

# CITY OF TEHACHAPI

## REQUEST FOR QUOTATION

(RFQ No. 2020-001)

for

**Mobile Diesel Generator Sets**



**City of Tehachapi  
115 S. Robinson St  
Tehachapi, CA 93561**

Contact Person: Don Marsh  
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### ATTACHMENTS

EXHIBIT A - RFQ RESPONSE PACKET

EXHIBIT B – TECHNICAL SPECIFICATIONS

**I. STATEMENT OF WORK**

**A. SCOPE**

The City of Tehachapi, Public Works Department intends to purchase multiple trailer mounted mobile diesel generator sets. The generator sets will be used to support critical water and wastewater operations when a backup power source is needed.

It is the intent of these specifications, terms, and conditions to describe the purchase and delivery of the mobile diesel generator sets.

The City of Tehachapi intends to award a contract to the lowest cost bidder(s) whose response meets the City's requirements.

**B. BIDDER QUALIFICATIONS**

**1. Bidder Minimum Qualifications**

- a. Power system manufacturer shall have been regularly engaged in the business of manufacturing power systems for at least 10 years.
- b. Bidder shall possess all permits, licenses, and professional credentials necessary to supply product and perform services as specified under this RFQ.

**C. SPECIFIC REQUIREMENTS**

1. Furnish trailer mounted, towable, diesel driven generator sets with all associated accessories as described in the Technical Specifications. The City may purchase multiple units of each size generator or only one of the two sizes proposed depending on pricing and available budget.
2. All products shall be in new and unused condition and shall be of the most current and up to date model.
3. Delivery – Refer to Exhibit B for delivery requirements.

**D. DELIVERABLES**

Prior to shipment of generator sets, Supplier shall provide submittals for City review and approval. Required submittals are specified in Exhibit B.

E. FAILURE TO MEET SPECIFICATIONS

In the event any shipment or shipments of a Supplier’s product do not meet the specification or delivery requirements, the City may reject the shipment or shipments and, at its option, may purchase this equipment from any supplier on the open market who can meet the City’s specification requirements or the City may demand immediate replacement by Supplier of the non-conforming product. Any costs over and above the original contract price will be charged back to the Supplier. In addition, Supplier shall bear the costs of removal and disposition for any delivery which fails to conform to the specifications.

II. CALENDAR OF EVENTS

EVENT	DATE/LOCATION
RFQ Issued	May 18, 2020
Deadline For Submission of Questions	June 5, 2020
Response Due	June 10, 2020 by 1:30 p.m.
Anticipated Contract Start Date	July 6, 2020

Note: All dates are subject to change.

III. CITY PROCEDURES, TERMS, AND CONDITIONS

A. RFQ ACCEPTANCE AND AWARD

1. RFQ responses will be evaluated to determine that they are responsive, responsible, and that they meet the specifications as stated in this RFQ.
2. The City reserves the right to award to a single or to multiple Suppliers, dependent upon what provides the lowest overall cost to the City.
3. The City has the right to decline to award this contract or any part of it for any reason.
4. The City may award any combination of units proposed depending on bidders response, pricing and available budget.
5. Any specifications, terms or conditions, issued by the City, or those included in the bidder’s submission, in relation to this RFQ, may be incorporated into any purchase order or contract that may be awarded as a result of this RFQ.
6. Award of contract. The City reserves the right to reject any or all proposals, to accept one part of a proposal and reject the other, unless the bidder stipulates to the contrary, and to waive minor technical defects and administrative errors, as the interest of the City may require. Award will be made or proposals rejected by the City as soon as possible after bids have been opened.

B. BRAND NAMES, APPROVED EQUIVALENTS, DEVIATIONS, AND EXCEPTIONS

Any references to manufacturers, trade names, brand names, and/or catalog numbers are intended to be descriptive, but not restrictive, unless otherwise stated, and are intended to indicate the quality level desired. Bidders may offer an equivalent product that meets or exceeds the specifications.

The City reserves the right to be the sole judge of what shall be considered equal and/or acceptable and may require the bidder to provide additional information and/or samples. If the bidder does not specify otherwise, it is understood that the brand and/or product referenced in this RFQ will be supplied.

**Taking exception to the RFQ, or failure on the part of the bidder to comply with all requirements and conditions of this RFQ, may subject the RFQ response to rejection. If no deviations are shown, the bidder will be required to furnish the material exactly as specified. The burden of proof of compliance with the specifications will be the responsibility of the bidder.**

This RFQ is subject to acceptance only on the terms and conditions stated in this RFQ. Any additional or different terms and conditions proposed by the bidder are hereby rejected, and shall be of no force or effect unless expressly assented to in writing by the City.

RFQ responses based on equivalent products must use Exhibit A “Exceptions, Clarification and Amendments” to:

- a. Clearly describe the alternate offered and indicate specifically how it differs from the product specified in this RFQ
- b. Include complete descriptive literature and/or specifications as proof that the proposed alternate will be equal to or better than the product named in this RFQ

C. PRICING

1. All prices are to be F.O.B. destination. Any freight/delivery charges are to be included.
2. All prices quoted shall be in United States dollars.
3. Price quotes shall include any and all payment incentives available to the City.

