

**JURUPA COMMUNITY SERVICES DISTRICT
RIVERSIDE, CALIFORNIA**

ADDENDUM NO. 3

**TO THE PLANS AND SPECIFICATIONS FOR
WELL NO. 6 RETROFIT AND SITE IMPROVEMENTS AND
WELL 14 AND 15 PUMP-TO-WASTE SYSTEM [D.P.N. 3359]**

Bidders are advised that the plans and specifications for the above referenced contract are hereby amended in the following manner and the following manner only:

A. GENERAL

1. All provisions of this Addendum No. 3 are hereby incorporated into the Contract Documents and bidders shall account for all provisions pursuant to this Addendum No. 3 in submitting their bid proposals. **EACH BIDDER SHALL INCLUDE A DATED AND SIGNED COPY OF THIS ADDENDUM NO. 3 WITH HIS SEALED BID PROPOSAL.**

B. SPECIFICATIONS

1. Delete Section 16620 entitled "Packaged Diesel Engine Standby Generator" in its entirety and replace with the revised Section 16620 per Attachment "A".



By: *Sinnaro Yos* 8/3/10
Sinnaro Yos date
P. E. 68607

By: _____
(Bidder's Company Name)

Date Received by Bidder:

(Bidder's Signature)

(Type or Print Name)

**BIDDER SHALL INCLUDE A SIGNED COPY OF THIS
ADDENDUM NO. 3 WITH THE BID PROPOSAL.**

Attachment “A”
Revised Section 16620 entitled
“Packaged Diesel Engine Standby Generator”

SECTION 16620

PACKAGED ENGINE GENERATOR SYSTEM

PART 1 - GENERAL

1.01 WORK INCLUDED

- A. This specification outlines the furnishing a complete and operable emergency stand-by diesel generator set with weatherproof enclosure, skid mount fuel tank, optional equipment as specified, and spare parts.
- B. The manufacturer shall have available prototype test results for the assembled engine-generator set. Individual component tests for the major components are not acceptable as a substitute for prototype testing of the complete and assembled engine generator set. All the equipment shall be new, and of current design and shall be constructed in accordance with the applicable requirements of the IEEE, NEMA, UL, ISO, NEC and ANSI standards.
- C. Equipment and materials shall be new and delivered to the job site factory-tested and ready for installation. The work includes the following:
 - 1. Furnish and install engine-generator set with mounted and loose accessories as described herein and shown on the drawings.
 - 2. Furnish tests, documents, spare parts source list and services as specified.
 - 3. Furnish fuel, oil, and antifreeze for testing and provide final fuel fill up after testing has been completed.
- D. The engine generator shall be equipped with the necessary devices to meet current AQMD regulations for the operation of a standby diesel generator. Contractor shall obtain a general permit registration number to submit application, pay for, and obtain a AQMD permit to construct and operate the standby generator.

1.02 SUBMITTAL

- A. Equipment as described herein is that as manufactured by Caterpillar. Equipment shall be equivalent to that specified herein for ratings, operation, and function.
- B. Provide the following submittal and shop drawing information for review. Any deviation from the specifications shall be noted on the transmittal letters indicating reasons for them.
 - 1. Outline drawing for engine generator showing overall dimensions, power and control wiring entrance locations, fuel connections, anchor

points, weight, breaker location and control panel.

2. Manufacturer data sheets for major components including engine, generator, protective controls, voltage regulator, fuel tank, batteries, charger, exhaust components, jacket water heater, circuit breakers and control panel.
 3. AC and DC wiring diagrams.
 4. Vibration isolation certified calculations for Zone 4 installations.
 5. Warranty and Prototype test documents.
 6. General Permit Registration for "pre-permitting" engine generator with SCAQMD.
 7. Specification review noting compliance.
- C. Furnish, at time of start up, two (2) Operating and Maintenance Manuals in three ring notebooks containing graphic diagrams, equipment data, spare parts lists, spare parts source, maintenance instructions and operator and service instructions.

1.03 APPLICABLE DOCUMENTS

- A. The following documents shall apply to the specified equipment.
1. IEEE 587 Surge Testing
 2. NEMA MG1 Motors and Generators
 3. NFPA 37 Installation and Use
 4. UL 142 Fuel Tanks

PART 2 - MATERIALS

2.01 ACCEPTABLE MANUFACTURERS

- A. Subject to compliance with requirements, provide diesel generator, documents, tests, and services by Caterpillar or approved equal.
- B. Engage the services of an authorized manufacturer's distributor capable of providing equipment as specified, maintaining parts inventory; performing initial start-up, warranty and 24 hour emergency service.
- C. Warranty for all products against defects in material and workmanship for a period of 1 year from the date of start up. Warranty coverage shall include parts, labor, travel expenses, and labor to remove/re-install equipment. Engage

supplier capable of administering the warranty service on all components of the emergency system specified herein.

