth, agree as follows:

ARTICLE 1. WORK.

CONTRACTOR shall complete the portion of the WORK as specified or indicated in the OWNER's Contract Documents entitled Los Osos Wastewater Project for Bid Schedule 1.

The overall WORK consists of Area construction divided into four geographical areas (Area A, Area B, Area C, and Area D) and Wastewater Treatment Facility (WWTF) construction. The WORK for Bid Schedule 1 consists of the WORK in Area B and Area C.

The Area B and Area C construction includes, but is not limited to, the following:

- Wastewater collection system consisting of approximately 81,000 linear feet of gravity sewer mains ranging in size from 8-inch diameter to 18-inch diameter, 360 manholes, 1680 laterals, and 14,000 linear feet of force mains ranging in size from 4-inch diameter to 12-inch diameter.
- One duplex and one triplex submersible pump stations ranging in capacity from approximately 130 gpm to 1000 gpm and two standby power facilities ranging in size from 15 kw to 90 kw.
- Effluent disposal system consisting of effluent disposal sites with approximately 20,000 linear feet of subsurface horizontal perforated pipe, and approximately 34,000 linear feet of disposal mains and headers ranging in size from 4-inch diameter to 12-inch diameter.
- Harvest water system consisting of two harvest wells approximately 150 feet in depth with harvest well buildings and approximately 6,000 linear feet of 6-inch diameter harvest mains.

The underground pipeline work for Area B must be completed before the underground pipeline work in Area C can be started.

ARTICLE 2. CONTRACT TIMES.

The WORK shall be completed within 730 successive calendar days from the commencement date stated in the Notice to Proceed. Partial utilization of the Area B work, including the Broderson disposal main and effluent disposal site, shall be completed within 550 successive calendar days after the commencement date stated in the Notice to Proceed.

ARTICLE 3. LIQUIDATED DAMAGES.

OWNER and the CONTRACTOR recognize that time is of the essence of this Agreement and that the OWNER will suffer financial loss if the WORK is not completed within the time specified in

Article 2 herein, plus any extensions thereof allowed in accordance with Article 12 of the General Conditions. They also recognize the delays, expense, and difficulties involved in proving in a legal proceeding the actual loss suffered by the OWNER if the WORK is not completed on time. Accordingly, instead of requiring any such proof, the OWNER and the CONTRACTOR agree that as liquidated damages for delay (but not as a penalty) the CONTRACTOR shall pay the OWNER \$10,000 for each day that expires after the Contract Time established for completion of the WORK as specified in Article 2 herein. The OWNER and the CONTRACTOR agree that as liquidated damages for delay (but not as a penalty) the CONTRACTOR shall pay the OWNER \$2,000 for each day that expires after the Contract Times established for completion of the intermediate milestones as specified in Article 2 herein.

Further, as liquidated damages for CONTRACTOR's delay in submitting its Record Drawings, its Schedule of Values, or its CPM Schedules, the CONTRACTOR shall pay the OWNER \$500 for each day that expires after the time specified in Sections 01300, 01301, and 01311 of the General Requirements.

Further, as liquidated damages for CONTRACTOR's failure to perform adequate public information, traffic, noise, dust, or mud control, the CONTRACTOR shall pay the OWNER \$1000 for each day that any of said responsibilities is inadequate, as determined by the ENGINEER.

ARTICLE 4. CONTRACT PRICE.

OWNER shall pay CONTRACTOR for completion of the WORK in accordance with the Contract Documents in current funds the amount set forth in the Bid Schedule(s).

ARTICLE 5. PAYMENT PROCEDURES.

CONTRACTOR shall submit Applications for Payment in accordance with Article 14 of the General Conditions. Applications for Payment will be processed by ENGINEER as provided in the General Conditions.

ARTICLE 6. CONTRACT DOCUMENTS.

The Contract Documents which comprise the entire agreement between OWNER and CONTRACTOR concerning the WORK consist of this Agreement and the following attachments to this Agreement:

- Notice Inviting Bids
- Instructions to Bidders
- Bid Forms including the Bid, Bid Schedule(s), Information Required of Bidder, Bid Bond, and all required certificates and affidavits
- Performance Bond
- Payment Bond
- General Conditions
- Supplementary General Conditions
- State Revolving Fund Loan Requirements

- Division 01 – General Requirements
- Technical Specifications as listed in the Table of Contents.
- Drawings as listed in the List of Drawings.
- Addenda numbers _____ to _____, inclusive.
- Change Orders which may be delivered or issued after Effective Date of the Agreement and are not attached hereto.

There are no Contract Documents other than those listed in this Article 6. The Contract Documents may only be amended by Change Order as provided in Paragraph 3.5 of the General Conditions.

ARTICLE 7. ASSIGNMENT

No assignment by a party hereto of any rights under or interests in the Contract Documents will be binding on another party hereto without the written consent of the party sought to be bound; and specifically but without limitation monies that may become due and monies that are due may not be assigned without such consent (except to the extent that the effect of this restriction may be limited by law), and unless specifically stated to the contrary in any written consent to an assignment, no assignment will release or discharge the assignor from any duty or responsibility under the Contract Documents.

OWNER and CONTRACTOR each binds itself, its partners, successors, assigns and legal representatives to the other party hereto, its partners, successors, assigns and legal representatives in respect of all covenants, agreements and obligations contained in the Contract Documents.

IN WITNESS WHEREOF, OWNER and CONTRACTOR have caused this Agreement to be executed the day and year first above written.

OWNER _____

CONTRACTOR _____

By _____

By _____

[CORPORATE SEAL]

Attest _____

Attest _____

Address for giving notices

Address for giving notices

License No. _____

Approved as to Form:

Agent for service of process: _____

(Signature)

(Title)

**AGREEMENT CERTIFICATE
(if Corporation)**

STATE OF)
) SS:
COUNTY OF)

I HEREBY CERTIFY that a meeting of the Board of Directors of the _____

a corporation existing under the laws of the State of _____, held on _____, 20____, the following resolution was duly passed and adopted:

"RESOLVED, that _____, as _____ President of the Corporation, be and is hereby authorized to execute the Agreement dated _____, 20____, by and between this Corporation and Los Osos Community Services District and that his/her execution thereof, attested by the Secretary of the Corporation, and with the Corporate Seal affixed, shall be the official act and deed of this Corporation."

I further certify that said resolution is now in full force and effect.

IN WITNESS WHEREOF, I have hereunto set my hand and affixed the official seal of the corporation this _____, day of _____, 20_____.

Secretary

(SEAL)

**AGREEMENT CERTIFICATE
(if Partnership)**

STATE OF)
) SS:
COUNTY OF)

I HEREBY CERTIFY that a meeting of the Partners of the _____

a partnership existing under the laws of the State of _____, held on _____, 20_____, the following resolution was duly passed and adopted:

"RESOLVED, that _____, as _____ of the Partnership, be and is hereby authorized to execute the Agreement dated _____, 20_____, by and between this Partnership and Los Osos Community Services District and that his/her execution thereof, attested by the _____ shall be the official act and deed of this Partnership."

I further certify that said resolution is now in full force and effect.

IN WITNESS WHEREOF, I have hereunto set my hand this _____, day of _____, 20_____.

Partner

(SEAL)

**AGREEMENT CERTIFICATE
(if Joint Venture)**

STATE OF)
)
COUNTY OF) SS:

I HEREBY CERTIFY that a meeting of the Principals of the _____

a joint venture existing under the laws of the State of _____, held on
_____, 20____, the following resolution was duly passed and adopted:

"RESOLVED, that _____, as
_____ of the Joint Venture,
be and is hereby authorized to execute the Agreement dated _____,
20____, by and between this Joint Venture and Los Osos Community Services District
and that his/her execution thereof, attested by the _____ shall be the
official act and deed of this Joint Venture."

I further certify that said resolution is now in full force and effect.

IN WITNESS WHEREOF, I have hereunto set my hand this _____, day of _____,
20_____.

Managing Partner

(SEAL)

- END OF AGREEMENT -

**SECTION 00500CA – AGREEMENT
BID SCHEDULE 2**

THIS AGREEMENT is dated as of the _____ day of _____ in the year 20_____
by and between Los Osos Community Services District (hereinafter called OWNER) and

(hereinafter called CONTRACTOR).

OWNER and CONTRACTOR, in consideration of the mutual covenants hereinafter set forth, agree as follows:

ARTICLE 1. WORK.

CONTRACTOR shall complete the portion of the WORK as specified or indicated in the OWNER's Contract Documents entitled Los Osos Wastewater Project for Bid Schedule 2.

The overall WORK consists of Area construction divided into four geographical areas (Area A, Area B, Area C, and Area D) and Wastewater Treatment Facility (WWTF) construction. The WORK for Bid Schedule 2 consists of the WORK in Area A and Area D.

The Area A and Area D construction includes, but is not limited to, the following:

- Wastewater collection system consisting of approximately 114,000 linear feet of gravity sewer mains ranging in size from 8-inch diameter to 18-inch diameter, 430 manholes, 3030 laterals, and 14,000 linear feet of force mains ranging in size from 2-inch diameter to 12-inch diameter.
- Four duplex and one triplex submersible pump stations ranging in capacity from approximately 130 gpm to 1900 gpm and four standby power facilities ranging in size from 30 kw to 300 kw.
- Twelve pocket pump stations ranging in capacity from 10 to 24 gpm using submersible grinder pumps.
- Effluent disposal system consisting of effluent disposal sites with approximately 50 vertical disposal wells and approximately 29,000 linear feet of disposal mains and headers ranging in size from 4-inch diameter to 12-inch diameter.
- Harvest water system consisting of one harvest well approximately 150 feet in depth with harvest well building and approximately 8,000 linear feet of 6-inch diameter harvest mains.

The underground pipeline work for Area A must be completed before the underground pipeline work in Area D can be started.

ARTICLE 2. CONTRACT TIMES.

The WORK shall be completed within 730 successive calendar days from the commencement date stated in the Notice to Proceed. Partial utilization of the Area A work shall be completed within 550 successive calendar days after the commencement date stated in the Notice to Proceed.

ARTICLE 3. LIQUIDATED DAMAGES.

OWNER and the CONTRACTOR recognize that time is of the essence of this Agreement and that the OWNER will suffer financial loss if the WORK is not completed within the time specified in Article 2 herein, plus any extensions thereof allowed in accordance with Article 12 of the General Conditions. They also recognize the delays, expense, and difficulties involved in proving in a legal proceeding the actual loss suffered by the OWNER if the WORK is not completed on time. Accordingly, instead of requiring any such proof, the OWNER and the CONTRACTOR agree that as liquidated damages for delay (but not as a penalty) the CONTRACTOR shall pay the OWNER \$10,000 for each day that expires after the Contract Time established for completion of the WORK as specified in Article 2 herein. The OWNER and the CONTRACTOR agree that as liquidated damages for delay (but not as a penalty) the CONTRACTOR shall pay the OWNER \$2,000 for each day that expires after the Contract Times established for completion of the intermediate milestones as specified in Article 2 herein.

Further, as liquidated damages for CONTRACTOR's delay in submitting its Record Drawings, its Schedule of Values, or its CPM Schedules, the CONTRACTOR shall pay the OWNER \$500 for each day that expires after the time specified in Sections 01300, 01301, and 01311 of the General Requirements.

Further, as liquidated damages for CONTRACTOR's failure to perform adequate public information, traffic, noise, dust, or mud control, the CONTRACTOR shall pay the OWNER \$1000 for each day that any of said responsibilities is inadequate, as determined by the ENGINEER.

ARTICLE 4. CONTRACT PRICE.

OWNER shall pay CONTRACTOR for completion of the WORK in accordance with the Contract Documents in current funds the amount set forth in the Bid Schedule(s).

ARTICLE 5. PAYMENT PROCEDURES.

CONTRACTOR shall submit Applications for Payment in accordance with Article 14 of the General Conditions. Applications for Payment will be processed by ENGINEER as provided in the General Conditions.

ARTICLE 6. CONTRACT DOCUMENTS.

The Contract Documents which comprise the entire agreement between OWNER and CONTRACTOR concerning the WORK consist of this Agreement and the following attachments to this Agreement:

- Notice Inviting Bids
- Instructions to Bidders
- Bid Forms including the Bid, Bid Schedule(s), Information Required of Bidder, Bid Bond, and all required certificates and affidavits
- Performance Bond
- Payment Bond
- General Conditions
- Supplementary General Conditions

- State Revolving Fund Loan Requirements
- Division 01 – General Requirements
- Technical Specifications as listed in the Table of Contents.
- Drawings as listed in the List of Drawings.
- Addenda numbers _____ to _____, inclusive.
- Change Orders which may be delivered or issued after Effective Date of the Agreement and are not attached hereto.

There are no Contract Documents other than those listed in this Article 6. The Contract Documents may only be amended by Change Order as provided in Paragraph 3.5 of the General Conditions.

ARTICLE 7. ASSIGNMENT

No assignment by a party hereto of any rights under or interests in the Contract Documents will be binding on another party hereto without the written consent of the party sought to be bound; and specifically but without limitation monies that may become due and monies that are due may not be assigned without such consent (except to the extent that the effect of this restriction may be limited by law), and unless specifically stated to the contrary in any written consent to an assignment, no assignment will release or discharge the assignor from any duty or responsibility under the Contract Documents.

OWNER and CONTRACTOR each binds itself, its partners, successors, assigns and legal representatives to the other party hereto, its partners, successors, assigns and legal representatives in respect of all covenants, agreements and obligations contained in the Contract Documents.

IN WITNESS WHEREOF, OWNER and CONTRACTOR have caused this Agreement to be executed the day and year first above written.

OWNER _____

CONTRACTOR _____

By _____

By _____

[CORPORATE SEAL]

Attest _____

Attest _____

Address for giving notices

Address for giving notices

License No. _____

Approved as to Form:

(Signature)

(Title)

Agent for service of process: _____

**AGREEMENT CERTIFICATE
(if Corporation)**

STATE OF)
) SS:
COUNTY OF)

I HEREBY CERTIFY that a meeting of the Board of Directors of the _____

_____ held on _____
a corporation existing under the laws of the State of _____, held on _____, 20____, the following resolution was duly passed and adopted:

"RESOLVED, that _____, as _____ President of the Corporation, be and is hereby authorized to execute the Agreement dated _____, 20____, by and between this Corporation and Los Osos Community Services District and that his/her execution thereof, attested by the Secretary of the Corporation, and with the Corporate Seal affixed, shall be the official act and deed of this Corporation."

I further certify that said resolution is now in full force and effect.

IN WITNESS WHEREOF, I have hereunto set my hand and affixed the official seal of the corporation this _____, day of _____, 20_____.

Secretary

(SEAL)

**AGREEMENT CERTIFICATE
(if Partnership)**

STATE OF)
) SS:
COUNTY OF)

I HEREBY CERTIFY that a meeting of the Partners of the _____

_____ held on
a partnership existing under the laws of the State of _____, held on
_____, 20____, the following resolution was duly passed and adopted:

"RESOLVED, that _____, as
_____ of the Partnership,
be and is hereby authorized to execute the Agreement dated _____,
20____, by and between this Partnership and Los Osos Community Services District and
that his/her execution thereof, attested by the _____ shall be the
official act and deed of this Partnership."

I further certify that said resolution is now in full force and effect.

IN WITNESS WHEREOF, I have hereunto set my hand this _____, day of _____,
20_____.

Partner

(SEAL)

**AGREEMENT CERTIFICATE
(if Joint Venture)**

STATE OF)
) SS:
COUNTY OF)

I HEREBY CERTIFY that a meeting of the Principals of the _____

a joint venture existing under the laws of the State of _____, held on
_____, 20____, the following resolution was duly passed and adopted:

"RESOLVED, that _____, as
_____ of the Joint Venture,
be and is hereby authorized to execute the Agreement dated _____,
20____, by and between this Joint Venture and Los Osos Community Services District
and that his/her execution thereof, attested by the _____ shall be the
official act and deed of this Joint Venture."

I further certify that said resolution is now in full force and effect.

IN WITNESS WHEREOF, I have hereunto set my hand this _____, day of _____,
20_____.

Managing Partner

(SEAL)

- END OF AGREEMENT -

**SECTION 00500CA – AGREEMENT
BID SCHEDULE 3**

THIS AGREEMENT is dated as of the _____ day of _____ in the year 20_____
by and between Los Osos Community Services District (hereinafter called OWNER) and

(hereinafter called CONTRACTOR).

OWNER and CONTRACTOR, in consideration of the mutual covenants hereinafter set forth, agree as follows:

ARTICLE 1. WORK.

CONTRACTOR shall complete the portion of the WORK as specified or indicated in the OWNER's Contract Documents entitled Los Osos Wastewater Project for Bid Schedule 3.

The overall WORK consists of Area construction divided into four geographical areas (Area A, Area B, Area C, and Area D) and Wastewater Treatment Facility (WWTF) construction. The WORK for Bid Schedule 3 consists of the WORK for the WWTF.

The WWTF construction of a 1.4 mgd tertiary treatment facility includes, but is not limited to, the following:

- Residuals Building with influent wastewater drum screens, screenings washer-compactors, mechanical vortex grit unit, grit cyclone-classifier, septage receiving station, centrifuge sludge dewatering, polymer feed system, dewatered sludge loading bay, workshop, electrical room, and associated architectural treatment, channels, gates, piping, valves, bridge crane, HVAC, electrical, and instrumentation and control support systems.
- Treatment Building with buried preanoxic basins with submersible mixers, buried aeration basin with fine bubble diffusers, postanoxic basins with submersible mixers and mixed liquor recirculation pumps, mixed liquor transfer pumps, membrane bioreactor tanks with submerged membrane cassettes, ultraviolet disinfection unit, treated effluent pumps, aeration blowers, air scour blowers, chemical feed systems, standby engine-generator set, electrical room, and associated architectural treatment, channels, gates, piping, valves, bridge crane, HVAC, electrical, and instrumentation and control support systems.
- Operations Building with control room, lab, locker rooms, break room, conference room, offices, and associated architectural treatment, mechanical, HVAC, and electrical support systems.
- Sitework with influent wastewater pump station, plant drainage pump station, buried septage receiving tank, odor control biofilters, diesel fuel storage, electrical substation, Ravenna Avenue extension, retaining wall, on-site drainage retention basin, off-site drainage sedimentation basin and percolation basin, and associated grading, drainage, paving, yard piping, fencing, landscaping, and electrical support systems.

ARTICLE 2. CONTRACT TIMES.

The WORK shall be completed within 730 successive calendar days from the commencement date stated in the Notice to Proceed. The temporary off-site drainage system at the WWTF shall be completed by October 15, 2004. Partial utilization of the Wastewater Treatment Facility

(WWTF) shall be completed within 550 successive calendar days after the commencement date stated in the Notice to Proceed.

ARTICLE 3. LIQUIDATED DAMAGES.

OWNER and the CONTRACTOR recognize that time is of the essence of this Agreement and that the OWNER will suffer financial loss if the WORK is not completed within the time specified in Article 2 herein, plus any extensions thereof allowed in accordance with Article 12 of the General Conditions. They also recognize the delays, expense, and difficulties involved in proving in a legal proceeding the actual loss suffered by the OWNER if the WORK is not completed on time. Accordingly, instead of requiring any such proof, the OWNER and the CONTRACTOR agree that as liquidated damages for delay (but not as a penalty) the CONTRACTOR shall pay the OWNER \$10,000 for each day that expires after the Contract Time established for completion of the WORK as specified in Article 2 herein. The OWNER and the CONTRACTOR agree that as liquidated damages for delay (but not as a penalty) the CONTRACTOR shall pay the OWNER \$2,000 for each day that expires after the Contract Times established for completion of the intermediate milestones as specified in Article 2 herein.

Further, as liquidated damages for CONTRACTOR's delay in submitting its Record Drawings, its Schedule of Values, or its CPM Schedules, the CONTRACTOR shall pay the OWNER \$500 for each day that expires after the time specified in Sections 01300, 01301, and 01311 of the General Requirements.

Further, as liquidated damages for CONTRACTOR's failure to perform adequate public information, traffic, noise, dust, or mud control, the CONTRACTOR shall pay the OWNER \$1000 for each day that any of said responsibilities is inadequate, as determined by the ENGINEER.

ARTICLE 4. CONTRACT PRICE.

OWNER shall pay CONTRACTOR for completion of the WORK in accordance with the Contract Documents in current funds the amount set forth in the Bid Schedule(s).

ARTICLE 5. PAYMENT PROCEDURES.

CONTRACTOR shall submit Applications for Payment in accordance with Article 14 of the General Conditions. Applications for Payment will be processed by ENGINEER as provided in the General Conditions.

ARTICLE 6. CONTRACT DOCUMENTS.

The Contract Documents which comprise the entire agreement between OWNER and CONTRACTOR concerning the WORK consist of this Agreement and the following attachments to this Agreement:

- Notice Inviting Bids
- Instructions to Bidders
- Bid Forms including the Bid, Bid Schedule(s), Information Required of Bidder, Bid Bond, and all required certificates and affidavits
- Performance Bond
- Payment Bond

- General Conditions
- Supplementary General Conditions
- State Revolving Fund Loan Requirements
- Division 01 – General Requirements
- Technical Specifications as listed in the Table of Contents.
- Drawings as listed in the List of Drawings.
- Addenda numbers _____ to _____, inclusive.
- Change Orders which may be delivered or issued after Effective Date of the Agreement and are not attached hereto.

There are no Contract Documents other than those listed in this Article 6. The Contract Documents may only be amended by Change Order as provided in Paragraph 3.5 of the General Conditions.

ARTICLE 7. ASSIGNMENT

No assignment by a party hereto of any rights under or interests in the Contract Documents will be binding on another party hereto without the written consent of the party sought to be bound; and specifically but without limitation monies that may become due and monies that are due may not be assigned without such consent (except to the extent that the effect of this restriction may be limited by law), and unless specifically stated to the contrary in any written consent to an assignment, no assignment will release or discharge the assignor from any duty or responsibility under the Contract Documents.

OWNER and CONTRACTOR each binds itself, its partners, successors, assigns and legal representatives to the other party hereto, its partners, successors, assigns and legal representatives in respect of all covenants, agreements and obligations contained in the Contract Documents.

IN WITNESS WHEREOF, OWNER and CONTRACTOR have caused this Agreement to be executed the day and year first above written.

OWNER _____

CONTRACTOR _____

By _____

By _____

[CORPORATE SEAL]

Attest _____

Attest _____

Address for giving notices

Address for giving notices

License No. _____

Approved as to Form:

(Signature)

Agent for service of process: _____

(Title)

**AGREEMENT CERTIFICATE
(if Corporation)**

STATE OF)
) SS:
COUNTY OF)

I HEREBY CERTIFY that a meeting of the Board of Directors of the _____

_____ held on _____, 20____, the following resolution was duly passed and adopted:

"RESOLVED, that _____, as _____ President of the Corporation, be and is hereby authorized to execute the Agreement dated _____, 20____, by and between this Corporation and Los Osos Community Services District and that his/her execution thereof, attested by the Secretary of the Corporation, and with the Corporate Seal affixed, shall be the official act and deed of this Corporation."

I further certify that said resolution is now in full force and effect.

IN WITNESS WHEREOF, I have hereunto set my hand and affixed the official seal of the corporation this _____, day of _____, 20_____.

Secretary

(SEAL)

**AGREEMENT CERTIFICATE
(if Partnership)**

STATE OF)
) SS:
COUNTY OF)

I HEREBY CERTIFY that a meeting of the Partners of the _____

_____ a partnership existing under the laws of the State of _____, held on
_____, 20_____, the following resolution was duly passed and adopted:

"RESOLVED, that _____, as
_____ of the Partnership,
be and is hereby authorized to execute the Agreement dated _____,
20_____, by and between this Partnership and Los Osos Community Services District and
that his/her execution thereof, attested by the _____ shall be the
official act and deed of this Partnership."

I further certify that said resolution is now in full force and effect.

IN WITNESS WHEREOF, I have hereunto set my hand this _____, day of _____,
20_____.

Partner

(SEAL)

**AGREEMENT CERTIFICATE
(if Joint Venture)**

STATE OF)
) SS:
COUNTY OF)

I HEREBY CERTIFY that a meeting of the Principals of the _____

a joint venture existing under the laws of the State of _____, held on
_____, 20_____, the following resolution was duly passed and adopted:

"RESOLVED, that _____, as
_____ of the Joint Venture,
be and is hereby authorized to execute the Agreement dated _____,
20_____, by and between this Joint Venture and Los Osos Community Services District
and that his/her execution thereof, attested by the _____ shall be the
official act and deed of this Joint Venture."

I further certify that said resolution is now in full force and effect.

IN WITNESS WHEREOF, I have hereunto set my hand this _____, day of _____,
20_____.

Managing Partner

(SEAL)

- END OF AGREEMENT -

**SECTION 00500CA – AGREEMENT
BID SCHEDULE 4**

THIS AGREEMENT is dated as of the _____ day of _____ in the year 20_____
by and between Los Osos Community Services District (hereinafter called OWNER) and

(hereinafter called CONTRACTOR).

OWNER and CONTRACTOR, in consideration of the mutual covenants hereinafter set forth, agree as follows:

ARTICLE 1. WORK.

CONTRACTOR shall complete the portion of the WORK as specified or indicated in the OWNER's Contract Documents entitled Los Osos Wastewater Project for Bid Schedule 4.

The overall WORK consists of Area construction divided into four geographical areas (Area A, Area B, Area C, and Area D) and Wastewater Treatment Facility (WWTF) construction. The WORK for Bid Schedule 4 consists of the WORK in Area A, Area B, Area C, and Area D.

The Area construction includes, but is not limited to, the following:

- Wastewater collection system consisting of approximately 195,000 linear feet of gravity sewer mains ranging in size from 8-inch diameter to 18-inch diameter, 790 manholes, 4710 laterals, and 28,000 linear feet of force mains ranging in size from 2-inch diameter to 12-inch diameter.
- Five duplex and two triplex submersible pump stations ranging in capacity from approximately 130 gpm to 1900 gpm and six standby power facilities ranging in size from 30 kw to 300 kw.
- Twelve pocket pump stations ranging in capacity from 10 to 24 gpm using submersible grinder pumps.
- Effluent disposal system consisting of effluent disposal sites with approximately 20,000 linear feet of subsurface horizontal perforated pipe, 50 vertical disposal wells, and approximately 63,000 linear feet of disposal mains and headers ranging in size from 4-inch diameter to 12-inch diameter.
- Harvest water system consisting of three harvest wells approximately 150 feet in depth with harvest well buildings and approximately 14,000 linear feet of 6-inch diameter harvest mains.

The underground pipeline work for Area B must be completed before the underground pipeline work in Area C can be started. The underground pipeline work for Area A must be completed before the underground pipeline work in Area D can be started.

ARTICLE 2. CONTRACT TIMES.

The WORK shall be completed within 730 successive calendar days from the commencement date stated in the Notice to Proceed. Partial utilization of the Area B work, including the Broderson disposal main and effluent disposal site, shall be completed within 550 successive calendar days after the commencement date stated in the Notice to Proceed. Partial utilization of

the Area A work shall be completed within 550 successive calendar days after the commencement date stated in the Notice to Proceed.

ARTICLE 3. LIQUIDATED DAMAGES.

OWNER and the CONTRACTOR recognize that time is of the essence of this Agreement and that the OWNER will suffer financial loss if the WORK is not completed within the time specified in Article 2 herein, plus any extensions thereof allowed in accordance with Article 12 of the General Conditions. They also recognize the delays, expense, and difficulties involved in proving in a legal proceeding the actual loss suffered by the OWNER if the WORK is not completed on time. Accordingly, instead of requiring any such proof, the OWNER and the CONTRACTOR agree that as liquidated damages for delay (but not as a penalty) the CONTRACTOR shall pay the OWNER \$10,000 for each day that expires after the Contract Time established for completion of the WORK as specified in Article 2 herein. The OWNER and the CONTRACTOR agree that as liquidated damages for delay (but not as a penalty) the CONTRACTOR shall pay the OWNER \$2,000 for each day that expires after the Contract Times established for completion of the intermediate milestones as specified in Article 2 herein.

Further, as liquidated damages for CONTRACTOR's delay in submitting its Record Drawings, its Schedule of Values, or its CPM Schedules, the CONTRACTOR shall pay the OWNER \$500 for each day that expires after the time specified in Sections 01300, 01301, and 01311 of the General Requirements.

Further, as liquidated damages for CONTRACTOR's failure to perform adequate public information, traffic, noise, dust, or mud control, the CONTRACTOR shall pay the OWNER \$1000 for each day that any of said responsibilities is inadequate, as determined by the ENGINEER.

ARTICLE 4. CONTRACT PRICE.

OWNER shall pay CONTRACTOR for completion of the WORK in accordance with the Contract Documents in current funds the amount set forth in the Bid Schedule(s).

ARTICLE 5. PAYMENT PROCEDURES.

CONTRACTOR shall submit Applications for Payment in accordance with Article 14 of the General Conditions. Applications for Payment will be processed by ENGINEER as provided in the General Conditions.

ARTICLE 6. CONTRACT DOCUMENTS.

The Contract Documents which comprise the entire agreement between OWNER and CONTRACTOR concerning the WORK consist of this Agreement and the following attachments to this Agreement:

- Notice Inviting Bids
- Instructions to Bidders
- Bid Forms including the Bid, Bid Schedule(s), Information Required of Bidder, Bid Bond, and all required certificates and affidavits
- Performance Bond
- Payment Bond

- General Conditions
- Supplementary General Conditions
- State Revolving Fund Loan Requirements
- Division 01 – General Requirements
- Technical Specifications as listed in the Table of Contents.
- Drawings as listed in the List of Drawings.
- Addenda numbers _____ to _____, inclusive.
- Change Orders which may be delivered or issued after Effective Date of the Agreement and are not attached hereto.

There are no Contract Documents other than those listed in this Article 6. The Contract Documents may only be amended by Change Order as provided in Paragraph 3.5 of the General Conditions.

ARTICLE 7. ASSIGNMENT

No assignment by a party hereto of any rights under or interests in the Contract Documents will be binding on another party hereto without the written consent of the party sought to be bound; and specifically but without limitation monies that may become due and monies that are due may not be assigned without such consent (except to the extent that the effect of this restriction may be limited by law), and unless specifically stated to the contrary in any written consent to an assignment, no assignment will release or discharge the assignor from any duty or responsibility under the Contract Documents.

OWNER and CONTRACTOR each binds itself, its partners, successors, assigns and legal representatives to the other party hereto, its partners, successors, assigns and legal representatives in respect of all covenants, agreements and obligations contained in the Contract Documents.

IN WITNESS WHEREOF, OWNER and CONTRACTOR have caused this Agreement to be executed the day and year first above written.

OWNER _____

CONTRACTOR _____

By _____

By _____

[CORPORATE SEAL]

Attest _____

Attest _____

Address for giving notices

Address for giving notices

License No. _____

Approved as to Form:

(Signature)

Agent for service of process: _____

(Title)

**AGREEMENT CERTIFICATE
(if Corporation)**

STATE OF)
) SS:
COUNTY OF)

I HEREBY CERTIFY that a meeting of the Board of Directors of the _____

a corporation existing under the laws of the State of _____, held on _____, 20_____, the following resolution was duly passed and adopted:

"RESOLVED, that _____, as _____ President of the Corporation, be and is hereby authorized to execute the Agreement dated _____, 20____, by and between this Corporation and Los Osos Community Services District and that his/her execution thereof, attested by the Secretary of the Corporation, and with the Corporate Seal affixed, shall be the official act and deed of this Corporation."

I further certify that said resolution is now in full force and effect.

IN WITNESS WHEREOF, I have hereunto set my hand and affixed the official seal of the corporation this _____, day of _____, 20_____.

Secretary

(SEAL)

**AGREEMENT CERTIFICATE
(if Partnership)**

STATE OF)
) SS:
COUNTY OF)

I HEREBY CERTIFY that a meeting of the Partners of the _____

_____ a partnership existing under the laws of the State of _____, held on _____, 20_____, the following resolution was duly passed and adopted:

"RESOLVED, that _____, as _____ of the Partnership, be and is hereby authorized to execute the Agreement dated _____, 20_____, by and between this Partnership and Los Osos Community Services District and that his/her execution thereof, attested by the _____ shall be the official act and deed of this Partnership."

I further certify that said resolution is now in full force and effect.

IN WITNESS WHEREOF, I have hereunto set my hand this _____, day of _____, 20_____.

Partner

(SEAL)

**AGREEMENT CERTIFICATE
(if Joint Venture)**

STATE OF)
) SS:
COUNTY OF)

I HEREBY CERTIFY that a meeting of the Principals of the _____

a joint venture existing under the laws of the State of _____, held on
_____, 20____, the following resolution was duly passed and adopted:

"RESOLVED, that _____, as
_____ of the Joint Venture,
be and is hereby authorized to execute the Agreement dated _____,
20____, by and between this Joint Venture and Los Osos Community Services District
and that his/her execution thereof, attested by the _____ shall be the
official act and deed of this Joint Venture."

I further certify that said resolution is now in full force and effect.

IN WITNESS WHEREOF, I have hereunto set my hand this _____, day of _____,
20_____.

Managing Partner

(SEAL)

- END OF AGREEMENT -

**SECTION 00500CA – AGREEMENT
BID SCHEDULE 5**

THIS AGREEMENT is dated as of the _____ day of _____ in the year 20_____
by and between Los Osos Community Services District (hereinafter called OWNER) and

(hereinafter called CONTRACTOR).

OWNER and CONTRACTOR, in consideration of the mutual covenants hereinafter set forth, agree as follows:

ARTICLE 1. WORK.

CONTRACTOR shall complete the WORK as specified or indicated in the OWNER's Contract Documents entitled Los Osos Wastewater Project for Bid Schedule 5.

The WORK consists of Area construction divided into four geographical areas (Area A, Area B, Area C, and Area D) and Wastewater Treatment Facility (WWTF) construction. The WORK for Bid Schedule 5 consists of all the WORK.

The Area and WWTF construction includes, but is not limited to, the following:

- Wastewater collection system consisting of approximately 195,000 linear feet of gravity sewer mains ranging in size from 8-inch diameter to 18-inch diameter, 790 manholes, 4710 laterals, and 28,000 linear feet of force mains ranging in size from 2-inch diameter to 12-inch diameter.
- Five duplex and two triplex submersible pump stations ranging in capacity from approximately 130 gpm to 1900 gpm and six standby power facilities ranging in size from 30 kw to 300 kw.
- Twelve pocket pump stations ranging in capacity from 10 to 24 gpm using submersible grinder pumps.
- Effluent disposal system consisting of effluent disposal sites with approximately 20,000 linear feet of subsurface horizontal perforated pipe, 50 vertical disposal wells, and approximately 63,000 linear feet of disposal mains and headers ranging in size from 4-inch diameter to 12-inch diameter.
- Harvest water system consisting of three harvest wells approximately 150 feet in depth with harvest well buildings and approximately 14,000 linear feet of 6-inch diameter harvest mains.

The underground pipeline work for Area B must be completed before the underground pipeline work in Area C can be started. The underground pipeline work for Area A must be completed before the underground pipeline work in Area D can be started.

The WWTF construction of a 1.4 mgd tertiary treatment facility includes, but is not limited to, the following:

- Residuals Building with influent wastewater drum screens, screenings washer-compactors, mechanical vortex grit unit, grit cyclone-classifier, septage receiving station, centrifuge sludge dewatering, polymer feed system, dewatered sludge loading bay,

workshop, electrical room, and associated architectural treatment, channels, gates, piping, valves, bridge crane, HVAC, electrical, and instrumentation and control support systems.

- Treatment Building with buried preanoxic basins with submersible mixers, buried aeration basin with fine bubble diffusers, postanoxic basins with submersible mixers and mixed liquor recirculation pumps, mixed liquor transfer pumps, membrane bioreactor tanks with submerged membrane cassettes, ultraviolet disinfection unit, treated effluent pumps, aeration blowers, air scour blowers, chemical feed systems, standby engine-generator set, electrical room, and associated architectural treatment, channels, gates, piping, valves, bridge crane, HVAC, electrical, and instrumentation and control support systems.
- Operations Building with control room, lab, locker rooms, break room, conference room, offices, and associated architectural treatment, mechanical, HVAC, and electrical support systems.
- Sitework with influent wastewater pump station, plant drainage pump station, buried septage receiving tank, odor control biofilters, diesel fuel storage, electrical substation, Ravenna Avenue extension, retaining wall, on-site drainage retention basin, off-site drainage sedimentation basin and percolation basin, and associated grading, drainage, paving, yard piping, fencing, landscaping, and electrical support systems.

ARTICLE 2. CONTRACT TIMES.

The WORK shall be completed within 730 successive calendar days from the commencement date stated in the Notice to Proceed. The temporary off-site drainage system at the WWTF shall be completed by October 15, 2004. Partial utilization of the Area B work, including the Broderson disposal main and effluent disposal site, shall be completed within 550 successive calendar days after the commencement date stated in the Notice to Proceed. Partial utilization of the Area A work shall be completed within 550 successive calendar days after the commencement date stated in the Notice to Proceed. Partial utilization of the Wastewater Treatment Facility (WWTF) shall be completed within 550 successive calendar days after the commencement date stated in the Notice to Proceed.

ARTICLE 3. LIQUIDATED DAMAGES.

OWNER and the CONTRACTOR recognize that time is of the essence of this Agreement and that the OWNER will suffer financial loss if the WORK is not completed within the time specified in Article 2 herein, plus any extensions thereof allowed in accordance with Article 12 of the General Conditions. They also recognize the delays, expense, and difficulties involved in proving in a legal proceeding the actual loss suffered by the OWNER if the WORK is not completed on time. Accordingly, instead of requiring any such proof, the OWNER and the CONTRACTOR agree that as liquidated damages for delay (but not as a penalty) the CONTRACTOR shall pay the OWNER \$10,000 for each day that expires after the Contract Time established for completion of the WORK as specified in Article 2 herein. The OWNER and the CONTRACTOR agree that as liquidated damages for delay (but not as a penalty) the CONTRACTOR shall pay the OWNER \$2,000 for each day that expires after the Contract Times established for completion of the intermediate milestones as specified in Article 2 herein.

Further, as liquidated damages for CONTRACTOR's delay in submitting its Record Drawings, its Schedule of Values, or its CPM Schedules, the CONTRACTOR shall pay the OWNER \$500 for each day that expires after the time specified in Sections 01300, 01301, and 01311 of the General Requirements.

Further, as liquidated damages for CONTRACTOR's failure to perform adequate public information, traffic, noise, dust, or mud control, the CONTRACTOR shall pay the OWNER \$1000 for each day that any of said responsibilities is inadequate, as determined by the ENGINEER.

ARTICLE 4. CONTRACT PRICE.

OWNER shall pay CONTRACTOR for completion of the WORK in accordance with the Contract Documents in current funds the amount set forth in the Bid Schedule(s).

ARTICLE 5. PAYMENT PROCEDURES.

CONTRACTOR shall submit Applications for Payment in accordance with Article 14 of the General Conditions. Applications for Payment will be processed by ENGINEER as provided in the General Conditions.

ARTICLE 6. CONTRACT DOCUMENTS.

The Contract Documents which comprise the entire agreement between OWNER and CONTRACTOR concerning the WORK consist of this Agreement and the following attachments to this Agreement:

- Notice Inviting Bids
- Instructions to Bidders
- Bid Forms including the Bid, Bid Schedule(s), Information Required of Bidder, Bid Bond, and all required certificates and affidavits
- Performance Bond
- Payment Bond
- General Conditions
- Supplementary General Conditions
- State Revolving Fund Loan Requirements
- Division 01 – General Requirements
- Technical Specifications as listed in the Table of Contents.
- Drawings as listed in the List of Drawings.
- Addenda numbers _____ to _____, inclusive.
- Change Orders which may be delivered or issued after Effective Date of the Agreement and are not attached hereto.

There are no Contract Documents other than those listed in this Article 6. The Contract Documents may only be amended by Change Order as provided in Paragraph 3.5 of the General Conditions.

ARTICLE 7. ASSIGNMENT

No assignment by a party hereto of any rights under or interests in the Contract Documents will be binding on another party hereto without the written consent of the party sought to be bound; and specifically but without limitation monies that may become due and monies that are due may not be assigned without such consent (except to the extent that the effect of this restriction may be limited by law), and unless specifically stated to the contrary in any written consent to an assignment, no assignment will release or discharge the assignor from any duty or responsibility under the Contract Documents.

OWNER and CONTRACTOR each binds itself, its partners, successors, assigns and legal representatives to the other party hereto, its partners, successors, assigns and legal representatives in respect of all covenants, agreements and obligations contained in the Contract Documents.

IN WITNESS WHEREOF, OWNER and CONTRACTOR have caused this Agreement to be executed the day and year first above written.

OWNER _____

CONTRACTOR _____

By _____

By _____

[CORPORATE SEAL]

Attest _____

Attest _____

Address for giving notices

Address for giving notices

License No. _____

Approved as to Form:

(Signature)

Agent for service of process: _____

(Title)

**AGREEMENT CERTIFICATE
(if Corporation)**

STATE OF)
) SS:
COUNTY OF)

I HEREBY CERTIFY that a meeting of the Board of Directors of the _____

_____ a corporation existing under the laws of the State of _____, held on _____, 20____, the following resolution was duly passed and adopted:

"RESOLVED, that _____, as _____ President of the Corporation, be and is hereby authorized to execute the Agreement dated _____, 20____, by and between this Corporation and Los Osos Community Services District and that his/her execution thereof, attested by the Secretary of the Corporation, and with the Corporate Seal affixed, shall be the official act and deed of this Corporation."

I further certify that said resolution is now in full force and effect.

IN WITNESS WHEREOF, I have hereunto set my hand and affixed the official seal of the corporation this _____, day of _____, 20_____.

Secretary

(SEAL)

**AGREEMENT CERTIFICATE
(if Partnership)**

STATE OF)
) SS:
COUNTY OF)

I HEREBY CERTIFY that a meeting of the Partners of the _____

a partnership existing under the laws of the State of _____, held on _____, 20____, the following resolution was duly passed and adopted:

"RESOLVED, that _____, as _____ of the Partnership, be and is hereby authorized to execute the Agreement dated _____, 20____, by and between this Partnership and Los Osos Community Services District and that his/her execution thereof, attested by the _____ shall be the official act and deed of this Partnership."

I further certify that said resolution is now in full force and effect.

IN WITNESS WHEREOF, I have hereunto set my hand this _____, day of _____, 20_____.

Partner

(SEAL)

**AGREEMENT CERTIFICATE
(if Joint Venture)**

STATE OF)
) SS:
COUNTY OF)

I HEREBY CERTIFY that a meeting of the Principals of the _____

a joint venture existing under the laws of the State of _____, held on _____, 20____, the following resolution was duly passed and adopted:

"RESOLVED, that _____, as _____ of the Joint Venture, be and is hereby authorized to execute the Agreement dated _____, 20____, by and between this Joint Venture and Los Osos Community Services District and that his/her execution thereof, attested by the _____ shall be the official act and deed of this Joint Venture."

I further certify that said resolution is now in full force and effect.

IN WITNESS WHEREOF, I have hereunto set my hand this _____, day of _____, 20_____.