2.02 RATINGS

- A. The generator set shall be diesel powered, 1800 RPM, 0.86 power factor, 480VAC, three phase, four wire, 60 hertz, with minimum rating for continuous standby operation at 450KW (site rated for 560KVA). This shall including radiator fan and all parasitic loads.
- B. The generator set shall be capable of picking up 100% load in one step in accordance with NFPA Standard 110.
- C. 450KW Generator set shall be capable of starting the following loads with a 20% maximum voltage dip:
 - Step 1: (1) 37.5KVA Transformer with Loadcenter
 - Step 2: (1) 300 Hp Well pump (RVNR – soft starter).

2.03 ENGINE AND EQUIPMENT

- A. Engine shall be four cycle, powered by #2 diesel., water cooled and turbocharged/aftercooled as required.
- B. Positive displacement, full pressure, lubrication oil pump. Full flow lubrication oil filters with replaceable spin-on canister elements and dipstick.
- C. Engine driven positive displacement fuel pump. Fuel filter with replaceable spin-on canister element.' Replaceable dry element air cleaner with restriction indicator.
- D. Engine mounted battery charging alternator, 45 ampere minimum, and solid-state voltage regulator.
- E. Jacket water heater, 2500 watts, 240 volt AC.
- F. Electronic governor with adjustable control. Frequency regulation shall be isochronous under varying loads from no load to full load. Frequency variation shall be ± 0.25 percent of rated speed.
- G. Provide engine mounted radiator including belt-driven pusher fan, water pump and thermostat. Cooling system shall be rated for full rated load operation in 122 degree f ambient conditions. Guard rotating parts against accidental contact.
- H. The engine and generator shall be mounted on a heavy duty steel base with a battery tray with battery hold-down clamps within the base. Electrical and fuel stub up shall be within the base rails.

2.04 ENGINE STARTING

- A. Electric starter.
- B. Control cranking with three crank attempts with rest periods, 75 second minimum. Lock out controls after third attempt.
- C. Battery, 24 VDC, 100AH, lead acid type. Batteries shall provide sufficient capacity to provide 100 seconds cranking. Provide insulated stranded copper conductors to connect batteries to generator starter.
- D. Battery charger, 120 VAC, 10 amp 24 VDC, voltage regulated mounted in generator enclosure. Equip with adjustable float and manual equalize charge settings, and DC voltmeter and ammeter. Provide contact and wiring for indication of low battery voltage on control panel. Charger voltage regulator shall be temperature compensated to prevent thermal damage to batteries.

2.05 GENERATOR

- A. The generator shall be single bearing, four pole, two-thirds pitch, dripproof, and air cooled. The rotor shall have amortisseur windings and be dynamically balanced.
- B. THD shall not exceed 5% of rated voltage at full load and no single harmonic shall exceed 3% of rated voltage at full load.
- C. The exciter shall be brushless, three phase, with full wave silicon diodes, surge suppressor and exciter circuit breaker.
- D. Provide permanent magnet generator (PMG) for isolation and sustained 300% short circuit current for 10 seconds. Electronic current boost methods or CT boost methods are not acceptable.
- E. The insulation system for rotor, stator, exciter and PMG Shall be Class H. Temperature rise at full load shall not exceed 125C at rated KW.
- F. The voltage regulator shall be 3 phase RMS sensing, temperature compensated, pulse width modulated and $\pm 0.5\%$ regulation with overvoltage and over excitation protection. Over voltage protection shall shut down regulator output on a sustained over voltage of one (1) second; over excitation protection shall shutdown regulator output if overloads exceed ten (10) seconds. The regulator shall allow frequency output to decline to 58-59 Hz before correcting the output voltage. The regulator shall allow frequency to decline to 58 Hz before correcting the output voltage in a linear volts/hertz manner. Shield generator, exciter and regulator to prevent radio frequency interference per provisions of BS 800 and VDE Class G and N.