Managing Partner

(SEAL)

- END OF AGREEMENT -

**WATER RESOURCES CONTROL BOARD - DIVISION OF CLEAN WATER PROGRAMS
 MINORITY BUSINESS/WOMEN BUSINESS ENTERPRISE (MBE/WBE) UTILIZATION
 FEDERAL CLEAN WATER GRANT OR STATE REVOLVING FUND LOAN**

1. All purchases for this contract are completed. Check here [<input type="checkbox"/>]		2. GRANT/LOAN NO:		3. REPORTING QUARTER (Check one):				4. TOTAL ACCUMULATED PAYMENTS PAID TO CONTRACTOR:	
				Jan.-Mar.	April-June	July-Sept	Oct-Dec	\$	
5. PURCHASE PERIOD UNDER THIS LOAN CONTRACT:						6. TOTAL PAYMENTS TO PRIME CONTRACTOR THIS QUARTER:			
START DATE: _____						ENDING DATE: _____			
7. RECIPIENT'S NAME AND ADDRESS:						8. RECIPIENT'S CONTACT PERSON AND PHONE NUMBER:			
9. MBE/WBE PAYMENTS PAID BY PRIME CONTRACTOR DURING REPORTING QUARTER (AMOUNT(S) INCLUDED IN BOX NO. 6.)									
PURCHASE MADE BY RECIPIENT/ CONTRACTOR	BUSINESS ENTERPRISE DOLLAR VALUE OF PROCUREMENT		DATE OF AWARD (M/D/Y)	PRODUCT TYPE CODE (BELOW)	NAME AND ADDRESS OF MBE/WBE CONTRACTOR/SUBCONTRACTOR OR VENDOR				
	MBE	WBE							
TOTALS	\$	\$							
10. COMMENTS:									
11. SIGNATURE AND TITLE OF RECIPIENT'S AUTHORIZED REPRESENTATIVE								12. DATE	

Return to:
 Ken Gonzales
 Water Resources Control Board
 Division of Clean Water Programs
 P.O. Box 944212
 Sacramento, CA 94244-2120

PRODUCT OR SERVICES CODES:

- | | | |
|-------------------|-------------------------------------|---------------------------|
| 1 = Agriculture | 5 = Transportation | 9 = Services |
| 2 = Mining | 6 = Wholesale Trade | a = Business Services |
| 3 = Construction | 7 = Retail Trade | b = Professional Services |
| 4 = Manufacturing | 8 = Finance, Insurance, Real Estate | c = Repair Services |
| | | d = Personal Services |

Tel. (916) 341-5683
 Fax: (916) 341-5707

**WATER RESOURCES CONTROL BOARD - DIVISION OF CLEAN WATER PROGRAMS
MINORITY BUSINESS/WOMEN BUSINESS ENTERPRISE (MBE/WBE) UTILIZATION
FEDERAL CLEAN WATER GRANT OR STATE REVOLVING FUND LOAN
INSTRUCTIONS FOR COMPLETING THE UR 334**

- Box 1** Check this box only if *all* procurements (purchases) under this loan contract or grant have been completed either during the reporting quarter or a prior quarter. If you check this box, we will no longer send you quarterly surveys.
- Box 2** State Revolving Fund loan number.
- Box 3** Mark the appropriate quarter. If you are sending data for more than one quarter, copy the form and prepare multiple reports. (Note: reporting the information in the proper quarter is not as important as collecting and reporting all MBE/WBE purchases.)
- Box 4** Enter the total amount of payments paid to the contractor including previous quarters.
- Box 5** Enter the dates between which you plan to make procurements under this loan or grant.
- Box 6** Enter the total dollar amount of payments paid to prime contractor for this reporting quarter. This total includes MBE, WBE, Subcontractor payments shown in box no. 9.
- Box 7** Enter the loan or grantee name and address.
- Box 8** Enter the loan or grantee contact person's name and phone number.
- Box 9** Enter details for the MBE or WBE purchases *only* and be sure to limit them to the same period used for Box 6. 1) Use either an "R" or a "C" to represent "Recipient" or "Contractor." 2) Enter a dollar total for either MBE or WBE and total the two columns at the bottom of the section. 3) Provide an award 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 10** This box is for explanatory information or questions.
- Box 11** Provide an authorized representative signature
- Box 12** Enter the date of completion.

State Water Resources Control Board

Division of Financial Assistance (DFA)

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.swrcb.ca.gov>

Compliance Guidelines for State Revolving Fund (SRF) Loan Program Minority and Women Owned Business Enterprise (MBE/WBE)

January 1, 2003

State Revolving Fund Loan Program MBE/WBE Instructions

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Section 1: APPROVAL TO AWARD (ATA) PROCESS

REQUIRED FOR STATE REVOLVING FUND LOANS DIVISION OF FINANCIAL ASSISTANCE

The purpose of this document is to provide a summary of the MBE/WBE “good faith” effort for SRF Loan contractors and recipients. Section 1 provides the contractor and recipient with a brief overview of the ATA process. The MBE/WBE “good faith” effort is one element of the ATA process summarized below. The ATA request package submitted to DFA for approval must contain all of the following:

1. Completed ATA form (original must be signed by the recipient’s authorized representative or designee).
2. A legal description of the site on which the project is to be constructed and an opinion signed by competent title counsel describing the interest the applicant has in the site, including information as to any easements and rights-of-way and certifying that the estate or interest is legal and valid.
3. Tabulation of all bids received and the engineer’s estimate.
4. Copy of the bid proposal chosen.
5. Evidence of advertising (submit a copy of newspaper advertisement for the project).
6. All MBE/WBE documentation, which includes Forms 1 through 6. Also, documentation that the local Small Business Administration and Minority Business Development Agency centers were contacted at least five (5) working days by the prime contractor prior to the need for referrals to MBE/WBE subcontractors and documentation that invitations were sent to MBE/WBE subcontractors at least seven (7) working days prior to bid opening.
7. A dedicated source of revenue (ordinance or resolution).
8. Disbursements of SRF funds may take up to 90 days. Some construction costs may be ineligible for SRF funding. Provide a cash flow projection showing the source and expected time of receipt of funds needed to meet project cash requirements.

Detailed directions for completing the ATA form are provided on the form. If you have any questions regarding the ATA process, please contact Ken Gonzales of DFA at (916) 341-5683 or gonzalek@swrcb.ca.gov.

Section 2: PRIME CONTRACTOR & RECIPIENT RESPONSIBILITIES

PARTICIPATION RESPONSIBILITIES FOR PRIMES AND THEIR SUBCONTRACTORS

All recipients of federal funds from USEPA, as well as their prime contractors and subcontractors, must make every effort to solicit bids from eligible MBE/WBEs. This information must be documented and reported to DFA as described in this document.

The MBE/WBE responsibilities of the prime contractor are:

1. Conduct a “good faith” effort to ensure maximum MBE/WBE participation in the project.
2. Complete or obtain from MBE/WBE subcontractors, all of the completed forms required in

State Revolving Fund Loan Program MBE/WBE Instructions

these guidelines and submit them to the recipient.

3. Report actual MBE/WBE participation on a quarterly basis to the recipient.

The MBE/WBE responsibilities of the recipient are:

1. Ensure that the prime contractor meets the responsibilities identified in these guidelines.
2. Submit all documentation identified in these guidelines to DFA and maintain all records in the project files for later access or auditing.
3. Provide quarterly reports on MBE/WBE procurements to DFA.

Section 3: “Good Faith” Effort Process

Any public or private entity receiving federal funds must demonstrate that efforts were made to attract MBE/WBEs on any SRF contracts. The process to attract MBE/WBEs is referred to as the “good faith” effort. This effort requires the recipient, prime contractor and any subcontractors to take the steps listed below to assure that MBE/WBEs are used whenever possible as sources of supplies, construction, equipment or services. Failure to take the steps outlined below and submit Form 4, Prime Contractor/Recipient Selected MBE/WBEs, prior to bid opening, shall cause the bid to be rejected as non-responsive. Use Forms 1 through 6 to document the process. If it is not practical or possible to comply with one or more of the five steps, prepare an explanation and submit it with the ATA package.

STEP 1: Divide the total requirements, when economically feasible, into small tasks or quantities to permit maximum participation. Evidence submitted must illustrate that the work was divided into small proprietary portions (e.g. paving, electrical, landscaping, revegetation).

STEP 2: Establish delivery schedules, when work requirements permit, that encourage maximum MBE/WBE participation.

STEP 3: Use the services of the U.S. Small Business Administration (SBA) and the Minority Business Development Agency (MBDA) of the U. S. Department of Commerce (DOC) in soliciting qualified MBE/WBEs. Utilization of these resources is required at no cost. These agencies offer several services, including Internet access to databases of MBE/WBEs.

For additional assistance, the recipient or contractor could telephone the local offices of both agencies in their area (SBA Minority Enterprise Development Offices and DOC MBDA Regional Centers). The Internet web sites also include names, addresses, and phone or fax numbers of local SBA and MBDA centers. There are contact phone numbers listed in Step 5 that will assist you in reaching the two offices if the Internet is unavailable. **Do not write to these sources.**

The prime contractor must provide documentation that the local SBA/MBDA offices or web sites were notified of the contracting opportunity (allow at least **five working days** for a response). Documentation must not only include the efforts to contact the information sources and list the contract opportunity, but also the solicitation and response to the bid request.

STEP 4: Include qualified MBE/WBEs on solicitation lists and record the information.

State Revolving Fund Loan Program MBE/WBE Instructions

Solicitation should be as broad as possible. The following web sites include a list of available sources for expanding the search for eligible MBE/WBEs: <http://www.sba.gov> and <http://www.mbda.gov>. If MBE/WBE sources are *not* located, explain why and describe the efforts made. See Step 5 for more detailed information.

For all contracts, the prime contractor must send invitations to at least three (or all, if less than three) MBE/WBE vendors for each item of work referred by sources contacted. The invitations must adequately specify the items for which bids are requested. The record of “good faith” efforts must indicate a real desire for a positive response, such as a certified mail receipt or a documented telephone conversation. **(A regular letter or an unanswered telephone call is not an adequate “good faith” effort)**. A list of all sub-bidders, including the bidders **not** selected, and bid amount for each item of work must be submitted. A sample list is shown in Form 5, Sample Summary of Bids Received from Subcontractors. If a low bid was not accepted, an explanation must be provided.

STEP 5: Solicit available MBEs and WBEs whenever they are potential sources. The prime contractor must provide invitations to MBE/WBE sub-bidders at least **seven working days** prior to the bid opening date.

Federal Agencies (must be contacted):

Name and Address	Telephone and Web Site
U.S. Small Business Administration	(415) 744-6820 Extension 0
455 Market Street, Suite 600	PRO-Net Database: http://www.sba.gov ¹
San Francisco, CA 94105	Bid Notification: http://web.sba.gov/subnet/
RE: Minority Enterprise Development Offices	
U.S. Department of Commerce	(415) 744-3001
Minority Business Development Agency	Phoenix/ Opportunity Database:
211 Main Street, Room 1280	http://www.mbda.gov
San Francisco, CA 94105	RE: Business Development Centers

State Agencies (optional contacts):

Name and Address	Telephone and Web Site
California Department of Transportation	Mailing Address: PO Box 942874
(CALTRANS) Business Enterprise Program ²	Sacramento, CA 94274-0015
1820 Alhambra Blvd.	(916) 227-9599
Sacramento, CA 95816	www.dot.ca.gov/hq/bep
CA Public Utilities Commission (CPUC)³	
505 Van Ness Avenue	http://www.cpuc.ca.gov/static/aboutcpuc/divisions/executive+office/wmbe
San Francisco, CA 94102-3298	

¹ PRO-Net is the SBA’s electronic search engine, containing business profiles for nearly 200,000 businesses. The SBA requests Internet contact only. A list of potential firms downloaded from PRO-Net will verify that the bidder made the required contact with the SBA.

² Based on the federal Disadvantaged Business Enterprises (DBE) program, CALTRANS maintains a database and provides directories of minority and woman-owned firms.

³ CPUC maintains a database of MBE/WBE-owned business enterprises and serves to inform the public.

Section 4: Non-Governmental Local Contacts

MINORITY BUSINESS ENTERPRISE/WOMAN BUSINESS ENTERPRISE (MBE/WBE) RESOURCES

The following organizations provide services to identify potential MBE/WBEs. Some of the organizations charge a fee or require membership fees to provide their services. Services provided may include the entire good faith effort process for recipients that need comprehensive assistance.

Humboldt Builder's Exchange Inc.

2355 Myrtle Ave.
Eureka, CA 95501
Phone #: (707) 442-3708
FAX #: (707) 442-6051
www.humvx.com

California Daily Bid Advisor/Challenge News

1276 Lincoln Ave. #203
San Jose, CA 95125
Phone #: (408) 998-0241
or (800) 298-0240
FAX #: (408) 998-2534

California Procurement Training and Assistance Center at West Valley

1 West Campbell Ave., Ste J70
Campbell CA 95008
Phone #: (408) 871-4390
FAX #: (408) 378-2034

Contractors Assistance Center

PO Box 7675
Redlands, CA 92375
Phone #: (800) 742-4124
FAX #: (800) 742-4125

Eldridge Bid Reporter, M/W/DVBE Assistance

PO Box 699
West Sacramento, CA 95691
Phone #: (916) 444-7618
FAX #: (916) 444-7731
www.ebrbids.com

Regis Communications Construction

Bid Source Interactive (CBSI)

PO Box 568
Burson, CA 95225-0568
Phone #: (209) 772-3670
FAX #: (800) 560-7266
www.Regis-usa.com
1-800-962-4162

Riverside Community College District

Procurement Assistance Center
2038 Iowa Ave., Ste. 100
Riverside, CA 92507
Phone #: (909) 788-2559
FAX #: (909) 788-2515
www.resources4u.com/pac

Small Business Exchange

703 Market St., Ste. 1000
San Francisco, CA 94103
Phone #: (415) 778-6250
FAX #: (415) 778-6255
www.sbeinc.com

Section 5: Reporting Requirements

All requests for services, supplies, equipment or construction solicited by the SWRCB, other governmental agencies, non-profit agencies, or private businesses are subject to the MBE/WBE requirements. **These requirements apply to the prime contractor and all subcontractors.** The only exceptions to this requirement are contracts with governmental or non-profit agencies.

For the duration of the contract, all primary and subcontractors will be required to report progress made in fulfilling the “good faith” effort in their quarterly reports. Failure to provide this information as stipulated in the contract language will be cause for contract termination. DFA staff will provide recipients with the forms and instructions to report their “good faith” efforts after the ATA.

Once a bidder is selected, the prime contractor should compile the information required by the “good faith” effort process. **All information supporting the “good faith” effort must be submitted within ten working days after the bid opening.** Recipient shall review the successful bidder’s records closely to be sure that, prior to bid opening, all required “good faith” efforts were made. Failure of either the bidder or prime contractor/subcontractor to follow the process and provide the necessary information to DFA could jeopardize the bidding process. The following situations and circumstances require actions as indicated:

1. If the apparent successful low bidder was rejected a complete explanation must be provided.
2. Each MBE/WBE firm utilized must complete and submit the Form 3, Contractor Self-Certification with the bid.
3. If additional subcontracts become necessary after the award of the prime contract, provide Form 3 to DFA within ten working days following the award of each new subcontract.
4. Any deviation from the information provided at the time of the bid shall not result in a reduction of MBE/WBE participation without prior approval of
5. Failure of the apparent low bidder to perform the five “good faith” effort steps *prior* to bid opening and submittal of Form 4 with the bid, will result in its bid being declared non-responsive. The contract may then be awarded to the next low, responsive, responsible bidder that meets the requirements or the recipient may re-advertise the project.
6. The apparent successful low bidder must submit documentation to the recipient within ten working days following bid opening showing that, prior to the bid opening, all required “good faith” efforts were made.

Section 6: Definitions

A bona fide minority or women-owned business enterprise (MBE/WBE) is a:

- (1) MBE or WBE that has submitted a “Minority or Women-Owned Business Enterprise Contractor Self-Certification” Form 3, and
- (2) A firm that has been accepted as a bona fide MBE or WBE by the recipient.

In addition, a bona fide MBE/WBE must be an independent business concern that is at least 51% owned, controlled, and operated by minority group members (see definition of minority group member) or women. Ownership and control can be measured by:

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- Contract work performance responsibility.
- Management responsibility.
- At least 51% share of profits and risk.
- Other data (such as voting rights) that may clarify ownership or control.

Control means exercising the power to make policy decisions.

Operate means being actively involved in the day-to-day management of the business.

Determination of whether a business is at least 51% owned by a woman or women shall be made without regard to community property laws. An otherwise qualified WBE which is 51% owned by a married woman in a community property state will not be disqualified because her husband has a 50% interest in her share. Similarly, a business that is 51% owned by a married man and 49% by an unmarried woman does not become a qualified WBE by virtue of the wife's 50% interest in the husband's share of the business.

A joint venture is a business enterprise formed by a combination of firms under a joint venture agreement. To qualify as a bona fide MBE/WBE, the minority-owned or women-owned and controlled firms in the joint venture must:

- Satisfy all requirements for bona fide MBE/WBE participation in their own rights.
- Share a clearly defined percentage of the ownership, management responsibilities, risks, and profits of the joint venture. Only this percentage of ownership will be credited towards the MBE/WBE goal.

A minority group member is a citizen of the United States and one of the following:

- ***Native American*** consists of American Indian, Eskimo, Aleut, and native Hawaiian. To qualify, the person must meet one of the following criteria:
 1. Native Americans are at least one-fourth Indian descent (as evidenced by registration with the Bureau of Indian Affairs).
 2. Characteristic Indian appearance and features.
 3. Characteristic Indian name.
 4. Recognition in the community as an Indian.
 5. Membership in a tribe, band, or group of American Indians (recognized by the Federal Government), as evidenced by a tribal enrollment number or similar indication.
- ***African-American*** consists of individuals having origins in any of the black racial groups of Africa.
- ***Asian-Pacific American*** consists of individuals having origins in any of the original peoples of the Far East, Southeast Asia, and the Indian subcontinent. This area includes, for example, China, Japan, Korea, the Philippines, Vietnam, Samoa, Guam, U.S. Trust Territories of the Pacific, Northern Marianas, Laos, Cambodia, and Taiwan. The Indian subcontinent takes in the countries of India, Pakistan, Bangladesh, Sri Lanka, Nepal, Sikkim, and Bhutan.
- ***Hispanic American*** consists of individuals with origins from Puerto Rico, Mexico, Cuba, or South or Central America. Only those persons from Central and South American countries who are of Spanish origin, descent, or culture should be included in this category. Persons from Brazil, Guyana, Surinam or Trinidad, for example, would be classified according to

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their race and would not necessarily be included in the Hispanic category. In addition, this category does not include persons from Portugal, who should be classified according to race.

In cases where a firm is owned and controlled by a minority woman or women, the percentage may be credited towards MBE participation or as WBE participation, or allocated, but may not be credited fully to both.

Recipient – An agency (County, City, Special District, etc.) applying for a SRF loan to construct a project.

Contractor – Refers to any recipient of funds who will participate in some phase of construction. The contractor receiving funds directly from the recipient for construction is the prime contractor. Contractors working for the prime contractor are subcontractors.

Project Manager – If DFA staff is responsible for managing the project, the Project/Contract Manager is responsible for review during the planning, design and contract development phases.

Section 7: MBE/WBE Forms

The following forms are provided to report project MBE/WBE information. They are available in electronic form from Ken Gonzales at (916) 341-5683 or gonzalek@swrcb.ca.gov. If you have any questions about completing these forms or when to turn them in, please contact Mr. Gonzales.

All Forms, where applicable, must have original signature and date.

The following table provides information on who completes each form and where the forms are to be sent:

Form#	Description	Completed By	Submit To	Forward To
1	Solicitation	Prime	Recipient	DFA with ATA
2	Bids Received List	Prime	Recipient	DFA with ATA
3 (Att A)	Self-Certification	MBE/WBE Sub	Prime	Recipient, DFA w/ATA
4 (Att B)	Selected Subcontractors	Prime (with bid)	Recipient	DFA with ATA
5	Sample Summary	Prime	Recipient	DFA with ATA
6	Positive Effort Certification	Recipient	DFA w/ATA	

FORM 3 (Attachment A)
MINORITY- OR WOMEN-OWNED BUSINESS ENTERPRISE
(MBE/WBE)

CONTRACTOR SELF CERTIFICATION

Firm Name: _____ Phone: _____

Address: _____

Principal Service or Product: _____

PLEASE INDICATE PERCENTAGE OF OWNERSHIP

MBE _____% Ownership

WBE _____% Ownership

Prime Contractor

Supplier of Material/Service

Subcontractor

Broker

Sole Ownership

Corporation

Partnership

Joint Venture

I hereby certify that this firm is a Minority or Women Business Enterprise as defined in Public Contract Code, Section 10115.1. In making this certification, I am aware of Sections 12650 et seq. of the Government Code, providing for the imposition of treble damages for making false claims against the State and Section 10115.10 of the Public Contract Code, making it a crime to intentionally make an untrue statement in this certificate.

Certified by: _____ Title: _____

MBE/WBE Sub _____ (ORIGINAL SIGNATURE AND DATE REQUIRED)

Name: _____ Date: _____

Additional proof may be required upon written challenge of this certification by any person or agency. Falsification of this certification by a firm selected to perform federally funded work may result in a determination that the firm is non-responsive and ineligible for future contracts.

This form must be submitted within 10 working days after the bid opening date.

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FORM 4 (Attachment B)**

PRIME CONTRACTOR/RECIPIENT

SELECTED MINORITY- AND WOMEN-OWNED BUSINESS ENTERPRISES (MBE/WBEs)

CONTRACT RECIPIENTS NAME		CONTRACT NO. OR SPECIFICATION NO.	
PROJECT DESCRIPTION		PROJECT LOCATION	
PRIME CONTRACTOR INFORMATION			
NAME AND ADDRESS (Include ZIP Code, Federal Employer Tax ID #)		<input type="checkbox"/> MBE	<input type="checkbox"/> WBE
PHONE	AMOUNT OF CONTRACTS		
MBE/WBE INFORMATION			
<input type="checkbox"/> NONE*			
<input type="checkbox"/> MBE	<input type="checkbox"/> WBE	NAME AND ADDRESS (Include ZIP Code,)	
<input type="checkbox"/> SUBCONTRACTOR <input type="checkbox"/> JOINT VENTURE	<input type="checkbox"/> SUPPLIER/SERVICE <input type="checkbox"/> BROKER		
AMOUNT OF CONTRACT \$			
WORK TO BE PERFORMED			
<input type="checkbox"/> MBE	<input type="checkbox"/> WBE	NAME AND ADDRESS (Include ZIP Code)	
<input type="checkbox"/> SUBCONTRACTOR <input type="checkbox"/> JOINT VENTURE	<input type="checkbox"/> SUPPLIER/SERVICE <input type="checkbox"/> BROKER		
AMOUNT OF CONTRACT \$			
WORK TO BE PERFORMED			
<input type="checkbox"/> MBE	<input type="checkbox"/> WBE	NAME AND ADDRESS (Include ZIP Code,)	
<input type="checkbox"/> SUBCONTRACTOR <input type="checkbox"/> JOINT VENTURE	<input type="checkbox"/> SUPPLIER/SERVICE <input type="checkbox"/> BROKER		
AMOUNT OF CONTRACT \$			
WORK TO BE PERFORMED			
<input type="checkbox"/> MBE	<input type="checkbox"/> WBE	NAME AND ADDRESS (Include ZIP Code,)	
<input type="checkbox"/> SUBCONTRACTOR <input type="checkbox"/> JOINT VENTURE	<input type="checkbox"/> SUPPLIER/SERVICE <input type="checkbox"/> BROKER		
AMOUNT OF CONTRACT \$			
WORK TO BE PERFORMED			
<input type="checkbox"/> MBE	<input type="checkbox"/> WBE	NAME AND ADDRESS (Include ZIP Code)	
<input type="checkbox"/> SUBCONTRACTOR <input type="checkbox"/> JOINT VENTURE	<input type="checkbox"/> SUPPLIER/SERVICE <input type="checkbox"/> BROKER		
AMOUNT OF CONTRACT \$			
WORK TO BE PERFORMED			
TOTAL MBE AMOUNT: \$ _____		TOTAL WBE AMOUNT: \$ _____	
SIGNATURE OF PERSON COMPLETING FORM: _____			
TITLE: _____		PHONE: _____	DATE: _____

*Negative reports are required. ORIGINAL SIGNATURE AND DATE REQUIRED

Failure to complete and submit this form with the bid will cause the bid to be rejected as non-responsive.

FORM 5

SAMPLE SUMMARY OF BIDS RECEIVED FROM SUBCONTRACTORS (MBE/WBE & NON-MBE/WBE)						
THIS SUMMARY IS PREPARED BY THE PRIME CONTRACTOR						
Type of Job	Company Name	Selected	Bid Amount	MBE	WBE	NON
Asphalt	Gillerti & Sons	X	\$123,750	X		
	Americash		\$131,850			X
	Caltex		\$176,775			X
Bore & Jack	State Boring	X	\$208,870			X
	Jack Bore		\$208,870			X
	Alotta Boring		\$227,472	X		
Electrical	Square Fasteners, Inc		\$20,190	X		
	REM Sleep Co	X*	\$24,189		X	
	Tram Electic		\$30,120			X
Masonry	Welch, Inc.	X	\$20,383		X	
	Cheatum		\$36,000	X		
Striping	Orange Peel	X	\$8,597			X
	Crispy Boys Co.		\$9,370			X
	Sweat Co.		\$11,785	X		

*REM Sleep Co. selected over Square Fasteners, Inc. due to incomplete bid by Square Fasteners.
List type of jobs alphabetically, from low to high in each category and selected low bidder. All other types of bidders such as DBE, SWBE SMBE, and Non MBE/WBE should be shown in the "Non" column.

Form for information required to be submitted with the ATA package.

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FORM 6

MINORITY BUSINESS ENTERPRISE/WOMEN BUSINESS ENTERPRISE (MBE/WBE)
POSITIVE EFFORT CERTIFICATION BY APPLICANT/RECIPIENT

1. The apparent successful low bidder on Clean Water Program funded project number C-06-_____ is _____
(name of bidder)
2. Before the State Water Resources Control Board - Division of Financial Assistance can consider requests for an Approval To Award (ATA) to any bidder the applicant/recipient must certify to the following:

MINORITY BUSINESS ENTERPRISE (MBE)

The bidder has obtained _____% of MBE participation for this contract.

WOMEN BUSINESS ENTERPRISE (WBE)

The bidder has obtained _____% of WBE participation for this contract.

Also submitted are Forms 3 and 4 which contain a complete list of those MBE and WBE firms subcontracted with or with whom other types of agreements were made. The list includes the names of the firm, address, phone number and dollar amount involved.

The following affirmative steps as required by 40 CFR 35.3150 (d) have been taken:

- (1) The contractor divided total requirements when economically feasible, into small tasks or quantities to permit maximum participation of minority and women's businesses.
- (2) The contractor established delivery schedules, where the requirements of the work permitted, which encouraged participation by minority and women's business.
- (3) The contractor included qualified minority and women's businesses on solicitation lists.
- (4) The contractor assures that minority and women's businesses were solicited, whenever they were potential sources.
- (5) The contractor used the services and assistance of the Small Business Administration and the Office of Minority Business Development Agency of the U.S. Department of Commerce.

It must be understood that the applicant/recipient in its role as a public trustee assumes primary responsibility to achieve an acceptable level of MBE/WBE utilization. This primary responsibility is a basic condition of the award of any State Revolving Fund financial assistance. Where an application/recipient fails to meet its obligations under these requirements the applicant/recipient may be declared nonresponsive and may have funding either annulled, suspended or terminated.

In accepting these responsibilities, I hereby certify to the above.

Name of Applicant/Recipient

Signature of Authorized Representative

Date

Name and Title of Authorized Representative

This form must be submitted with the ATA package.

7. Any effect on Contract completion time or delivery schedule, including supporting schedule analysis.
 8. Cost estimate for existing Contract requirements correlated to CONTRACTOR's unit price or lump sum breakdown and the proposed changes in those requirements, including costs of development (including costs for design engineering by the ENGINEER, if any) and implementation by the CONTRACTOR.
- C. CONTRACTOR shall submit VECP'S to the ENGINEER. The ENGINEER will review and process proposals expeditiously, but shall not be liable for any delay in acting upon any proposal submitted pursuant to this Paragraph. CONTRACTOR may withdraw all or part of any VECP at any time prior to acceptance by the OWNER, but shall be liable for costs incurred by the ENGINEER in reviewing the proposal.
- D. At its sole discretion, the OWNER may accept, in whole or in part and by Change Order, any VECP submitted pursuant to this Section. Designs for accepted VECP'S will be prepared by the ENGINEER for incorporation into the drawings and specifications. Until a Change Order is issued on a VECP, CONTRACTOR shall remain obligated to perform the WORK in accordance with the Contract. Contract modifications made pursuant to this Section shall so-state. The decision of the OWNER as to the rejection or acceptance of any VECP shall be at the sole discretion of the OWNER; the decision shall be final and not subject to any other Contract review/appeal provisions.

1.3 COST SAVINGS AND SHARING

- A. If a VECP submitted by CONTRACTOR pursuant to this Section is accepted, the Total Contract Price shall be adjusted based upon an equal (50%:50%) sharing of the net savings by CONTRACTOR and the OWNER.
1. Net savings are defined as gross savings less CONTRACTOR's costs and less the OWNER's costs.
 2. Estimated gross savings to CONTRACTOR means the difference between the cost of performing the Work according to the existing requirement and the cost to perform the Work according to the proposed change. In each instance, CONTRACTOR's overhead and profit shall not be considered part of the cost.
 3. CONTRACTOR costs means reasonable costs incurred by CONTRACTOR in preparing the VECP and making the change, such as cancellation or restocking charges.
 4. The OWNER's costs means reasonable costs incurred by the OWNER and ENGINEER for evaluating and implementing the VECP, such as redesign and effect on other WORK.
 5. CONTRACTOR is not entitled to share in either concurrent, collateral or future contract savings. Collateral savings are those measurable net reductions in the OWNER's costs of operation that result from the VECP including maintenance, logistics, and OWNER-furnished property. Future contract savings cover the reductions in the cost of performance of future contracts for essentially the same item resulting from a VECP submitted by CONTRACTOR.
 6. CONTRACTOR's profit shall not be reduced by application of the VECP.

SECTION 01240 – VALUE ENGINEERING

PART 1 -- GENERAL

1.1 GENERAL

- A. The OWNER encourages CONTRACTOR to submit Value Engineering Change Proposals (VECPs) whenever it identifies areas and/or instances in which improvements can be made without reduction in functionality or serviceability, in order to avail it and the OWNER of potential cost savings.
- B. The CONTRACTOR and the OWNER shall equally share (i.e. 50%:50% cost split) any cost savings following compensation to each party for expenses incurred in developing and reviewing the VE proposal.
- C. VECPs are not applicable to elements of the WORK that are covered by unit price bid items or to changes to the Contract that are covered by Change Orders initiated by the OWNER or ENGINEER.

1.2 VE PROPOSALS

- A. This Section applies to a CONTRACTOR-developed and documented VECP that meets the following criteria:
 - 1. Requires a change to the Contract to implement the VECP;
 - 2. Reduces the total contract price without impairing essential functions or characteristics of the Work, providing that it is not based solely upon a change in specified quantities; and
 - 3. Results in a minimum \$20,000 of net savings.
- B. At a minimum, the following information shall be submitted by CONTRACTOR with each VECP:
 - 1. Description of the existing Contract requirements that are involved in the proposed change.
 - 2. Description of the proposed change.
 - 3. Discussion of differences between existing requirements and the proposed change, together with advantages and disadvantages of each changed item.
 - 4. Itemization of the Contract requirements that must be changed if the VECP is accepted (e.g., drawing numbers and specifications).
 - 5. Justification for changes in function or characteristics of each affected item, and the effect of the change on the performance of the end item.
 - 6. Date or time by which a Change Order adopting the VECP must be issued in order to obtain the maximum cost reduction.

- B. CONTRACTOR shall include appropriate VECP provisions in all Subcontracts of \$25,000 or greater, and may include those provisions in any subcontract. Subcontracts shall state that any benefits accruing to CONTRACTOR as a result of an accepted VECP initiated by a Subcontractor shall be shared by CONTRACTOR and the Subcontractor in a manner specified in the contract between them. Concurrent contract savings on other OWNER contracts where the Subcontractor is participating are not allowable.

- END OF SECTION -

SECTION 02630 – MONITORING WELLS

PART 1 – GENERAL

1.1 THE REQUIREMENT

- A. **General:** The CONTRACTOR shall construct monitoring wells at the sites shown in the Contract Drawings. Monitoring wells shall be completed with 2-inch diameter PVC casing and screen to the total depth as specified, complete and operable, all in accordance with the requirements of these Contract Documents. This technical specification applies to the construction and testing of wells for monitoring ground water levels at Effluent Disposal Sites (EDS). The purpose of this specification is to document the level of effort expected from the drilling contractor. This specification does not, through omission, excuse the contractor from complying with any laws, rules, and regulations, or standards governing the work being performed.
- B. **Scope of Work:** The work includes furnishing all labor, materials, transportation, tools, supplies, equipment, and appurtenances necessary for the complete and satisfactory construction, and testing, of ground water monitoring wells. Monitoring wells for this project differ only in their depth, as noted below. The design is as follows:

Well Design – EDS Monitoring Wells

Drilling Sites:	West Side: Broderson Site (five cluster wells)
	East Side: 14th, 15th, 16 th , and 17th (four wells)
Total Well Depth:	West Side: 40 feet
	East Side: Varies (35 to 90 feet)
Final borehole size:	West Side: 10-inch diameter
	East Side: 8-inch diameter
Completion:	West Side: five nested wells (three completions per borehole)
	Piezometer A -Wellhead to 11 feet depth blank casing. 11 to 14 feet depth screen with end cap.
	Piezometer B -Wellhead to 24 feet depth blank casing. 24 to 27 feet depth screen with end cap.
	Piezometer C -Wellhead to 37 feet depth blank casing. 37 to 40 feet depth screen with end cap.
	East Side:
	14th Street: Wellhead to 50 feet depth blank casing. 50 to 60 feet depth screen with end cap.
	15th Street: Wellhead to 25 feet depth blank casing.

25 to 35 feet depth screen with end cap.

16th Street: Wellhead to 80 feet depth blank casing.
80 to 90 feet depth screen with end cap.

17th Street: Wellhead to 25 feet depth blank casing.
25 to 35 feet depth screen with end cap.

Blank Casing: West Side: 1-inch PVC (Schedule 40) water well casing.

East Side: 2-inch PVC (Schedule 40) water well casing.

Screen: West Side: 1-inch PVC (schedule 40) with high-density perforations, 0.020-inch slots.

East Side: 2-inch PVC (Schedule 40) with high-density perforations, 0.020-inch slots.

Gravel Pack: RMC Lapis Luster 2/12 sand (12 x 20), or approved equal.

Sanitary Seal: West Side: Hydrated bentonite chip seal between piezometer screens and 1-2 feet above upper screen. Neat grout from top of bentonite chip seal to surface.

East Side: 2- to 3-foot hydrated bentonite chip seal above filter pack (filter pack brought 2 feet above screen). Cement-bentonite grout or neat cement grout from top of chip seal to well box vault. Well box set in neat cement.

Wellhead: 10-inch/8-inch (West Side/Ease Side) traffic-rated well box set in cement, minimum 6" thick and 3' x 3' square (site-specific slope and finish per ENGINEER). Locking well plugs.

Rig Development: West Side: None (dry wells)
East Side: Bail (as needed; budget 1 hour per well)

Cuttings: West Side: Spread on-site
East Side: Removed from site by CONTRACTOR.

C. **Surveyed Location:** Where specified the CONTRACTOR shall employ the services of a surveyor licensed by the State of California to provide vertical and horizontal locations for well sites.

D. **Well Depths:** The exact depths and lengths for boreholes, casings, and screens will be determined by the ENGINEER on the basis of lithologic logs and geologic sample collection throughout drilling.

E. **Sound Mitigation:** The CONTRACTOR shall provide sound proofing mufflers on equipment, and take whatever other steps necessary during drilling, pumping, and all other work incidental thereto to ensure that noise levels conform to any San Luis Obispo County noise ordinances.

- F. **Public Hazard:** The CONTRACTOR shall take necessary measures to limit unauthorized access to drilling sites and minimize public hazards.
- G. **Qualified Work Crew:** The WORK shall be performed by a licensed California water well Contractor with equipment which is adequate to complete all phases of well construction. If the CONTRACTOR equipment is not capable of satisfactorily performing the work provided for in these specifications, the CONTRACTOR at his own expense shall substitute equipment satisfactory to the ENGINEER.
- H. **Permits, Laws, and Standards:** All WORK shall conform with and be completed in full conformance with the rules and regulations for water wells, or this Specification whichever is greater or more restrictive. The CONTRACTOR is responsible for obtaining a well application permit prior to drilling and for filing a Well Completion Report at the conclusion of the project. The CONTRACTOR shall comply with all federal, state, or local laws, ordinances, rules and regulations, and standards relating to the performance of work, including the California Water Well Standards (Dept. of Water Resources Bulletins 74-81 and 74-90).

1.2 REFERENCE SPECIFICATIONS, CODES AND STANDARDS

A. **Commercial Standards:**

ASTM D 1785	Standard Specification for Poly Vinyl Chloride (PVC) Plastic Pipe Schedules 40, 80 and 120
ASTM C 150	Specification for Portland Cement
AWWA A 100	Standard for Water Wells
ASTM F 480	Thermoplastic Well Casing Pipe and Couplings Made in SDR, Sch 40 and Sch 80

1.3 CONTRACTOR SUBMITTALS

- A. **General:** All CONTRACTOR submittals shall conform to the applicable requirements of the appropriate sections of the Contract Documents and supplementary requirements as specified.
- B. **Equipment List:** The CONTRACTOR shall submit a list of equipment proposed for use on the project which shall include manufacturer's load capacities, horsepower, year of manufacture and year of purchase by the present OWNER.
- C. **Geologic Samples:** During test hole drilling, the CONTRACTOR shall provide the on-site ENGINEER with downhole soil samples. The sampling interval will be every 5 feet beginning at 5 feet depth through the total well depth. The samples collected on odd-foot intervals (5, 15, 25, etc.) will be with a 2-inch O.D. standard penetrometer test (SPT) split spoon sampler, unlined. Samples collected on even-foot intervals (10, 20, 30, etc.) will be with a 3-inch O.D. modified California split spoon sampler, lined with brass sleeves. One brass sleeve per sample will be archived by the ENGINEER.
- D. **Drilling Log:** A log of the formations encountered from the surface to the total depth of the well showing each change in formation shall be prepared during drilling operations

by the CONTRACTOR. The drilling log shall be available for inspection at all times and one copy shall be submitted to the ENGINEER upon well completion.

- E. **Daily Report:** The CONTRACTOR shall prepare a daily report of all construction activities. One copy of each daily report shall be submitted to the ENGINEER at the close of construction activities each day. These daily reports shall contain dates and weather conditions, borehole numbers, tasks undertaken during the work day, and the times of beginning and ending the tasks, beginning and ending depths of the boreholes, the names of all employees of the CONTRACTOR who were present on the site on each day, and a log of pay items, as outlined in the Bid Schedule, completed during each day.
- F. **Gravel Envelope Sample:** The CONTRACTOR shall submit one sample of the materials proposed for use in the gravel envelope prior to placement in the annular space of the well.
1. Gravel Pack: RMC Lapis Luster 2/12 sand (12 x 20), or approved equal.
- G. **Final Description:** Final well descriptions shall include the following information: total depth and diameter of borehole; diameter, wall thickness, depth and length of casings and screens installed; type, aperture, and pattern of screen slots; borehole diameters; depths and thickness' of annular seals; graduation of gravel envelope; quantity of gravel; quantity of material removed during development operations; and all other pertinent details. The CONTRACTOR shall submit 2 copies of the final description to the ENGINEER.
- H. **Development Records:** Development records shall be maintained during development showing static water level, bailed volumes, and visual water turbidity/sediment.
- I. **Surveying:** The CONTRACTOR shall provide 4 copies to the ENGINEER of all surveyed information, to include the initial and final vertical elevations and horizontal locations for the well sites and the final vertical elevations and horizontal locations for Well Sites.
- J. **Records Required by Law:** The CONTRACTOR shall maintain all records required by governmental agencies having jurisdiction, and shall submit such records to them as may be required. Two copies of each record shall be furnished to the ENGINEER.
- K. **Drilling Cuttings Disposal:** The CONTRACTOR shall provide ENGINEER with written notification of the proposed location of drilling waste disposal at the preconstruction conference.

Cuttings: West Side: Spread on-site
 East Side: Removed from site by CONTRACTOR to
 designated location in Los Osos

1.4 QUALITY ASSURANCE

- A. **Rejection and Remedy:** The borehole shall be maintained in a condition suitable for well construction and changes in borehole condition shall be remedied immediately or the borehole will be deemed unacceptable and shall be abandoned and a new borehole constructed at the CONTRACTOR's expense.

- B. **Maintenance and Open Borehole:** The CONTRACTOR will maintain the straightness of the borehole and prevent sloughing or collapse. If well construction cannot be completed due to the condition of the borehole, the CONTRACTOR shall clean and condition the borehole at his expense. Standby charges incurred during the cleaning of the borehole shall be the CONTRACTOR's responsibility.
- C. **Surveying:** Survey information submitted by the CONTRACTOR will be rejected unless it is signed and sealed by a surveyor licensed in the State of California.

1.5 MATERIALS, DELIVERY, STORAGE AND PROTECTION OF MATERIALS

- A. **General:** The CONTRACTOR's equipment shall be clean and free from contamination, well maintained, and in good operating condition when delivered to the site and during the entire operation.
 - 1. The equipment shall be of adequate size, strength, horsepower, and capacity to complete the project and shall be of the type successfully utilized for the construction of similar or larger wells within the last 2 years.
 - 2. All equipment shall be provided with safety devices as required by governmental authorities having jurisdiction.
- B. **Equipment Use:** Drilling and setting of casing shall be done with the same equipment and no resetting of equipment will be allowed after the hole is drilled until after gravel placement has been completed.

1.6 MOBILIZATION AND OPERATING REQUIREMENTS

- A. **Mobilization:** The CONTRACTOR shall mobilize its equipment and personnel to effectively commence its drilling operations within the time limit specified by the Contract Documents. Any improvements necessary for access should be identified by the contractor during the initial site inspection. The CONTRACTOR is responsible for ensuring that site access is satisfactory prior to mobilizing equipment on-site. Arranging for, obtaining, and transporting water for drilling shall be the contractor's responsibility.
- B. **Operating Requirements:** All equipment shall be carefully maintained during the CONTRACTOR's operations period and any damage to the well or surrounding property and/or facilities of any nature due to the CONTRACTOR's operations shall be repaired or replaced.
- C. **Hours of Operation:** The CONTRACTOR shall perform the WORK specified in the Contract Documents during daylight hours, Monday through Friday, unless otherwise authorized by the ENGINEER.
- D. **Noise Control Barriers:** The CONTRACTOR shall furnish, install, and maintain noise control barriers when required by County and local ordinances at the site and shall remove the barriers upon completion of the WORK.
- E. **Access to the Well:** At certain intervals, for the purposes of gathering samples and data, the ENGINEER shall require access to the well in close proximity to the drill rig during drilling. The CONTRACTOR shall assist the ENGINEER by providing safe conditions for the collection of information and samples during drilling operations.

- F. **Repeat Work:** All work required to be repeated, resulting from the CONTRACTOR's performance, including all additional materials, labor and equipment required, shall be furnished at the expense of the CONTRACTOR and no claim for additional compensation shall be made or be allowed therefore, except as specifically provided herein.
- G. **OWNER Notice to Proceed:** If information indicates that completion of a well at the well site is warranted, the OWNER and/or ENGINEER shall instruct the CONTRACTOR to proceed with construction of the well.
- H. **Remedial Work:** If remedial work on the well becomes necessary to satisfactorily complete the well as required by the specifications because of accident, loss of tools, defective material, or for any other cause, the CONTRACTOR shall propose a method, in writing, of correction the problem. Suggested remedial methods shall be reviewed and approved by the ENGINEER before work proceeds. Remedial work will be performed at the CONTRACTOR's expense and shall not be grounds for extending the length of the Contract.
- I. **Discharge of Development Water:** The CONTRACTOR shall provide all facilities, equipment, and materials necessary for the proper discharge of water during well development. The discharge system shall be designated to the satisfaction of the ENGINEER and so that no erosion results from the discharge. The CONTRACTOR is responsible for conformance to local and State discharge regulations as applicable.

1.7 FINAL CLEANUP

- A. **General:** The CONTRACTOR shall thoroughly clean the site after completion of its operations and prior to acceptance of the WORK. All excess gravel, debris, and other materials utilized during the construction shall be removed and disposed of by the CONTRACTOR and the disposal location and method shall be acceptable to the ENGINEER. Work excavations shall be filled, compacted, and graded, and the site shall be returned to a condition better or equal to the condition existing prior to the commencement of work. Fill brought to the location and installed in accordance with these specifications shall be graded and smoothed after completion of operations at that location. The specified sites shall be filled and graded to the final grade elevation indicated on the Drawings.
- B. **Equipment Removal:** The CONTRACTOR shall promptly remove its equipment, temporary facilities, and materials, and leave the site immediately following the completion of construction activities.

1.8 ABANDONMENT

- A. **Site Abandonment:** If information indicates that the completion of a well at any well site is not warranted, the OWNER reserves the right to terminate all further work at the site. In such an event, the CONTRACTOR will be paid the value of its work completed to that time based on the unit prices indicated in the bid schedule.
- B. **Contractor Abandonment:** Any borehole in which the CONTRACTOR voluntarily stops work and/or fails to complete in a satisfactory manner because of loss of tools, casing collapse, casing deformation, or for other causes shall be considered abandoned. The CONTRACTOR shall abandon the hole at his own cost and no payment will be made by the OWNER for the abandoned well.

- C. **Borehole Abandonment:** If the CONTRACTOR stops work at the request of the OWNER prior to completion of any monitoring well, the CONTRACTOR shall plug the well by filling the borehole with cement grout, and abandon the well in accordance with applicable local, state and federal laws. In the event that the CONTRACTOR is instructed by the OWNER to abandon the well, the CONTRACTOR will be paid the value of its WORK completed to that time, based on the unit prices indicated in the Bid Schedule.