2.06 GENERATOR CONTROL

- A. Provide NEMA 1 enclosed control panel mounted on the generator with vibration isolators. Solid state components shall have surge suppression for protection. Provide panel lighting with ON/OFF switch. Indicating meters (2%) and devices shall include:
1. AC ammeter
 2. AC voltmeter
 3. Frequency meter
 4. Phase selector switch with OFF position for meter display of current and voltage in each generator phase.
 5. Voltage adjustment "5%
 6. Running time meter
 7. Oil pressure gauge
 8. Water temperature gauge
 9. DC voltmeter
- B. Controls shall shut down and lock out the engine upon:
1. Overcrank
 2. Overspeed
 3. Low oil pressure
 4. High engine temperature/low coolant level
- C. Provide DC powered engine monitor with the following lights on the control panel:
1. *Run green
 2. Low oil pressure (prealarm) amber
 3. High engine temp (prealarm) amber
 4. Low engine temp (prealarm) amber
 5. *Low fuel (prealarm) amber
 6. *Fuel leak (alarm) red

- | | | | | |
|-----|----------------------|------------|-----|------------|
| 7. | Low oil pressure | (shutdown) | red | |
| 8. | High engine temp | (shutdown) | red | |
| 9. | Overcrank | (shutdown) | red | |
| 10. | Overspeed | (shutdown) | red | |
| 11. | *Not in Automatic | (flashing) | red | (flashing) |
| 12. | *Generator fail | | red | |
| 13. | *Low battery voltage | | | |

- D. Operation of shut down circuits shall be independent of pre-alarm circuits. Panel mounted switches shall reset the engine monitor and test all the lamps. Provide individual signals for each indication for connection to RTU. A dry contact for each alarm indicated by * shall be included for SCADA system.
- E. Provide three position panel mounted switch (RUN-STOP-AUTO) to stop the engine in the STOP position, start and run the engine in the RUN position, and allow the engine to start and run by closing a remote contact, and stop by opening the remote contact when in the AUTO position.
- F. Provide cranking cycle function, consisting of three crank attempts followed by rest periods. Failure to start after three attempts (75 seconds), shall shut down and lockout engine. Two means of cranking termination after engine start shall be provided, one as a backup to the other.
- G. Provide distribution circuit breaker as shown on drawings. Breaker shall be U.L. listed molded case, with overload and over current trip.

2.07 FUEL TANK

- A. Provide 24 hours sub-base fuel tank with electrical stub up area for cable entry. Tank shall be double wall and include level gauge, low level contacts wired to control panel, rupture basin alarm contacts wired to control panel, basin drain, all fuel lines, fill cap, drain valve, vents, UL label and other necessary items. Fuel capacity shall be based on operation at full load.

2.08 HOUSING

- A. House generator in a factory furnished outdoor weatherproof sound attenuated enclosure, with 14 gauge, and hinged control panel door. Provide shield to prevent water from entering through exhaust penetration. Paint shall be electro deposition. Provide restrained spring isolators for skid.

All housing doors on generator shall be equipped with push pin type door switches. Door switches shall have contacts rated for 5A at 24VDC. Door switches shall have normally closed contact that shall be held open with door

closed pushing in on switch. Provide terminal block and connect switches in parallel to form a one single alarm circuit.

Housing shall be furnished with hot dipped galvanized steel, 36" wide, working platform, hand rail, and stairs designed to support 1000lb loading minimum. Platform height to be determined by furnished generator model. Working platform shall be installed in front of the control panel and main circuit breaker location(s). Height of the platform shall be such that installed, it doesn't prevent any of the generators exterior housing doors from fully opening, and the maximum height to breaker of top of control panel does not exceed 5ft. from top of platform. Provide structural and anchorage design plans certified by Licensed CA Structural Engineer

2.09 EXHAUST SILENCER

- A. Provide critical hospital grade silencer; mounted so the weight is not supported by the engine. Size to assure full load operation without excessive back pressure. Make provisions as required for pipe expansion and contraction. Provide the following:
 - 1. Stainless steel flexible connection between the engine and exhaust line.
 - 2. Condensation drain with manual valve to prevent water from entering the engine.
 - 3. Rain cap.

2.10 PRODUCTION TESTS

- A. Provide certified factory production tests on the equipment performed at rated load and 0.8 PF. Tests shall include :
 - 1. Steady-state voltage and frequency analysis
 - 2. Rated load at rated PF
 - 3. Maximum power analysis

PART 3 – EXECUTION

3.01 EXAMINATION

- A. Verify that genset equipment is ready to be connected and energized.

3.02 PREPARATION

- A. Make arrangements with District and Engineer 48 hours in advance to witness start-up test.
- B. Coordinate location of Contractor's facilities to ensure proper access is

available and space for loadbank is prepared.

- C. Check existing service transformer voltage readings and phase rotation and coordinate with genset.

3.03 INSTALLATION

- A. Installation of all genset equipment specified herein shall be in accordance with all applicable codes, standards, and practices.
- B. Installation of all genset equipment specified herein shall be in accordance with the recommendations of the manufacturer.

END OF SECTION