PART 2 -- PRODUCTS

2.1 SCREEN, CASING, AND APPURTENANCES

- A. **Temporary Conductor Casing:** The CONTRACTOR may find it necessary to install a temporary conductor casing in order to stabilize the upper portion of the borehole. The CONTRACTOR shall determine the diameter, length and type of conductor casing required. The length of the conductor casing shall not exceed 20 feet without prior approval of the ENGINEER. The conductor casing, if installed, shall be removed prior to well completion. Use of such temporary conductor casing shall not constitute a basis for additional claims for payment.
- B. **Blank Well Casing:** The monitoring well casing shall be 1-inch diameter (West Side) or 2-inch diameter (East Side), Schedule 40 PVC waterwell casing with flush treaded ends, conforming to ASTM F 480. Well casing installation shall begin as soon as possible after the borehole is terminated.
1. All casing material delivered to the site will be new. All sections of casing will be threaded for well construction. The well casing and screens will be placed in the correct position and depth or an alternate acceptable to the ENGINEER. The well casing will be suspended from the top and allowed to hang freely in the borehole at all times during well construction.
- C. **Well Screen:** The monitoring well screen shall be 0.020 slot, machine slotted, 2-inch diameter Schedule 40 PVC well screen as specified in ASTM D 185.

2.2 FILTER PACK

- A. **General:** The annular space around the screen shall be filled with a filter pack material to a depth 2 feet higher than the top of the screen. This filter pack material shall consist of well rounded, water-worn 12 x 20 silica sand, washed clean of silt, dirt and foreign matter. The rate of sand placement shall not exceed 1.5 feet per minute, and placement of gravel shall proceed without interruption until completion. A weighted tape shall be used to monitor sand placement and ensure no bridging. The filter pack will terminate approximately 2 feet above the top of the screen.

2.3 CEMENT

- A. **Well Pad:** Cement used for well pad construction shall be standard brand Portland cement conforming to ASTM C 150 for Type II or Type V.
- B. **Casing Sanitary Sealing Material:** Neat cement grout material used in sanitary sealing of the casing shall use Type II Portland cement conforming to ASTM C 150. Neat-cement grout shall contain not more than 5.2 gallons of water per 94 lb sack of cement.

1. **Additives:** Additives may be mixed with the sealing material to speed setting time or to expand the material. They shall not exceed the following:

- a. 2 percent, by weight, calcium chloride; and
- b. not more than 4 percent by weight, bentonite.

C. **Casing Transition Sealing Material:** Cement-bentonite grout material used in transition sealing of the casing shall use 1 to 1-1/4 pounds of bentonite powder and up to 2 pounds of Type II Portland cement per gallon of water. Bentonite shall be thoroughly mixed with water before adding cement. Final mixture must be thoroughly blended prior to placement. Hydrated bentonite clay chip material used in transitional sealing intervals shall be commercially prepared sodium montmorillonite clay. The largest dimension of the chips used should be less than 1/5 the radial thickness of the annular space into which they are placed.

2.4 WELL HEAD

- A. **General:** Each of the monitoring wells constructed shall be completed inside painted manholes set to ground level.
- B. **Manhole:** The well head shall be completed inside a 12-inch diameter by 12-inch deep manhole the top of which is to be flush with ground level. The manhole shall be equipped with a 12-inch diameter lockable lid. The manhole lid shall be prime coated then finish coated with a rust resistant white epoxy paint. Two 1-1/2-inch diameter drain holes shall be cut in the manholes at approximately 10 inches down from the top. The drain holes shall be permanently covered with a wire mesh.

PART 3 -- EXECUTION

3.1 GENERAL

A. **Site Locations:** The CONTRACTOR will locate the well sites using the coordinates indicated on the Contract Drawings.

1. Drilling Sites: West Side: Broderson Site (five cluster wells)
East Side: 12th, 14th, 15th, 16th, and 18th
Streets (five wells)

3.2 BOREHOLES

- A. **Drilling Method:** The well shall be drilled using the hollow stem auger process in which the walls of the drill hole are held in place at all times with auger flights. The work shall be performed by a competent crew with equipment which is adequate to complete all phases of well construction.
- B. **Drilling:** A nominal 8-inch (East Side) to 10-inch (West Side) borehole will be drilled between land surface and the total depth of the monitoring well. Well depths will be determined by the ENGINEER. The total borehole depth in each well shall include of overdrill to allow for any sediment accumulation during construction.

- C. **Core Sample Collection:** At 5 foot intervals and at changes of formations the CONTRACTOR shall collect representative core samples in order to provide an indication of the sequence of geological formations penetrated. The CONTRACTOR shall collect samples using geotechnical sampling equipment as specified in Section 1.3C.
1. Drill cuttings must be contained and removed from the East Side sites (residential right-of-way areas). On the West Side, the cuttings may be spread near the well.

3.3 WELL CONSTRUCTION

- A. **Installation of Well Casing:** When the drilling operation has been completed, blank casing and well screen will be installed. The lengths and intervals of each casing type will be determined by the ENGINEER. West Side nested well casings shall be installed such that a 2-inch minimum seal thickness will be maintained between all casings and the borehole wall.
- B. **Tension:** The well assembly shall be suspended in tension from the surface by means of a suitable clamp. The bottom of the well assembly shall be at a sufficient distance above the bottom of the pilot hole as to ensure that none of the casing will be supported from the bottom of the hole.
- C. **Failure to Complete:** If the well assembly cannot be landed in the correct position or at a depth acceptable to the ENGINEER, the CONTRACTOR shall construct another well immediately adjacent to the original location and complete this well in accordance with the Contract Documents at no additional cost to the OWNER.
- D. **Casing Collapse:** If the casing should collapse prior to well completion, it shall be withdrawn and replaced at the CONTRACTOR's expense.
- E. **Well Screen:** The well screen shall be properly secured to the bottom of the casing as determined by the ENGINEER.
- F. **Installation of Filter Pack:** The Filter Pack, as specified, shall be installed in the annular space between the borehole wall and the casing. Filter pack sand shall be carefully installed to ensure complete filling of the annular space from the bottom of the hole to a depth of 2 feet above the well screen or as specified by the ENGINEER. The volume of gravel used shall not be less than one calculated volume of the annular space between the casing and the wall of the borehole as determined by the ENGINEER.
1. The filter pack will consist of clean, mostly rounded to sub-rounded silica sand, graded to the specifications listed in the Scope of Work. If the filter pack does not come in sealed, factory-labeled bags, a recent sieve analysis of the pack must be provided. The on-site geologist has the right to reject a filter pack if the bags are not sealed and labeled per the specification, or if the sieve analysis is unsatisfactory. The pack may also be rejected if the grains are mostly angular to highly angular, or if the sand has more than a trace of impurities, especially of calcium carbonate (such as shell fragments). The filter pack shall be protected from contamination during storage. The rate of sand placement shall not exceed 1.5 feet per minute, and placement of gravel shall proceed without interruption until completion. A weighted tape shall be used to monitor sand placement and ensure no bridging. The filter pack will terminate approximately 2 feet above the top of the screen.

G. **Sanitary Seal:** Upon completion of the filter pack installation operations, a cement ground seal shall be placed in the annulus between the borehole wall and the well casing from immediately above the sand pack to the surface or as determined by the ENGINEER. The specific grouting method to be employed by the CONTRACTOR shall be acceptable to the ENGINEER.

1. A cement-bentonite grout sanitary well seal shall be tremmied into the annular space between the casing and borehole from the top of the hydrated bentonite chip seal to surface, in accordance with State of California Water Well Standards and as directed by the County of San Luis Obispo Environmental Health Division (waiver for 10-foot seals required). A hydrated bentonite chip seal and/or cement-bentonite grout will be used between piezometer screens in the West Side nested wells, as directed by the ENGINEER.

3.4 WELL DEVELOPMENT

- A. **General:** After the well is complete in accordance with the requirements of the Contract Documents, the CONTRACTOR shall notify the ENGINEER and shall make the necessary arrangement for conducting the well development.
- B. **Development Time:** The East side wells shall be developed by bailer. Well development shall continue until the bailed water is clear of sand, silt, and mud, and the well is open to total depth – budget one hour per East side well. West Side wells will not require development (dry wells).

3.5 WELLHEAD COMPLETION

- A. **Manhole:** Upon completion of all work connected with well construction and development, monitor wells shall be capped with a 2-inch PVC cap and completed inside a 12-inch diameter by 12-inch deep manhole with a lockable lid. The top of the well riser pipe shall be positioned 6 inches below the top of the locking lid.
- B. **Concrete Slab:** Each monitoring well shall be completed in a 3 foot by 3 foot square concrete surface slab centered around the well and manhole. The slab shall be reinforced with a minimum of 4 pieces of No. 3 rebar set parallel with the edges of the slab. The completed slab shall slope a minimum of 1/4-inch per foot toward the edge of the slab and shall be finished to final grade as specified in the Contract Drawings. Well Pad: The well pad shall be constructed of concrete, 6-inch minimum pad thickness, 3-foot by 3-foot in area. Slope and finish will be site specific at the discretion of the on-site geologist (i.e. raised pad in open space, or sloping to meet flush with grade in residential right-of-way).
- C. **Final Inspection:** The ENGINEER will inspect the site and wellhead prior to releasing the CONTRACTOR from the job. All trash, extra materials, and cuttings generated by the contractor must be off the site, and the wellhead must be properly secured.

- END OF SECTION -

SECTION 15440 - PLUMBING FIXTURES

PART 1 – GENERAL

1.1 THE REQUIREMENT

- A. The CONTRACTOR shall provide plumbing fixtures, complete and operable, in accordance with the Contract Documents.

1.2 CONTRACTOR SUBMITTALS

- A. Furnish submittals in accordance with Section 01300 - Contractor Submittals.
- B. **Shop Drawings:** Show material type, material thickness, sinks, counters, splashes, drawers shelves, legs, frame, supports, and anchors or fasteners for the counter sink unit.

PART 2 -- PRODUCTS

2.1 GENERAL

- A. Plumbing piping, fixtures, specialties, and equipment shall be of the latest design, new, first-quality products, manufactured for the intended usage, and shall be compatible with elements of related or connected WORK.
- B. Plumbing fixtures shall be without flaws and with white finish unless otherwise indicated. Exposed brass, faucets, valves, wastes, traps, piping, and escutcheons shall be chrome-plated. Each fixture shall be provided with individual stops and shall be anchored firmly to the building wall or floor. Softeners, water heaters, and lab equipment shall have drains and isolating valves on each side.
- C. Water closets, valves, fixtures, and hardware shall be approved by local governing authorities as low flow items.
- D. Floor mounted and tank type water closets indicated (by "HC") to be for handicapped persons or located within a toilet stall indicated to be for handicapped persons shall conform to ADA requirements.
- E. Insulation at lavatories requiring handicapped persons protection shall conform to the wheelchair accessibility requirements of ADA and other governing authorities. The insulation shall be easily removable, bacteria resistant, molded to piping and fixture configurations, closed cell vinyl assemblies. Fasteners shall be corrosion resistant and reusable. Handicapped persons protection shall be **Lav Guard as manufactured by Truebro, Inc., Pro-Warp as manufactured by McGuire, Inc.,** or equal.

2.2 FIXTURE SCHEDULE

<u>Drawing Callout</u>	<u>Fixture Type</u>	<u>Description</u>
WC-1	Water Closet (floor mounted)	Water closet, with elongated siphon jet bowl; solid, white, plastic, open front seat; self-sustaining hinges; and 1-inch chrome-plated

flush valve and escutcheons (with 1-1/2-inch water supply connection). HC fixtures shall be provided where indicated.

UR	Urinal	Urinal with elongated wall-hung vitreous china siphon jet bowl (conforming to handicapped persons requirements and ADA); 1-1/4-inch top spud; chair carrier; 2-inch outlet; 3/4-inch chrome-plated water-saving flush valve using less than 1.5 gallons per flush; and escutcheons (with 1-1/4-inch water supply connection).
LAV	Lavatory (counter top)	Lavatory basin of acid-resistant porcelain enameled cast-iron, oval, countertop mounted; complete with ring, chrome-plated combination supply with angle stops and pop-up waste fitting with aerator; and 1-1/4-inch cast brass adjustable "P" trap. Piping shall be insulated for protection of handicapped persons.
SS	Service sink (wall-hung)	The sink shall be acid-resisting white enameled cast-iron, with integral back, size 22 x 18-inch; with chair carrier; 3-inch "P" trap standard; stainless steel strainer; and chrome-plated combination faucet with integral tops, pail-hook, vacuum breaker spout, and wrist handles.
MS	Mop Sink	Floor-mounted mop sink of porcelain-enameled cast-iron, with integral back, size indicated on the architectural drawing with rim guard, drain channels; 3-inch outlet with "P" trap and stainless steel strainer; and chrome-plated service sink faucet with vacuum breaker, hose, and hose bracket.
S-1	Kitchen Sink	18-gauge stainless steel countertop sink with back ledge and clamps, 16 x 11-1/2 x 7-1/2 inches deep (inside), with rounded corners; 1-1/2-inch brass "P" trap; single-handle faucet; and sound-insulated garbage grinder.
S-2	Double Sink	18-gauge stainless steel countertop 2-compartment sink with back ledge and clamps, rounded corners, overall size: 42 x 21 x 7-1/2 inches deep; with stainless steel basket strainers; 1-1/2-inch brass "P" trap; and single-handle faucet with swing spout.

S-3	Sinks in Treatment and Residual Building (wall hung or floor mounted)	The sink shall be acid-resisting white enameled cast-iron, with integral back, size 22 x 18-inch; with chair carrier; 3-inch "P" trap standard; stainless steel strainer; and chrome-plated combination faucet with integral tops, pail-hook, vacuum breaker spout, foot operated pedals, and gooseneck wrist-handle faucets with vacuum breakers, hot and cold. Provide point of use electric hot water heaters for all sinks in the Residuals Building; hot water heaters to have a minimum of 2.5-gallon capacity each, be mounted on the wall or floor and have glass lined tank.
SH-1	Shower	The shower stall fixtures and fittings shall be for a tiled shower, with single handle 1/2-inch chrome-plated thermostatic mixing valve, including the shower head and arm.
DS	Drench Shower (non-freeze type with eye-face wash and independent operated valves)	Emergency drench showers located in exposed areas outside of buildings subject to freezing with shower head, manual valve, eye wash and 1-1/4-inch supply shall be HAWS Model No. 8300-FP; Bradley Corp., Model S19-310NN; or equal.
EW-1	Lab Eye-Wash (deck type) in Treatment, Operations and Residual Building	Deck-mounted with 1/2-inch supply and 6 feet of hose. HAWS Model 8902; Bradley Corp., Model S19-460; or equal.
EW-2	Eye-Face/Wash Fountain	Stainless steel bowl, wall mounted, with push type ball valve, chrome-plated twin head, face ring or head and flow control. HAWS Model 7360BT; Bradley Corp., Model S19-220T; or equal.

2.3 MANUFACTURERS OR EQUAL

A. Unless indicated otherwise, fixtures shall be:

1. **Crane Co.;**
2. **Kohler;**
3. **American Standard.**

PART 3 – EXECUTION

3.1 INSTALLATION

A. Each fixture shall be installed with trap, easily removable for servicing and cleaning, and be vented in accordance with the applicable plumbing code.

- B. The CONTRACTOR shall provide chrome-plated rigid or flexible supplies to fixtures with angle stops, reducers, and escutcheons.
- C. All components shall be installed level and plumb. Supplies and wastes shall be centered on or between the wall tiles.
- D. All fixtures shall be installed and secured in place with wall carriers and floor carriers and bolts.
- E. Fixtures shall be sealed to wall and floor surfaces with sealant as indicated in Section 07920 - Sealants and Caulking. Color shall match fixture.
- F. All fixtures shall be mounted to the following heights above finished floor:

Water Closet:

Standard	15 in.	(380 mm) to top of bowl rim
Handicapped	17-19 in.	(432-482 mm) to top of seat

Urinal:

Standard	22 in.	(560 mm) to top of bowl rim
Handicapped	17 in.	(432 mm) to top of bowl rim

Lavatory:

Standard	31 in.	(785 mm) to top of basin rim
Handicapped	34 in. (max) 29 in. (min)	(864 mm) to top of basin rim (736 mm) clearance under or pullman option

Water Closet Flush Valves:

Standard	11 in.	(280 mm) in. above bowl rim
Recessed	10 in.	(255 mm) min. above bowl rim
Handicapped	44 in. (max)	(1118 mm) max to flush valve control and easily accessible

Shower Heads:

Adult [male]	69.5 in.	(1765 mm) to bottom of head
Adult [female]	64.5 in.	(1640 mm) to bottom of head
Child	58.5 in.	(1490 mm) to bottom of head
Handicapped	65 in. (max)	(1650 mm) to outlet pipe
Handicapped Controls	48 in. (max) 38 in. (min)	(1220 mm) to top of controls (965 mm) to bottom of controls

Emergency Eye [And Face] Wash:

Standard	38 in.	(965 mm) to receptor rim
Handicapped	34 in. (max)	(864 mm) to receptor rim
Handicapped	27 in.	(686 mm) to spray head

Emergency Shower:

Standard	84 in.	(2130 mm) to bottom of head
Handicapped	48 in. (max)	(1220 mm) to pull handle

3.2 ADJUSTING AND CLEANING

- A. Stops or valves shall be adjusted for intended water flow rate to fixtures without splashing, noise, or overflow.
- B. At completion, the CONTRACTOR shall clean all plumbing fixtures and equipment.
- C. Water closets shall be solidly attached to floor or wall carrier with lag screws. Lead flashing shall not be used to hold fixture in place.

- END OF SECTION -

SECTION 15500 - HEATING, VENTILATING, AND AIR CONDITIONING

PART 1 -- GENERAL

1.1 THE REQUIREMENT

- A. The CONTRACTOR shall furnish and install all heating, ventilating, and air conditioning systems and equipment complete with all supports, mounting frames, ventilators, ductwork, piping, louvers, panels, filters, grilles, electric drive units and controls, mechanical equipment, electrical work, appurtenances, testing and balancing, ready for operation as shown and specified herein, in accordance with the requirements of the Contract Documents.

1.2 REFERENCE SPECIFICATIONS, CODES, AND STANDARDS

- A. **Codes:** All codes, as referenced herein, are specified in Section 01090 – Reference Standards.
- B. All work and materials shall be in full accordance with the latest rules and regulations or publications of the State Energy Resources Conservation and Development Commission, the State Fire Marshall, the Industrial Safety Orders, the Health and Safety Rules (Air Conditioning systems), the local Plumbing Code, the local Building Code, and all other local codes. Nothing in the Contract Documents shall be construed to permit work in violation of the above codes, rules and regulations. In the absence of applicable codes, the installation and workmanship shall follow the standards set by the American Society of Heating, Refrigeration and Air Conditioning Engineers (ASHRAE).

1.3 CONTRACTOR SUBMITTALS

- A. **Shop Drawings:** Shop drawings shall be submitted for all equipment and for all specified heat tracing in accordance with Section 01300 - Contractor Submittals.
- B. **Equipment Numbers:** Equipment is identified by assigned numbers for reference and location purposes in the Contract Documents. The appropriate equipment numbers shall be indicated on the Shop Drawings and on other submittals by the CONTRACTOR.
- C. **Fan Curves:** Certified fan curves for each fan are required.

1.4 WARRANTY

- A. The air conditioners, heaters, and all fans, ventilators, grilles, etc., furnished and installed by the CONTRACTOR shall carry the manufacturer's standard warranty, and all such warranties shall be furnished to the ENGINEER upon final acceptance of the completed systems by the OWNER. All refrigerant compressors shall carry a 5-year warranty by the manufacturers.

PART 2 -- PRODUCTS

2.1 GENERAL

- A. **Quality:** All mechanisms or parts shall be amply proportioned for the stresses which may occur during operation or for any other stresses which may occur during fabrication and erection. Individual parts furnished which are alike in all units shall be alike in workmanship, design, and materials and shall be of the manufacturer's top line, industrial-commercial grade.
- B. **Supports:** All equipment and appurtenances shall be firmly anchored or connected to supporting members. All supports required for the proper installation of the equipment, but not forming an integral part of the building structure, shall be provided by the HVAC CONTRACTOR, unless otherwise shown. Equipment shall be supported on restrained spring-type vibration isolators.
- C. **Noise/Vibration Control:** The system shall be free of any objectionable vibrations and noise. Flexible connections shall be provided in all ducts and piping connections to fans, compressors, and any other vibrating equipment.

2.2 MOTORS

- A. All motors supplied for equipment shall conform to the latest IEEE and NEMA requirements for mechanical and electrical characteristics including service factors. In addition, motors shall meet the requirements of Section 16460 – Electric Motors. Each motor shall bear the manufacturer's nameplate with complete motor data. Each motor shall be of ample size and construction to carry continuously all loads which might be imposed by the piece of equipment it drives throughout the full range of operation of the equipment and the maximum motor loading shall in all cases be less than or equal to the nameplate horsepower rating, exclusive of the service factor.

2.3 ELECTRICAL WORK

- A. The HVAC CONTRACTOR shall furnish and install all controls, sensors and control panels relating to the HVAC systems including starters, thermostats, motorized dampers and louver operators and as indicated, and shall install all control wiring of 120 volts and less under this Section, but shall meet the requirements of Division 16 – Electrical. Local power disconnects, where required, shall be installed by the ELECTRICAL CONTRACTOR.
- B. The ELECTRICAL CONTRACTOR under Division 16 – Electrical, shall install all circuit breakers, all starters in motor control centers, all 120, 208, 240 and 480 volt power feeders from starters and circuit breakers to the HVAC equipment shown on the Contract Drawings. Equipment locations on the Electrical Drawings are shown for reference only and actual locations are shown on the HVAC Contract Drawings.
- C. All starters whether as an integral part of the equipment or as a separate part shall meet the specifications as given in Section 16480 – Low Voltage Motor

Control Centers. Enclosures shall be of the same NEMA class as the electrical equipment in that area and all starters shall be of the same manufacturer as starters specified under Section 16480 – Low Voltage Motor Control Centers.

- D. All low voltage control wiring shall be in accordance with the National Electric Code. All control wiring for line voltage 120 volts and higher shall conform to Section 16120 – Wires and Cables.
- E. Details of individual control panels shall be similar to those shown on Electrical Drawings. Control Panels shall conform to Section 16485 – Local Control Panels.
- F. CONTRACTOR to note that all conduit in this Section shall conform to that specified in Sections 16110 – Electrical Raceway Systems, and 16111 – Underground Raceway Systems.

2.4 FIRE ALARM AND DETECTION SYSTEM

- A. The CONTRACTOR shall furnish and install a complete, electrically supervised, non-coded, 24-volt DC, 2-wire automatic, fire alarm system as described herein. Operation shall be such that actuation of any automatic smoke detector shall cause building alarm devices to sound, and designated HVAC equipment to shut down. The smoke detector shall be of the type that is either automatic resetting or is reset from a remote control panel.
- B. Fire Alarm detection system shall be manufactured by ADT, Pyrotronics, Simplex or equal, and all devices and equipment shall be UL listed.

2.5 FLASHING

- A. All equipment that passes through roofs of buildings or structures will be provided with proper flashing in accordance with the specifications and as indicated on the Contract Drawings. The flashing shall comply with Section 07600 – Flashing and Sheet Metal of this Specification.

2.6 PIPE AND FITTINGS

- A. All piping and fitting material used in the fulfillment of this Contract shall be new and the best of its respective class.
- B. The extent of all piping work is shown on the Contract Drawings. All heating piping shall be Schedule 40 black steel pipe with screwed fittings. All refrigerant piping shall be type L hard temper copper with cast brass fittings. Provide a drain at all low points in piping system.
- C. All copper and steel pipe and fittings shall meet the specifications for Section 15010 – Mill Piping – Exposed and Buried, insofar as it applies. All joints in refrigerant piping shall be made with silver solder.

2.7 VALVES

- A. Furnish and install valves at all locations shown on the Contract Drawings or specified and in at least the following locations:
1. A gate valve in each hot water heating coil supply and return connection.
 2. A balancing valve may replace the gate valve on hot water piping as hereinafter specified.
- B. All gate valves shall be good for 125 pounds working pressure, and in every respect suitable for the purpose intended. All shall be brass with screwed ends and be wheel operated. Gate valves shall be **Powell Co. No. 500; Jenkins 47U; or equal.**
- C. All check valves shall be all brass or bronze with regrinding discs. Check valves shall be **Crane No. 36; Jenkins 762A; or equal.**
- D. Provide on water heating equipment including air handling unit hot water coils, a combination balancing and shut-off valve. The valve shall be a 100 percent shut-off unit with a maximum valve pressure of 125 psig at a temperature of 250 degrees F. Units shall be such that after closing for shut-off, they can be reopened to balance position with no further adjustment. Valves shall be **Illinois, Series 61** up to 1-inch size and **Series 81** on larger sizes; **ITT Bell and Gossett, Circuit Setter Series CB; or equal.**
- E. Solenoid valves shall have brass body, with stainless steel trim. Valves shall be provided with a mechanical operator for manually actuating the valve in case of power loss, and NEMA Type IV solenoid enclosure for 120 volt, 60 Hz current. Normally closed valves shall be provided with a manual lock-open feature and normally opened valves shall be provided with a manual lock-open feature and normally opened valves shall be provided with a manual lock-closed feature, and high temperature coils. Valves shall be **Automatic Switch Company No. 8210-MO Series; Skinner Electric Valve Co. Model V5-1 or V5-2; or equal.**
- F. Three way mixing valves shall be **Honeywell No. V5013F; or equal.** The operator for either proportional or 2-position control of the hot water shall be appropriate for the application and of proper size and power for smooth operation of the valve. The unit shall be complete with all necessary linkages, parts, etc.
- G. **Installation:** Except as otherwise indicated, comply with the following requirements.
1. All valves be set carefully regarding their location with respect to equipment controlled and accessibility. Consideration should be given to location of valves with respect to the proper drainage of the piping system.
 2. Install valves where required for proper operation of piping and equipment, including valves in branch lines necessary to isolate sections of piping. Locate valves so as to be accessible and so that separate support can be provided when necessary.

3. Install valves with stems pointed up, in the vertical position where possible, but in no case with stems pointed downward.
4. Where insulation is indicated, install extended-stem valves, arranged in the proper manner to receive insulation.

2.8 INSULATION (PIPING/DUCTWORK)

- A. All heating piping, refrigerant piping, supply, return and outside air ductwork shown on Contract Drawings shall be insulated under this Section in accordance with the specifications.
- B. The insulation shall comply with Section 15145 - Pipe, Ductwork and Equipment Insulation of these Specifications.

2.9 WELDING

- A. All welding of black steel or alloy pipe shall be carried out in strict accordance with A.W.S. procedures and all codes and ordinance of the City of San Luis Obispo and the State of California pertaining to welded steel pipe lines. Welding shall be accomplished by means of the shielded electric arc process and by workers who are certified for this work.

2.10 EXPANSION JOINTS AND LOOPS

- A. Provide expansion loops or expansion joints at locations shown on the Contract Drawings and as necessary to provide for the expansion of piping. Maximum straight run of pipe without an expansion joint or loop installed shall not exceed 75 feet. Provide an expansion joint or loop at every building construction joint.
- B. The pipe expansion joints on metal piping three inches and smaller shall be two-ply stainless steel bellows type with 1-1/2 inches compression stroke, 1/2-inch extension and total stroke of 2 inches suitable for maximum operating temperature of 750 degrees F and maximum working pressure of 175 psi. The compensator shall have male pipe thread ends for steel pipe or female sweat ends for copper pipe. Pipe expansion joints shall be as manufactured by **Flexonics, Model H** for steel piping and **Model HB** for copper piping; **Keflex Series 7Q; Adesco Compensators; or equal.**

2.11 HANGERS AND SUPPORTS

- A. The CONTRACTOR shall provide all necessary hangers, supports, concrete inserts, anchors and guides for material and equipment to be installed in this Contract.
- B. No perforated strap hangers and no wire supports will be permitted.
- C. Hangers supporting insulated pipe shall be sized to fit the pipe plus the insulation. The insulation at support points shall be provided with metal shield to prevent damage to insulation.

- D. Anchors and guides shall be built of steel, in accordance, with approved detail drawings and as indicated on the Contract Drawings.
- E. Pipe hangers used to support uninsulated copper piping shall be copper plated.
- F. Anchorage shall be obtained by welding lugs onto the pipe and providing abutting surfaces against the lugs to restrict longitudinal movement. All anchors shall be so designed that the pipe may be removed by removing bolts and no welding of pipe to the anchor will be permitted. All bolting materials shall be cadmium plated.
- G. Guides shall be located not more than twenty feet away from each expansion loop or joint.
- H. Horizontal runs of pipe shall have supports spaced so that the sag of the unsupported length will not create any pockets in the piping (weight of fluid included).

Steel

Pipe up thru 1¼"	not more than 8'0"
Pipe 1½ "thru 2½"	not more than 10'0"
Pipe 3" thru 3½"	not more than 12'0"
Pipe 4" thru 6"	not more than 14'0"
Pipe 8" and larger	not more than 16'0"

Copper

Pipe to 1¼"	not more than 6'0"
Pipe 1½ "thru 2½"	not more than 8'0"
Pipe 3" thru 3½"	not more than 10'0"
Pipe 4" and larger	not more than 12'0"

- I. All vertical piping shall be supported at the base with fittings made for this purpose or supported from the nearest horizontal member or floor with a riser extension pipe clamp. Provide riser extension clamp at each floor.
- J. Hangers for ductwork and equipment shall be in accordance with the details shown on the Contract Drawings and also in accordance with the Sheet Metal and Air Conditioning Contractors National Association (SMACNA).
- K. All inserts shall be galvanized.
- L. Seismic Resistance: When earthquake loads are applicable in accordance with the building code, mechanical system supports shall be designed by the CONTRACTOR and installed for the seismic forces in accordance with the building code.

2.12 PIPE SLEEVES

- A. The CONTRACTOR shall examine the Contract Drawings carefully for all sleeves that are to be built into the construction and plan his work accordingly, so that sleeves are placed well in advance of construction work, and care taken with their location and support until encased.
- B. Sleeves shall be standard weight galvanized steel pipe for dry interior installation. Sleeves for exterior or wet installation shall be standard weight ductile black steel, stainless steel, or standard weight PVC for pipe temperatures below 120 degrees F.
- C. All sleeves shall be sized one pipe size larger than uninsulated piping and one pipe size larger than piping plus insulation on insulated pipe.
- D. Where pipes pass through floors, sleeves shall extend 3 inches above finished floor. Where pipes pass through walls, sleeves shall be flush with wall.

2.13 ALUMINUM DUCTWORK

- A. The CONTRACTOR shall furnish and install ductwork as shown on the HVAC Contract Drawings.
- B. All low pressure ductwork shall be designed for 3 inches vacuum and pressure and be constructed of sheet aluminum of not less than eighteen gauge where the largest dimension of a duct is 12 inches or less in width or diameter, and not less than 16 gauge for widths or diameters larger than 12 inches. Gauge designations refer to Brown and Sharpe Standards. Ductwork sheets, unless otherwise specified, shall be of Aluminum Association Alloy 3003-H14.
- C. Ductwork shall be air tight and well braced. It shall be carefully supported in horizontal runs with rod and angle supports at no greater than 8 feet intervals. Ductwork shall be run as close as possible to the layouts as shown on the Drawings. Vertical aluminum ductwork shall be adequately guided and shall be firmly supported by standard framing angles of Aluminum Alloy 6061-T6.
- D. All seams shall be double locked. Rectangular ducts with longer than a 12-inch dimension shall have full perimeter standing seams not less than 1-inch high. Reinforcements shall be at intervals of not greater than 30 inches along the duct. No "S" seams will be permitted.
- E. Except where permitted by the ENGINEER, fan discharge connections and ductwork reductions shall have duct side slopes not to exceed 30 degrees.
- F. Radius of bends shall be not less than 1-1/2 duct diameters, unless otherwise shown. All mitered elbows and extractors on supply air ductwork, shall have turning vanes as shown on the Contract Drawings.
- G. Care shall be taken to properly insulate aluminum duct and supports from concrete or dissimilar metals by an applied bituminous coating or by rubber gaskets at all contact points.

- H. **Access Doors:** Access doors shall be provided in the ductwork at all fire dampers, motorized and back draft dampers, filters and as shown on the drawings. They shall be continuously hinged, double skinned, of either 22 gauge galvanized steel or 20 gauge aluminum to match the ductwork material, with one cam lock for sizes up to 16 inches square or 2 cam locks for sizes over 16 inches square, must match insulation thickness in door with ductwork insulation and have foam sealing gaskets on all four sides. Access doors shall be **Ruskin SMACNA Standard Duct Access Doors; or equal.**
- I. Flexible duct may be used to attach air outlets to duct banks when outlets are fitted in a finished ceiling. Flexible duct shall be insulated. Maximum length of flexible duct shall not exceed 5 feet. Materials joining and supporting of flexible duct shall be in accordance with the latest edition of SMACNA.
- J. **Flexible Connections:** Equipment shall be attached to ducts through approved flexible connections to facilitate removal of the units and for sound isolation. Flexible connections consisting of heavy duct canvas or woven glass fabric silicon coated shall be provided. Canvas connections shall be a heavy cotton impregnated for waterproofing and fire retardant. Glass fabric shall be used where temperatures exceed 200 degrees F. Weight of Canvas shall be 20 ounces Per sq. yd. Weight of glass fabric shall be approximately 12 ounces. per sq. yd.

2.14 FLUES

- A. Furnish and install flues, supports, and other accessories as required for gas fired heaters and appliances as shown on the Contract Drawings.
- B. Flues shall be made from 12 gauge steel. Flues shall be painted with one coat of a high temperature rust inhibitive primer. Flues shall not be supported by the unit. Comply with SMACNA (Sheet Metal and Air Conditioning Contractors' National Association) recommendations for fabrication, construction, details and installation procedures, except as otherwise indicated.
- C. The manufactured, pre-fabricated flue shall be UL listed, used at temperatures not to exceed 1000 degrees F under continuous operating conditions, be designed to be gas tight to prevent leakage of combustion products into the building, and be designed to compensate for the flue gas induced thermal expansions. The double wall flue shall have an inner gas carrying pipe of Type 304 stainless steel, a nominal 1 inch air space between the walls, and an outer jacket of aluminum coated steel or Type 304 or Type 316 stainless steel for additional corrosion protection in hostile environments. The flue duct shall be **Selkirk Metalbestos Model PS; or equal.**
- D. Assemble and install flues in accordance with recognized industry practices which will achieve air tight systems. Install with a minimum of joints. Align accurately at connections, and keep internal surfaces smooth. Support flues rigidly with suitable ties, braces, hangers, and anchors of the type which will hold work true-to-shape and prevent buckling.

- E. Locate runs as indicated by diagrams, details and notations or, if not otherwise indicated, run in the shortest route which does not obstruct usable space or block access for servicing the building and its equipment. Pitch flues upward from equipment to stack.

2.15 MOTORIZED DAMPERS

- A. CONTRACTOR shall furnish and install the motorized opposed blade dampers as shown on the Contract Drawings.
- B. The damper and frames shall be of minimum aluminum B & S 12 gauge. Aluminum blades shall have interlocking edges with one center and two edge crimps, and brass bearings. The frame shall be welded channel construction with lugs and mounting brackets for damper operators. Dampers shall have felt or rubber seals at edges to minimize air infiltration, when closed.
- C. Damper motors shall be [electric] [pneumatic] with necessary linkages for positioning the damper blades. Damper sizes and capacities shall be as called for on the Contract Drawings. The motors shall be powered open and spring closed except as noted.

2.16 BACKDRAFT OR GRAVITY DAMPERS

- A. Furnish and install gravity (Backdraft) dampers on the exhaust fans and ventilators where called for on the Contract Drawings. Dampers shall be multi-blade, with soft seating gaskets for minimizing noise and air leakage when closed. The blades shall be constructed of 16 gauge aluminum, and be of air foil design. Frames shall be 16 gauge extruded aluminum alloy. The frames shall be totally out of the air stream, and arranged for flange mounting.
- B. Dampers shall be **Air Balance, Inc.; Air Dynamic; or Ruskin**, and shall be designed to operate at 0.05-inch w.g. S.P. or less. Blades shall be individually counter balanced and shall have non-ferrous pins turning in nylon bearings. Damper sizes and capacities shall be as called for on the Contract Drawings.

2.17 VOLUME CONTROL DAMPERS (MANUAL AND MOTORIZED)

- A. Furnish and install volume control dampers in accessible locations in branch supply ducts and at each exhaust air opening to properly regulate the volume of air delivered or withdrawn from each inlet and outlet and as indicated on the Drawings.
- B. The volume dampers shall be of the opposed blade type and be constructed of aluminum B & S fourteen gauge, suitably reinforced with sturdy control shafts. Ductwork shall be reinforced to double thickness at damper shaft openings.
- C. The volume control dampers of the air extractor type as indicated on the Drawings shall be constructed of stainless steel, 20 gauge for frames and 24 gauge for blades.

- D. No splitter dampers will be allowed. All manual control dampers shall have provisions for adjustment and locking in position after being set.
- E. Damper motors shall be electric with either modulating or two positioning control and necessary linkages. Damper sizes and capacities shall be as called for on the Contract Drawings. The motors shall be powered open and spring close except as noted.

2.18 FIRE DAMPERS

- A. Furnish and install fire dampers in ductwork at all floor penetrations and all fire rated wall penetrations where shown or not on the Contract Drawings. Fire dampers to be of the fusible link type and have Underwriter's approval.
- B. Fire dampers shall be 1-1/2 hour **Ruskin FD35; or equal**. Blades shall be stored out of the airstream. Dampers shall be approved for horizontal or vertical installation as indicated. Fire dampers for connection to ceiling grilles, registers, and diffusers shall be UL-labeled and shall have minimum 1-hour rating and be approved for horizontal installation.
- C. Controller shall be furnished by the manufacturer for horizontal or vertical mounting, and be provided with a 165 degree F fusible link.
- D. Furnish and install an end switch on fire dampers to signal fire alarm and de-energize fan motors in the event of a fire.
- E. Fire dampers shall be in accord with the codes of the State of California and the provisions of the NFPA Bulletin 90A.

2.19 REGISTERS, GRILLES AND DIFFUSERS

- A. Furnish and install all supply and return registers and grilles and all supply diffusers as shown on the Contract Drawings. The sizes, capacities, and deflection of each unit shall be as shown on the Contract Drawings.
- B. **General:** The following schedule shall be followed for all units:
 - 1. Supply Diffusers (SD): Titus Model TMS-AA with optional dampers; Metalair; or equal.
 - 2. Return Grilles (RG): Titus Model 50-F; Tuttle and Bailey; or equal; with 1/2" x 1/2" x 1/2" aluminum grid and no dampers.
 - 3. Return Registers (RR): Titus Model 350FL; Tuttle and Bailey; or equal;
 - 4. Supply Registers (SR): Titus Model 272FL; Tuttle and Bailey; or equal; with opposed blade dampers.
- C. All registers, grilles and diffusers are to be constructed of aluminum. Finish to be a white baked-on enamel. Accessory equipment shall be aluminum, or if not

available, steel with a white baked-on enamel. The proper border style shall be selected by the CONTRATOR to suit the installation conditions.

- D. All registers, grilles and diffusers located in corrosive atmospheres as indicated on the Drawings shall be painted with a special protective coating. See Section 09900 – Architectural Finishes.

2.20 TERMINAL UNITS

A. Casings:

1. Minimum 24 gauge galvanized steel.
2. Acoustical lining: minimum 0.5" thick, 1.5 pcf density coated fiberglass. Lining shall meet erosion test method described in UL 181-1996 and shall have a flame spread rating of not more than 25 and a smoke developed rating of not more than 50 in accordance with NFPA 90A-1999.
3. Access doors: sealed, flush type for access to internal parts for service or maintenance.
4. Enclosure: removable type for control components.
5. With four angle or heavy gauge hanger brackets for units to be suspended with vibration isolators.
6. Casing leakage rate of less than 3% at 4" wg.
7. Inlet velocity shall not exceed 2200 fpm.

B. Control Motors:

1. Factory-installed on units by unit manufacturer.
2. Coordinated with automatic control system manufacturer.

C. Airflow sensors: averaging multipoint type, with taps for field calibration, minimum $\pm 5\%$ accuracy with 90 elbow at inlet.

D. Volume Regulators:

1. Factory-preset: minimum and maximum air quantity. Air volumes and unit size shall be indicated on the regulator.
2. Gauge taps and calibrated means of adjustment to permit field adjustment of air quantities without unit disassembly.
3. Pressure independent, capable of maintaining constant volume, $\pm 5\%$, up to 4" wg inlet air pressure.
4. Factory-mounted.
5. Removable.

E. Noise Levels:

1. Sound power levels, including sound attenuators, in dB re 10-12 watts, at design airflow and minimum operating pressure plus 1.5" wg shall not exceed:

	Octave Band		
	2	3	4
Casing radiated noise	67	60	55
Discharge noise, for the following design airflow:			
less than 1000 cfm	71	65	75
1000 cfm or greater	73	65	71

2. Units shall have the ARI seal and shall be certified in accordance with ANSI/ARI 880-1998.

3. Sound attenuators: provide on discharge and plenum return air to meet sound power levels specified herein.

F. Depth of units: 20" maximum.

G. Moving parts designed for minimum of 300000 cycles.

H. Heating Coils:

1. Electric, labeled as a complete assembly with the terminal unit per UL 1995-1995, complete with unit-mounted terminal box with hinged cover, and intermediate coil supports.

2. Heating elements, exposed element type:

a. Nickel chrome (80% nickel, 20% chrome) coiled wire, with minimum 1 wire diameter open space between adjacent coils.

b. Maximum wire density: 37 watts per square inch.

c. Maximum wire surface temperature: 1400F.

3. Coils rated more than 48 amperes shall have heating elements subdivided. Each subdivided load shall not exceed 48 amperes and shall be fuse protected.

4. Provide a wiring diagram showing terminal designations of power and control circuits, mounted inside the terminal box.

5. Integral terminal boxes shall include:

a. Terminal blocks for line feeder and control connections.

b. Incoming line fuses for ungrounded conductors.

c. Control circuit transformer with fused primary and 120V or 24V secondary for 3-phase heaters.

d. Automatically reset thermal cutouts for primary over-temperature protection.

e. Manually reset thermal cutouts, load carrying type, for secondary over-temperature protection.

f. Contactors and PE switches. Controlling contactors shall be mercury.

Back-up contactors shall be magnetic and shall break ungrounded conductors.

6. Controls:

a. Coil shall be interlocked with fan by pressure differential air flow switch.

b. Steps of heat shall be operated with contactors.

I. Variable Volume Units:

1. Complete with:
 - a. Air valve assembly.
 - b. Variable air volume from maximum of 100% to minimum of approximately 0%.

J. Fan-Powered Units:

1. Complete with:
 - a. Air valve assembly, series or parallel type as indicated on the Drawings.
 - b. Parallel type: air valve and fan in parallel with backdraft damper on fan, and baffles to prevent stratification. Intermit-tent fan operation.
 - c. Series type: air valve and fan in series. Constant fan operation.
 - d. Forward-curved fan with positive means of volume control.
 - f. Permanent lubricated split capacitor 3-speed motor with speed changing taps or permanent lubricated motor with electronic speed controller, thermal overload protection, fan motor controller, and wiring.
 - g. Units shall be factory-wired for a single electrical connection point, including input fuses, single disconnect switch for both fan and heating coil, and transformers.

- K. Manufacturer: Carnes, Carrier, Enviro-Tec, Krueger, Metal*Aire, Price, Tempmaster, Titus ESV, TQS or TQP, Trane VCEE or VFPE, Tuttle & Bailey, or York SHSE or HVFB."

2.21 FLAT AIR FILTERS

- A. **General:** The flat air filters used in the air handling units, packaged air conditioning units, and heat pumps shall be 1-inch thick throw-away type supplied as an integral part of each unit.
- B. Provide 3 complete spare filter changes for all flat filters in all units, plus provide one new filter set in each unit at time of turning units over to the OWNER. Filters used in the units during construction are not included in the above, these filters are additional ones that shall also be furnished by the CONTRACTOR.
- C. The flat air filters shall be 1-inch thick throw-away type made of an adhesive coated fiber media and rated at 300 fpm face velocity, 0.04-inch wg initial resistance and a 0.50-inch wg recommended final resistance. The filters shall be by **Airguard Industries; Farr Co.; Snyder General Corp.; or equal.**

2.22 SPECIAL CARBON FILTERS

- A. The flat filters used in the air conditioner units, air handling units, inline duct filter racks, etc.] shall be a special carbon throw-away type filter to remove odors and low level acid gases. Provide three complete filter changes for all flat filters as spares in these units. Provide one new filter set in each unit before turning units over to OWNER. Filters used in units during construction are not included in the above but shall be furnished by the CONTRACTOR for use during construction.

- B. The filters shall be as noted on the drawing **or equal**. These filters have carbons that are used for odor removal. The quantity and filter sizes shall be obtained by the CONTRACTOR from the manufacturers submitted shop drawings on the HVAC equipment. The filters shall be 2 inches thick.
- C. The filter racks using the above described filter shall be by the same manufacturer **or equal**. The overall dimensions shall house the filters scheduled on the Contract Drawings and have hinged access doors with gaskets on both sides.

2.23 AIR FILTER GAUGES

- A. Furnish and install on each [filter section, each air handling unit and packaged air conditioning unit] an air filter gauge. The air filter gauge shall be inclined tube manometer type. The gauge shall be complete with enameled scale with screw type zero adjustment, rust-resistant steel frame, with 3/16-inch plate glass removable cover, oil, screened inlet and outlet nozzles, level glass, oil chamber, and all necessary connecting piping and accessories. Each gauge shall be 10 inches long with a total scale reading of 1.0-inch water and 0.1-inch scale graduations. Accuracy shall be within 0.02 lineal inch at any point on the scale. Gauges shall be mounted level and provided with all necessary pressure sensing tubing. Gauges shall not be mounted on fan housing or casings containing rotating or reciprocating machinery.
- B. Air filter gauges shall be by **F.W. Dwyer Company; Honeywell, Inc.; or equal**.

2.24 WALL LOUVERS

- A. Furnish and install wall louvers as hereinafter specified, and where shown on the Contract Drawings. Louvers shall be Adjustable Type and Fixed type as called for with a drain gutter in each blade and downspouts in jambs and mullions. All louvers shall be furnished with extended sill. Stationary blades and adjustable blades shall be contained within a single 6-inch louver frame. Adjustable section shall include low leakage blade and jamb seals. Louver components (heads, jambs, sills, blades & mullions) shall be factory assembled by the louver manufacturer. Water stop at sill shall be factory caulked watertight.
- B. Adjustable Type shall be **Ruskin Model ELC 6375D, or equal**. Fixed Type shall be **Ruskin Model ELF 6375D, or equal**, with extruded 6063T5 aluminum alloy construction as follows:
 1. Frame: .125" wall thickness, box type.
 2. Blades: Stationary section and adjustable center pivoted section .125" wall thickness. 37½ degree angle on approximate 4-1/2-inch centers.
 3. Operator: Electric Type furnished with louver, 120 volts max.
- C. Published louver performance data bearing the AMCA Certified Ratings Seal for Air Performance & Water Penetration must be submitted for approval prior to

fabrication and must demonstrate pressure drop and water penetration equal to or less than the model specified.

- D. Louvers shall be complete with aluminum bird screen and all necessary linkages for operating section. Size and capacities shall be as called for on the Construction Drawings.
- E. Louvers shall be furnished with clear anodized finish.

2.25 VIBRATION ISOLATORS

- A. Vibration control isolation shall be provided for all rotating equipment, except electric motors. Where rotating units are part of factory assembled package units, such as a package air handling unit, the isolator shall be provided under the unit casing.
- B. All suspended equipment shall be supported by combination spring and fiberglass isolation hangers, incorporating minimum 2-inch thick neoprene jacketed fiberglass inserts in series with springs, all encased in steel brackets.
- C. All floor mounted or platform mounted built-up or package air handling units shall be mounted on structural steel or concrete bases with isolator springs and brackets.
- D. All springs used in the vibration isolators shall have approximately one inch deflection under load and shall have a minimum additional travel of 50 percent between the design height and the solid height. All isolation equipment shall be provided and installed in strict compliance with the manufacturer's recommendations.
- E. For vibration isolation between HVAC equipment and supports and where indicated on the Contract Drawings, 3/4-inch thick rubber pads shall be used for full contact between equipment and support. The pads shall be as manufactured by **Mason Industries, Super W Pads; or equal.**

2.26 ROOF CURBS AND ROOF EQUIPMENT SUPPORTS

- A. Roof curb for all roof openings, for roof mounted exhaust fans and air intakes and exhausts unless otherwise shown or indicated on the Contract Drawings, are to be of the "raised cant" type with minimum 12-inch height above the roof line. Curbs shall be pitched at the base for roof pitch in excess of 3/8-inch per foot. A raised cant shall be a minimum of 4 inches unless otherwise specified. Curbs shall be of box design, constructed from 20 gauge galvanized steel with continuous welded seams, full mitered angle seam corners, and factory installed wood nailers, and shall be insulated with a minimum of 1-1/2-inch 3 lbs./cu.ft. density rigid board fiberglass.
- B. Roof curbs shall have a 18 gauge stainless steel liner set in mastic, extended the full height of curb, if the duct does not extend to the top of the curb.

- C. Roof equipment supports shall be provided for roof mounted equipment. The supports shall be constructed of 18 gauge galvanized steel with continuous welded seams, an integral base plate, wood nailer with 1-inch overhang to accommodate insulation, counter flashing with lag screws.
- D. The supports shall have a raised cant of not less than 4 inches and shall be a minimum of 15 inches high. The length and width of the units shall conform to the support requirements of the equipment being supported.
- E. The roof curbs **shall be Pate Model PC-5; Thycurb;** supplied by the manufacturer of the fan, air handler, air conditioner, etc.; or equal, and the roof equipment supports **shall be Pate Model ES-5B; Thycurb;** or equal.

2.27 TEMPERATURE AND EQUIPMENT CONTROL

- A. The CONTRACTOR shall design, furnish and install a complete electric-electronic system of automatic temperature control as specified herein. The system shall be designed and furnished by **Johnson Controls; Honeywell; or equal.**
 - 1. After completion of the installation, the automatic temperature control manufacturer shall adjust all thermostats, sensors, in the motors and other equipment provided under this Contract with trained personnel in the direct employ of the temperature control manufacturer. He shall place them in complete operating condition subject to the approval of the ENGINEER, and instruct the operating personnel in the operation of the control system.
 - 2. The control system as specified herein shall be guaranteed free from defects in workmanship and material under normal use and service for a period of one year after acceptance of the ENGINEER. Any equipment herein described proves to be defective in workmanship or material during the guarantee period shall be adjusted, repaired, or replaced by the automatic control manufacturer at no charge to the OWNER.
 - 3. All wiring incidental to the temperature control system including electrical interlock shall be provided by the TEMPERATURE CONTROL CONTRACTOR.
 - 4. Detailed wiring diagrams along with necessary supervision shall be provided by the TEMPERATURE CONTROL CONTRACTOR.
 - 5. All control wiring (line voltage or low voltage), required to complete the temperature control system (by interconnecting starters, thermostats, PE switches, relays, and like devices) shall be installed by the TEMPERATURE CONTROL CONTRACTOR, but in accordance with Section 16050 - Electrical Work, General of this Specification.
 - 6. All thermostats, controllers and amplifiers shall be suitable for the applications in which they are used.

7. Electric actuators for louvers shall be sized with sufficient reserve power to provide 2 position power as required.
8. All H.O.A. (Hand-Off-Auto) switches shall be furnished and installed by the TEMPERATURE CONTROL CONTRACTOR, but in accordance with Section 16485 - Local Control Panels.
9. The control manufacturer shall furnish all 2-position relays, capacity relays, sequencing relays, plus all other controls necessary to meet the specifications and provide for properly operating automatic control system. All electric switches and relays must be UL listed and of a type to meet the current and voltage requirements of the particular application.

2.28 CONTROL PANELS

- A. **General:** Control panels shall contain all relays, control switches, transformers, pilot lights, timers, time clocks, step controllers, gages, thermostats (unless otherwise shown), and other accessories necessary for the particular system. Panels shall be aluminum with baked enamel finish, hinged front door, and locking handle. All manual switches and direct-reading gauges shall be flush-mounted on the front face, identified by engraved and riveted Bakelite or laminated plastic nameplates with white letters on black background. Manual switches shall be of heavy-duty, oil-tight construction.
- B. **Wiring:** Control devices shall be prewired internally. All wires leaving the panel shall be terminated at separate numbered terminal strips. Individual connectors shall be provided for every item of mechanical equipment, all integral and remote pilot lights, and other devices described for each panel. Power and control circuit requirements shall be as shown on the Electrical Drawings. All wires shall be identified by color coding or numerical tags at both ends. Each control device shall be wired without splices to the terminal strip. Integral circuit protection shall be provided for all panel-mounted control devices. Each panel shall be wired with a single 20-amp, 120-volt, ac feeder in accordance with Section 16485 - Local Control Panels.
- C. **Diagrams:** Panel electrical wiring diagrams shall be secured to the inside of the panel door.

2.29 SEQUENCE OF OPERATION

- A. The Controls for the variable volume system, 44-A-01-CA and terminal units serving the Operations Building shall be as follows:
 1. The system shall be automatically started and stopped by the control panel whenever the hand-off-automatic switch is in the automatic position and manually started and stopped by the hand position.
 2. Controls shall be energized and the return dampers shall open prior to fan starting. The outside air dampers shall remain closed. The outside air damper shall open upon completion of the morning warm-up mode.

3. On morning warm-up mode, the system shall run, the outside air damper and terminal units shall be fully open and the heating coil shall be activated to provide 90 degrees supply air until return temperature rises above the warm-up mode setpoint.
4. The system discharge air temperature setpoint shall cycle the compressor of the condensing unit. The system discharge air temperature setpoint shall be reset upward on a fall in return air temperature below 70 degrees F.
5. Modulate the variable speed drive to maintain duct static pressure setpoint.
6. Modulate the return air damper to maintain mixing plenum static pressure as measured by a static pressure sensor in the mixed air plenum at the setpoint determined by the test and balance work.
7. Activate the steps of electric heat to maintain coil discharge temperature setpoint, sensed by an averaging element located immediately downstream of the preheat coil. This control shall remain active at all times, including unit shutdown.
8. A separate low limit safety sensing air entering the cooling coil set at 40°F adjustable, shall stop the fan and cycle the compressor and activate the steps of electric heat in the unit.
9. On power interruption or fan shutdown, the outside air and return dampers and the fan-powered terminal units electric heating coils shall be deactivated.
10. Terminal Units:
 - a. Variable volume - each room thermostat shall position its respective unit damper to maintain space temperature.
 - b. Variable volume reheat - each thermostat shall, on a drop in temperature, modulate the primary air valve to the minimum position. Once the primary air valve is at minimum flow, the room thermostat shall activate the steps of electric heat to maintain space temperature.
 - c. Fan-powered, parallel type - each room thermostat shall, on a drop in temperature, modulate the primary air valve to the minimum position, and start the fan. Once the primary air valve is at minimum flow, the room thermostat shall activate the steps of electric heat to maintain space temperature.
 - d. Fan-powered, series type - the fan shall be interlocked with the system. Each room thermostat shall, on a drop in temperature, modulate the primary air valve to the minimum position. Once the primary air valve is at minimum flow, the room thermostat shall activate the steps of electric heat to maintain space temperature.

11. A drop in space temperature below night setback setpoint shall override the supply fan interlock and allow the fan-powered terminal units system to operate under normal control until space temperature rises above night setback setpoint. Outside air dampers shall remain closed.
 12. Smoke detectors in the return air duct and downstream of the filters in the supply duct shall automatically shut down the fan.
 13. On activation of the fire alarm system relay, the system shall shut down.
- B. The controls for the Rooftop Heat Pump Unit, 44-R-01-CA, shall function as follows:
1. Provide control wiring between the heat pump unit and wall-mounted thermostats.
 2. Thermostats shall energize the unit compressor and refrigerant reversing valve to maintain space temperature.
 3. The unit fan shall be energized whenever the compressor is energized. The unit fan shall run continuously when thermostat is set for "Fan On" operation.
 4. Thermostat shall be provided with additional contacts and relays to provide control sequence specified herein.
- C. The controls for the Split Air Conditioning, 42-S-01-CA, shall function as follow:
1. The unit shall be controlled by a remote adjustable thermostat set at 80 degrees F. Provide control wiring between the unit and wall-mounted thermostats.
 2. The circulating fan of the unit shall run continuously and the room thermostat shall cycle the compressor of the condensing unit to maintain space temperature.
 3. If the smoke detector in the ceiling of the electrical room is activated, the air handling unit and supply fan shall stop.
 4. Thermostat shall be provided with additional contacts and relays to provide control sequence specified herein.
- D. The controls for the Rooftop Air Conditioning Unit, 43-R-01-CA, shall function as follows:
1. The unit shall be controlled by a remote adjustable thermostat set at 80 degrees F. Provide control wiring between the unit and wall-mounted thermostats.

2. The circulating fan of the unit shall run continuously and the room thermostat shall cycle the compressor of the condensing unit to maintain space temperature.
 3. The unit fan shall be energized whenever the compressor is energized. The unit fan shall run continuously when thermostat is set for "Fan On" operation.
 4. Smoke detectors in the return air duct and downstream of the filters in the supply duct shall automatically shut down the fan.
 5. Thermostat shall be provided with additional contacts and relays to provide control sequence specified herein.
- E. The controls for exhaust fans serving the Operations building shall be as follows:
1. The exhaust fans, 44-F-01-EA, 44-F-01-EA, 44-F-03-EA, 44-F-04-EA, shall be started and stopped by a switch in the wall located near the light switch.
 2. The exhaust fan, 44-F-05-EA, serving the laboratory room shall be interlocked to operate with 44-A-01-CA, except when the system is in the night setback or warm-up mode.
 3. The motorized intake discharge damper for each fan shall open when the fan is on and close when the fan is off.
 4. Provide all control wiring to provide control sequence specified herein.
- F. The controls for exhaust fans serving the Residual and Treatment buildings shall be as follows:
1. The exhaust fans shall operate continuously.
 2. The motorized intake discharge damper for each fan shall open when the fan is on and close when the fan is off.
 3. Provide all control wiring to provide control sequence specified herein.
 4. Provide all wiring between the static pressure sensor in the biofilter building to each exhaust fan with variable speed drive. Refer to civil drawings for the location of the static pressure sensors serving the Residual and Treatment building.

2.30 HEATING CABLE

- A. All electric heat trace cable called for shall be **Chromalox Type SRL-3-1; or equal**. Cable shall be self-regulating with 150 degrees F maintenance temperature, 120 volt, 3 watts per ft. output and twin 16 AWG copper buss wires within insulated jacket.
- B. After the pipe is heat traced, it shall be insulated and exterior jacketing applied in accordance with Section 15145 – Pipe and Equipment Insulation.

2.31 PAINTING

- A. Painting of the equipment and materials shall comply with Section 09900 – Architectural Finishes.
- B. The CONTRACTOR shall include the painting of factory paint surfaces that are rusted and/or scratched. These finishes shall be cleaned to bright metal, primed with a corrosion inhibitor and finished with a paint and/or enamel to match original finish.

PART 3 -- EXECUTION

3.1 GENERAL

- A. **Openings:** The CONTRACTOR shall provide all necessary openings in walls, floors and roofs for the passage of heating and ventilating equipment in the buildings. All openings shall be as indicated on the Contract Drawings, or as required to provide passage for heating and ventilating work.
 - 1. No extra compensation shall be given for defective or ill-timed work.
 - 2. The CONTRACTOR shall provide all hanger and support inserts into masonry or structural steel as required for proper completion of the work.

3.2 INSTALLATION OF PIPING

- A. **Drain Piping:**
 - 1. Install valve-drain piping where valves are equipped with drain connection, fabrication from type L copper tube and solder-joint drainage fittings.
 - 2. Install piping system and equipment drains fabricated from copper tube with solder-joint fittings, or from black steel piping with fittings as indicated.
 - 3. Install drain piping at the low points of supply and return piping, at abrupt changes in vertical offsets in horizontal runs, and in piping at mechanical equipment including pumps.
 - 4. Extend drain piping to nearest drain.
- B. **Bypass Piping:**
 - 1. Except as otherwise indicated, fabricate and install bypass piping using the same materials and in the same plane as connected piping, but one pipe size smaller, or as noted. Include valve in bypass piping.

3.3 BALANCING AND TESTING

- A. **General:** After the installation work is complete, the CONTRACTOR shall make all necessary adjustments of volume dampers, volume controllers, exhaust blowers, exhaust fans, supply blowers, supply and return registers, and heating

units. The CONTRACTOR shall balance the hot water heating system, provide all pressure gauge tappings, and through the use of balancing valves adjust water flows. The CONTRACTOR shall provide all labor, tools, testing equipment and appliances for the necessary testing and adjustment required.

1. The CONTRACTOR shall use the services of an independent BALANCING SUBCONTRACTOR to perform the work of balancing the system.
 2. The BALANCING SUBCONTRACTOR shall be one who has at least 5 years of balancing experience with experience in at least 5 projects of this type. The CONTRACTOR shall forward to the ENGINEER an experience resume and project resume for approval of the BALANCING SUBCONTRACTOR.
 3. The BALANCING SUBCONTRACTOR shall not be associated with any firms doing engineering and/or construction work in HVAC and/or Plumbing.
 4. The BALANCING SUBCONTRACTOR shall use the balancing methods approved by the Associated Air Balance Council.
 5. The BALANCING SUBCONTRACTOR shall send a copy of all correspondence and reports, as they are written, pertaining to this project, directly to the ENGINEER.
- B. The CONTRACTOR shall demonstrate to the OWNER, in an extensive operating test covering every component of the installation, that the entire heating, ventilating and air conditioning system meets the requirements of the Contract Drawings and Specifications and is in first class condition and ready for continuous, satisfactory operation. Any repairs and revisions necessary to make the system operative.

- END OF SECTION

SECTION 17202 – PLC ENCLOSURES

PART 1 – GENERAL

1.1 THE REQUIREMENT

- A. **General:** The CONTRACTOR shall provide PLC enclosures, complete and operable, in accordance with the Contract Documents. The PLC enclosures shall be stand-alone fabrications or shall be integrated with motor control centers, VFD panels or electrical distribution panels as shown on the Contract Drawings. The PLC enclosures shall house the PLC-Based Control System Hardware specified in Section 17510 and components specified herein. The CONTRACTOR shall coordinate with the Instrument Supplier that provides the Instrumentation devices that will be housed by the enclosure and the electrical sub-contractor that provides the actual enclosure to provide a complete PLC enclosure.
- B. **References:** The requirements of Section 17100 - Process Control and Instrumentation Systems apply to this Section.
- C. **Limitations:** The provisions of this Section apply to PLC and remote I/O devices and enclosures provided under Division 16 and 17.

1.2 REFERENCE SPECIFICATIONS, CODES, AND STANDARDS

- A. **General:** PLC enclosures shall comply with the requirements of NEC, NEMA, and UL.

1.3 CONTRACTOR SUBMITTALS

- A. **General:** Submittals shall be furnished in accordance with Section 01300 - Contractor Submittals.
- B. **Coordination:** The Instrument Supplier shall coordinate with the electrical sub-contractor to ensure that the size of the PLC enclosures is sufficient for all of the instrumentation devices and backpanels supplied.
- C. **Submittal Contents:** The CONTRACTOR shall submit a PLC enclosure submittal which shall completely define and document the construction, finish, layout, power circuits, signal and safety grounding circuits, fuses, circuit breakers, signal circuits, internally mounted instrumentation and SCADA system components, internal enclosure arrangements, and external enclosure arrangements. The CONTRACTOR shall coordinate with the Instrument Supplier that provides the Instrumentation devices and the electrical sub-contractor that provides the enclosure to provide a complete enclosure submittal. All drawings shall, as a minimum, be "B" size with all data sheets and manufacturer specification sheets being "A" size. The submittal shall consist of the following:
 - 1. A complete index shall appear in the front of each bound volume. Drawings and data sheets associated with an enclosure shall be grouped together with the enclosures being indexed by systems or process areas. Tagging and nameplate nomenclature shall be consistent with the requirements of the Contract Documents.
 - 2. Scaled physical arrangement drawings, which define and quantify the physical groupings comprising enclosure sections, auxiliary enclosures, subpanels, and racks. Cutout locations with nameplate identifications shall be shown.

3. Schematic/elementary diagrams shall depict all control devices and circuits and their functions.
4. Interconnection diagrams shall locate and identify all external connections between the enclosure devices and associated equipment. These diagrams shall show interconnecting wiring, designate terminal assignments, and show the physical location of all enclosure ingress and egress points.
5. Completed data sheets containing at least all the information on ISA form S20 for all instrumentation devices associated with each PLC enclosure, supplemented with manufacturer specification sheets that verify conformance to the requirements of the Contract Documents.
6. A bill of material that enumerates all devices associated with the enclosure.
7. A priced listing of spare parts in conformance with Section 17100.

PART 2 -- PRODUCTS

2.1 GENERAL

- A. **Enclosure:** Each PLC and/or remote I/O system and corresponding housing, I/O modules, power supply modules, communication interface devices, and peripheral equipment shall be mounted inside a NEMA rated enclosure. The enclosure shall be provided by the electrical sub-contractor and shall be suitable for the area classification per Section 16485 – Local Control Stations and Miscellaneous Electrical Devices. This arrangement will allow the PLC enclosures to be installed at the respective sites without the need to install the backpanel ahead of the installation.
- B. **Power Feed:** The enclosures shall each be supplied with a single 20A, 120 VAC power feed from a dedicated circuit breaker in a site panelboard, as indicated on the Electrical Drawings. Each enclosure shall be protected from electrical surges by the installation of a surge suppressor in the enclosure on the incoming power feed. The surge suppressor shall be suitable for single-phase power and meet ANSI/IEEE C62.11 -1987. The surge suppressor shall be **Square D model SDSA1175, or equal**. The PLC or remote I/O enclosure shall be the source of power for any solenoid valves interconnected with the enclosure.
- C. **Arrangement:** All devices mounted on the front of the enclosure shall be a minimum of 3 feet above finished floor elevation.
- D. **Labor and Workmanship:** Enclosures shall be fabricated, piped, and wired by fully qualified workmen who are properly trained, experienced, and supervised.

2.2 CONSTRUCTION

A. Back and Side Panels

1. The interior rear and sides of each enclosure shall have steel mounting channels for supporting mounting panels.
2. Wireways, devices, PLC components, and other interior mounted equipment shall be attached only to the back or side mounting panels.

3. Partial height side and back panels may be utilized when a standard 19-inch rack is installed in the enclosure to support certain electronic equipment. In this instance, the rack assembly shall be securely mounted to the side and back steel mounting channels within the enclosure.

2.3 ELECTRICAL REQUIREMENTS

A. General

1. The CONTRACTOR shall provide wireways, switches, wire, and electrical fittings for all circuits to instruments and other electrical devices as required for a complete and operable installation.
2. A "CAUTION" nameplate shall be attached to the outside of enclosure door warning of foreign voltages inside the enclosure.

B. Power Distribution: PLC enclosures shall be provided with internal circuit breakers to distribute power from the power feed circuit. One circuit breaker shall provide distribution to a fluorescent lamp, duplex GFI type receptacle, and heater/air conditioner. A separate circuit breaker shall distribute power to all PLC components, instruments, and loop power supplies, with additional disconnects and/or breakers as needed. The fluorescent lamp shall be provided with guards and an On/Off toggle switch mounted on the side or back panel.

C. Wiring:

1. Wire type and sizes: All conductors within the enclosure shall be flexible stranded copper, UL listed Type THHN/THWN, and shall be rated 600 volts. All control wiring shall be No. 16 AWG minimum.
2. Wire Insulation Colors: Conductors supplying 120 VAC power on the line side of a disconnecting switch shall have a black insulation for the ungrounded conductor. Grounded circuit conductors shall have white insulation. Insulation for ungrounded 120V AC control circuit conductors shall be red on the load side of any disconnecting switch. Wires energized by a voltage source external to the enclosure shall have yellow insulation. Insulation for DC conductors shall be blue.
3. Wire Termination: Terminals and fuses for each conductor and shield drain wire of a twisted shielded pair or triad cable shall be mounted consecutively next to each other.
4. Grounding: Provide enclosures with a 1/8-inch by 1-inch copper ground bus of appropriate length complete with solderless connector for one No. 4 AWG bare stranded copper cable. Provide the bus with tapped holes to accommodate ground connections from various devices in the enclosure. Provide separate ground buses for analog and discrete/digital signals. The No. 4 AWG copper ground cable shall be provided by the CONTRACTOR and be connected to a ground loop.

2.4 ENCLOSURE COMPONENTS

- A. **General:** Pushbuttons, 2 or 3 position selector switches, time delay relays, pilot lights, and lens colors shall be as specified under section 16485 – Local Control Stations.
- B. **Selector Switches:** Selector switches of 4 or more positions shall have rotary blades engaging separate contact banks for each set of contacts shown. Each contact shall

have a screw type terminal for connecting control wires. Each shall have a factory engraved legend plate, and make-before-break or break-before-make contacts as indicated on the Contract Drawings. Switches shall be **Electroswitch Type KW20, Entrelec VY40**, or equal.

- C. **Relays:** Relays shall be 3PDT with 10 amp contacts with indicating light. Relays shall be plug-in type utilizing rectangular blades and provided with sockets for screw-type termination and hold-down clips. Where more than 3 contacts are shown or required for a relay coil, additional relay(s) shall be furnished, installed, and connected. Relays shall be as manufactured by **Square D Class 8501 Type KU, Allen-Bradley Bulletin 700 Type HB**, or equal.
- D. **Latching Relays:** Latching relays shall be DPDT with 10 amp contacts with indicating light. Relays shall be plug-in type utilizing rectangular blades and provided with sockets for screw-type termination and hold-down clips. Where more than 2 contacts are shown or required for a relay coil, additional relay(s) shall be furnished, installed, and connected. Relays shall be as manufactured by **Square D Class 8501 Type KL, Allen-Bradley Bulletin 700 Type HJ**, or equal.
- E. **Circuit Breakers:** Circuit breakers shall be installed as disconnects for all external power feeds for control circuits from outside the enclosure and all branch circuits within the enclosure. Circuit breakers shall be as manufactured by **Cutler-Hammer Quicklag, Square D MULTI9**, or equal.
- F. **Terminal Blocks:** Terminal blocks for control wiring shall be of the DIN rail mounting type rated at 600 VAC and have a minimum width of 8mm suitable for No. 12 AWG stranded wire minimum. Terminals shall be the solderless box lug type with pressure plates in actual contact with the wire to minimize wire breakage. Each terminal shall have a numbered identification, marking the terminal number or circuit designation. Double high or stacked terminal blocks are not acceptable. All external wiring connections to and from enclosures shall terminate on terminal blocks, except approved communications cables. Circuit isolating switches and fuse terminals shall include non-conducting pullers which can be removed with finger alone, no tools required. Terminals shall be as manufactured by **Square D Class 9080 Type M, Allen-Bradley Bulletin 1492 Type H**, or equal. Provide 25 percent spare terminals in each enclosure.
- G. **Loop Power Supplies:** Redundant loop power supplies shall be provided. They shall be configured in a fault-tolerant manner to prevent interruption of service upon failure and/or replacement of a single power supply. Power supplies shall have an excess rated capacity of 40 percent. The failure of a power supply shall generate an alarm input contact to the PLC. Power supplies shall be **Power One HC24, ASI Type CS**, or equal.

PART 3 -- EXECUTION

3.1 PREPARATION FOR SHIPMENT AND SHIPPING

- A. **Packing:** The backpanels provided by the Instrument Supplier shall be cushioned to protect the finish of the instruments during shipment to protect parts that could be damaged due to mechanical shock.
- B. **Shipment:** Shipment shall be by air-ride van unless otherwise indicated.

3.2 SIGNAL AND CONTROL CIRCUIT WIRING

- A. **Wiring Installation:** All wires shall be run in plastic wireways except (1) field wiring, (2) wiring between mating blocks in adjacent sections, and (3) wiring to components mounted on the front of the enclosure. Side panel and back panel wireways shall not interfere with one another. Wiring run from door mounted components to other components within the enclosure shall be made up in tied bundles. These bundles shall be tied with nylon wire ties and shall be secured at both sides of the "hinge loop" so that conductors are not strained at the terminals. Wire bundles from door mounted components shall land on terminals on the back panel before continuing to back panel mounted devices so the door wiring can easily be tested and field modified. Wire bundles from door mounted components to terminals on the back panel shall include a minimum of four spare wires. Shop drawings shall show conformance to all wiring installation requirements.
- B. **Wire Marking:** All conductors connected to a given electrical point shall be designated by a single unique number that shall be shown on all shop drawings. These numbers shall be marked on all conductors at every terminal. Wire numbers shall be marked using white numbered wire markers made from plastic-coated cloth. Wire markers shall be **Panduit, Brady,** or equal.
- C. **Loop Circuit Protection:** Furnish, install, and connect transient surge protectors, loop isolators, or 100 mA fast blow fuses for both conductors of all field 4-20mA signal cables unless, otherwise specified or shown.

3.3 EQUIPMENT IDENTIFICATION

- A. **General:** Equipment and devices shall be identified as follows:
 - 1. Nameplates shall be provided for all components. In addition to nameplates, control devices shall be equipped with standard collar-type legend plates. Nameplates shall meet the requirement of Sections 16050-2.3 and 16050-3.5.
 - 2. Control devices mounted through the enclosure door(s) shall be identified on both the outside and inside of the door.
 - 3. Equipment names and tag numbers, where indicated on the Drawings, shall be utilized on all nameplates.

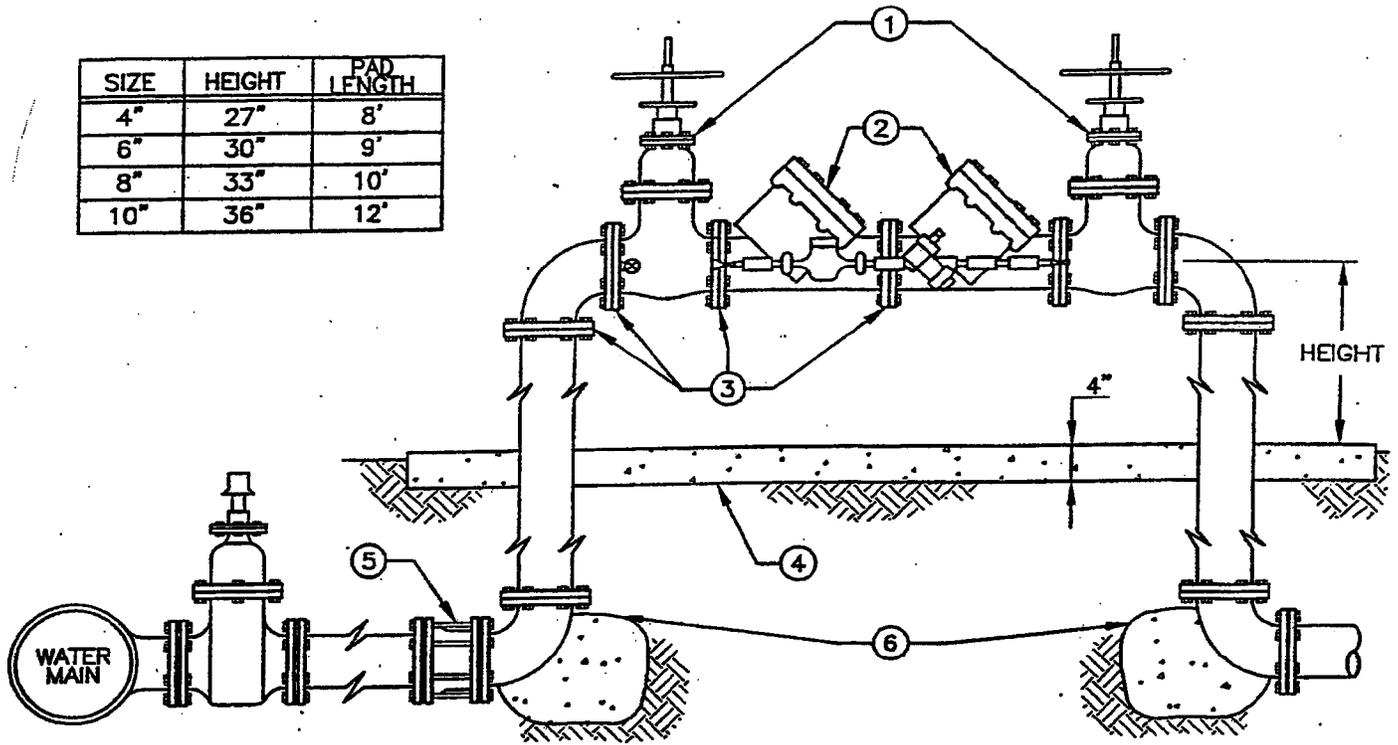
3.4 CALIBRATION, TESTING, AND INSTRUCTION

- A. **General:** Calibration, testing, and instruction shall be performed in accordance with Section 17100.
- B. **Inspection and Approval:**
 - 1. Fabricator shall conduct the following tests prior to arrival of the ENGINEER or before shipment, if the ENGINEER chooses not to witness factory testing.
 - a. Alarm circuits rung out to determine their operability.
 - b. Electrical circuits checked for continuity and where applicable, operability.
 - c. Any other test required to place the enclosure in an operating condition.
 - 2. It shall be the responsibility of the CONTRACTOR to furnish all necessary testing devices and sufficient manpower to perform the tests required by the ENGINEER.

3. Field Testing: Each PLC enclosure shall be tested again for functional operation in the field after the connection of external conductors and prior to equipment startup.

- END OF SECTION -

SIZE	HEIGHT	PAD LENGTH
4"	27"	8'
6"	30"	9'
8"	33"	10'
10"	36"	12'



- ① OS&Y gate valve with fully-encapsulated resilient seat - Mueller, Clow or A.V.K. (conforming to the latest edition of the AWWA standard C509-80)
- ② U.S.C. approved double detector check valve backflow preventer assembly, with 3/4" non-valved bypass meter assembly.
- ③ All risers and above-ground mainline fittings shall be D.I.P. flange-type.
- ④ P.C.C. pad, 12" minimum around risers, 5-sack.
- ⑤ M.J. x Flange adaptor (or M.J. x Flange 90° ell.)
- ⑥ P.C.C. thrust blocks, 5-sack.
- ⑦ OS&Y gate valves and backflow preventer to have factory applied epoxy coating.
- ⑧ Entire assembly above ground to be painted blue.

PLANT LEGEND

SYMBOL	BOTANICAL NAME	COMMON NAME	SIZE	QUANTITY	REMARKS
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TREES

	CUPRESSUS MACROCARPA	MONTEREY CYPRESS	24" BOX	31	SEE DETAIL A, SHEET 41-L-24
	GARRYA ELLIPTICA	SILK TASSEL TREE	24" BOX	16	SEE DETAIL A, SHEET 41-L-24
	LYONOTHAMNUS FLORIBUNDUS 'ASPENIFOLIUS'	CATALINA IRONWOOD	24" BOX	44	SEE DETAIL A, SHEET 41-L-24
	MELALUECA QUINQUENERVIA	CAJEPUT TREE	24" BOX	30	SEE DETAIL A, SHEET 41-L-24
	QUERCUS AGRIFOLIA 'FRUTESCENS'	DWARF COAST LIVE OAK	24" BOX	8	SEE DETAIL A, SHEET 41-L-24
	TRISTANIA CONFERTA	BRISBANE BOX	24" BOX	33	SEE DETAIL A, SHEET 41-L-24
	UMBELLARIA CALIFORNICA	CALIFORNIA BAY	24" BOX	14	SEE DETAIL A, SHEET 41-L-24

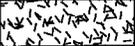
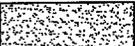
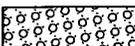
SHRUBS

	ARCTOSTAPHYLOS MORROENSIS	PARK VIEW MANZANITA	5 GAL.	31	SEE DETAIL B, SHEET 41-L-24
	BERBERIS DARWINII	DARWIN BARBERRY	5 GAL.	70	SEE DETAIL B, SHEET 41-L-24
	CEANOTHUS CUNEATUS	BUCKBRUSH	15 GAL.	83	SEE DETAIL B, SHEET 41-L-24
	CEANOTHUS 'FROSTY BLUE'	WILD LILAC	15 GAL.	183	SEE DETAIL B, SHEET 41-L-24
	COREOPSIS GIGANTEA	GIANT COREOPSIS	1 GAL.	87	SEE DETAIL B, SHEET 41-L-24
	ENCELIA CALIFORNICA	ENCELIA CALIFORNICA	1 GAL.	125	SEE DETAIL B, SHEET 41-L-24
	HELIANTHEMUM SCOPARIUM	SUNROSE	1 GAL.	77	SEE DETAIL B, SHEET 41-L-24
	HETEROMELES ARBUTIFOLIA	TOYON	15 GAL.	83	SEE DETAIL B, SHEET 41-L-24
	LOTUS SCOPARIUS	DEERWEED	1 GAL.	238	SEE DETAIL B, SHEET 41-L-24
	LAVATERA MARITIMA	ISLAND MALLOW	5 GAL.	136	SEE DETAIL B, SHEET 41-L-24
	LIMONIUM PEREZII	SEA LAVENDER	1 GAL.	99	SEE DETAIL B, SHEET 41-L-24
	LUPINUS CHAMISSONIS	BUSH LUPINE	1 GAL.	363	SEE DETAIL B, SHEET 41-L-24
	MIMULUS AURANTIACUS	MONKEY FLOWER	1 GAL.	389	SEE DETAIL B, SHEET 41-L-24
	PENSTEMON SPECTABILIS	SHOWY PENSTEMON	1 GAL.	459	SEE DETAIL B, SHEET 41-L-24
	PHYLLOSTACHYS HETEROCYCLA PUBESCENS	GIANT CHINESE TIMBER	15 GAL.	46	SEE DETAIL B, SHEET 41-L-24
	PHYLLOSTACHYS HETEROCYCLA PUBESCENS	GIANT CHINESE TIMBER	5 GAL.	43	SEE DETAIL B, SHEET 41-L-24
	PLUMBAGO AURICULATA 'ROYAL CAPE'	BLUE PLUMBAGO	5 GAL.	130	SEE DETAIL B, SHEET 41-L-24
	PRUNUS FASCICULATA VAR. PUNCTATA	SAND ALMOND	5 GAL.	26	SEE DETAIL B, SHEET 41-L-24
	PRUNUS ILICIFOLIA	HOLLY LEAF CHERRY	15 GAL.	10	SEE DETAIL B, SHEET 41-L-24
	RHAMNUS CALIFORNICA	COFFEE BERRY	15 GAL.	80	SEE DETAIL B, SHEET 41-L-24
	RHAMNUS CROCEA	RED BERRY	5 GAL.	221	SEE DETAIL B, SHEET 41-L-24
	RIBES SPECIOSUM	FUCHIA-FLOWERING GOOSEBERRY	1 GAL.	193	SEE DETAIL B, SHEET 41-L-24
	ROMNEYA COULTERI	MATILJA POPPY	5 GAL.	111	SEE DETAIL B, SHEET 41-L-24
	SALVIA MELLIFERA	BLACK SAGE	1 GAL.	290	SEE DETAIL B, SHEET 41-L-24
	SALVIA LEUCOPHYLLA	PURPLE SAGE	1 GAL.	74	SEE DETAIL B, SHEET 41-L-24
	SANTOLINA CHAMAECYPARISSUS	LAVENDER COTTON	1 GAL.	209	SEE DETAIL B, SHEET 41-L-24
	YUCCA WHIPPLEI	OUR LORD'S CANDLE	1 GAL.	88	SEE DETAIL B, SHEET 41-L-24

VINES

▼	FICUS PUMILA	CREEPING FIG	1 GAL.	79	SEE DETAIL D, SHEET 41-L-24
■	MANDEVILLA SANDERI	BRAZILIAN JASMINE	1 GAL.	-85*	INSTALL (1) PLANT IN FRONT OF EACH REBAR ESPALLIER, 16' O.C. @ 8' NO CLIMB FENCE PER DETAIL C, SHEET 41-L-10 * CONTRACTOR SHALL VERIFY QUANTITY & LOCATION OF PLANT MATERIAL BASED ON REBAR ESPALLIER LOCATIONS IN FIELD

GROUND COVERS

	ACHILLEA MILLEFOLIUM	COMMON YARROW	1 GAL.	586 SF	18" O.C. PER DETAIL C, SHEET 41-L-24
	ACHILLEA TOMENTOSA	WOOLLY YARROW	1 GAL.	479 SF	18" O.C. PER DETAIL C, SHEET 41-L-24
	ARCTOSTAPHYLOS 'PACIFIC MIST'	MANZANITA	1 GAL.	9,416 SF	4' O.C. PER DETAIL C, SHEET 41-L-24
	ARTEMESIA CALIFORNICA 'CANYON GREY'	CALIFORNIA SAGEBRUSH	1 GAL.	5,510 SF	4' O.C. PER DETAIL C, SHEET 41-L-24
	BACCHARIS PILULARIS 'PIGEON POINT'	DWARF COYOTE BRUSH	1 GAL.	4,604 SF	6' O.C. PER DETAIL C, SHEET 41-L-24
	CAREX PRAEGRACILIS	CLUSTERED SEDGE GRASS	LINER	31,370 SF	24" O.C. PER DETAIL C, SHEET 41-L-24
	CONVOLVULUS SABATIUS	GROUND MORNING GLORY	1 GAL.	2,965 SF	24" O.C. PER DETAIL C, SHEET 41-L-24
	IMPERATA CYLINDRICA 'RED BARON'	'RED BARON' BLOOD GRASS	1 GAL.	2,056 SF	12" O.C. PER DETAIL C, SHEET 41-L-24
	MILIUM EFFUSUM 'AUREUM'	GOLDEN WOOD MILLET	1 GAL.	1,419 SF	18" O.C. PER DETAIL C, SHEET 41-L-24

ORNAMENTAL GRASSES

	CALAMAGROSTIS ACUTIFLORA 'KARL FOERSTER'	FOERSTER'S FEATHER REED GRASS	1 GAL.	176	SEE DETAIL B, SHEET 41-L-24
	CAREX NUDATA	CALIFORNIA BLACK-FLOWERING SEDGE	1 GAL.	352	SEE DETAIL B, SHEET 41-L-24
	CAREX PRAEGRACILIS	CLUSTERED SEDGE GRASS	1 GAL.	461	SEE DETAIL B, SHEET 41-L-24
	HELICTOTRICHON SEMPERVIRENS	BLUE OAT GRASS	1 GAL.	70	SEE DETAIL B, SHEET 41-L-24
	MUHLENBERGIA CAPILLARIS	HAIRY AWN MUHLY	1 GAL.	127	SEE DETAIL B, SHEET 41-L-24
	MUHLENBERGIA RIGENS	DEER GRASS	1 GAL.	69	SEE DETAIL B, SHEET 41-L-24

NON-IRRIGATED NATIVE HYDROSEED MIX

	<table border="1" style="display: inline-table; vertical-align: middle;"> <tr> <td>10%</td> <td>ARTEMESIA CALIFORNICA</td> <td>CALIFORNIA SAGEBRUSH</td> </tr> <tr> <td>15%</td> <td>CROTON CALIFORNICUS</td> <td>CROTON</td> </tr> <tr> <td>25%</td> <td>ERICAMERIA ERICOIDES</td> <td>MOCK HEATHER</td> </tr> <tr> <td>25%</td> <td>LOTUS SCOPARIUS</td> <td>DEER WEED</td> </tr> <tr> <td>10%</td> <td>MIMULUS AURANTIACUS</td> <td>STICKY MONKEY FLOWER</td> </tr> <tr> <td>15%</td> <td>SALVIA MELLIFERA</td> <td>BLACK SAGE</td> </tr> </table>	10%	ARTEMESIA CALIFORNICA	CALIFORNIA SAGEBRUSH	15%	CROTON CALIFORNICUS	CROTON	25%	ERICAMERIA ERICOIDES	MOCK HEATHER	25%	LOTUS SCOPARIUS	DEER WEED	10%	MIMULUS AURANTIACUS	STICKY MONKEY FLOWER	15%	SALVIA MELLIFERA	BLACK SAGE	SEED	59,906 SF	NA
10%	ARTEMESIA CALIFORNICA	CALIFORNIA SAGEBRUSH																				
15%	CROTON CALIFORNICUS	CROTON																				
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15%	SALVIA MELLIFERA	BLACK SAGE																				

HYDROSEEDDED TURF GRASS

	MARATHON FESCUE OR EQUAL	NA	SEED	169,489 SF	NA
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PLANTING NOTES

1. Plant list is for convenience of contractor only. In case of discrepancies between the plans and the list, plans shall prevail.
2. Plant locations shown on the plans are diagramatic. Contractor shall locate all plant material under the direction of the City Engineer or authorized representative prior to planting hole excavation.
3. The City Engineer or authorized representative reserves the right to make substitutions, additions, and deletions to the planting layout as work progresses.
4. All groundcover shall be triangularly spaced unless otherwise noted.
5. Contractor shall install a 3" layer of 'Stringy Cedar Bark' mulch in all planting areas.