D. METHOD OF ORDERING

1. Written POs may be issued upon approval of written itemized quotations received from the Supplier.
2. Individual order price quotations shall be provided upon request per project and shall include, but not be limited to, an identifying (quotation) number, date, requestor name and phone number, ship to location, itemization of products and/or services with complete description (including model numbers, fabric and finish grade, description, color, etc.) and price per item, and a summary of total cost for product,

services, shipping, and tax. POs and payments for products and/or services will be issued only in the name of Supplier.

3. Any and all change orders shall be in writing and agreed upon, in advance, by Supplier and the City.

E. TERM / TERMINATION / RENEWAL

1. This Agreement may be terminated for convenience by the City provided the Supplier is given written notice of not less than 30 calendar days. Upon such termination, the City shall pay the Supplier the amount owing for the products ordered and satisfactorily received by the City. This shall be the sole and exclusive remedy to which the Supplier is properly entitled in the event of termination by the City.
2. This Agreement may be terminated for cause at any time, provided that the City notifies Supplier of impending action.

F. WARRANTY

1. Bidder expressly warrants that all goods and services to be furnished pursuant to any contract awarded it arising from the Bid will conform to the descriptions and specifications contained herein and in supplier catalogs, product brochures and other representations, depictions or models, and will be free from defects, of merchantable quality, good material, and workmanship. Bidder expressly warrants that all goods and services to be furnished pursuant to such award will be fit and sufficient for the purpose(s) intended. This warranty shall survive any inspections, delivery, acceptance, payment, or contract termination for any reason, by the City. Bidder warrants that all work and services furnished hereunder shall be guaranteed for a period of 2 years from the date of acceptance by the City.

G. INVOICING

1. Payment will be made within thirty (30) days following receipt of a correct invoice and upon complete satisfactory receipt of product(s).
2. The City shall notify Supplier of any invoice adjustments required.
3. The City will pay Supplier in an amount not to exceed the total amount quoted in the RFQ response.

#### **IV. RFQ RESPONSE SUBMITTAL INSTRUCTIONS AND INFORMATION**

##### **A. CITY OF TEHACHAPI CONTACTS**

All contact during the competitive bidding process is to be through the contact listed below.

Don Marsh  
E-Mail: [DMarsh@tehachapipw.com](mailto:DMarsh@tehachapipw.com)  
PHONE: (661)822-2200, ext. 509

##### **B. SUBMITTAL OF RFQ RESPONSE**

1. Responses must be submitted in accordance with Exhibit A – RFQ Response Packet, including all additional documentation stated in the “Required Documentation and Submittals” section of Exhibit A.
2. Late and/or unsealed responses will not be accepted.
3. RFQ responses submitted via electronic transmissions will not be accepted. Electronic transmissions include faxed RFQ responses or those sent by electronic mail (“e-mail”).
4. RFQ responses will be received only at the address shown below and must be received by 1:30 p.m. on the due date specified in the Calendar of Events. Any RFQ response received after that time or date, or at a place other than the stated address/email address cannot be considered and will be returned to the bidder unopened. All RFQ responses must be received and time stamped at the stated address by the time designated.
5. RFQ responses Mailed, Hand Delivered or delivered by courier or package delivery service shall be addressed as follows:

Don Marsh  
City of Tehachapi  
Mobile Diesel Generator Set RFQ No. 2020-001  
115 S. Robinson St.  
Tehachapi, CA 93561

**Bidder's name and return address, must also appear on the mailing package.**

6. All costs required for the preparation and submission of an RFQ response shall be borne by the bidder.
7. The RFQ response shall remain open to acceptance and is irrevocable for a period of one hundred eighty (180) days, unless otherwise specified in the RFQ documents.
8. It is understood that the City reserves the right to reject any or all RFQ responses.

**EXHIBIT A**  
**RFQ RESPONSE PACKET**  
**RFQ No. 2020-001**  
**Two Mobile Diesel Generator Sets**

To: The City of Tehachapi (“City”)

From: \_ (Official Name of Bidder)

**RFQ RESPONSE PACKET GUIDELINES**

- BIDDERS ARE TO SUBMIT ONE (1) ORIGINAL HARDCOPY or EMAIL RFQ RESPONSE WITH THE FOLLOWING, IN THEIR ENTIRETY:**
  - EXHIBIT A – RFQ RESPONSE PACKET**
    - INCLUDING ALL REQUIRED DOCUMENTATION AS DESCRIBED IN “EXHIBIT A-REQUIRED DOCUMENTATION AND SUBMITTALS”**
- BIDDERS THAT DO NOT COMPLY WITH THE REQUIREMENTS, AND/OR SUBMIT AN INCOMPLETE RFQ RESPONSE MAY BE SUBJECT TO DISQUALIFICATION AND THEIR RFQ RESPONSE REJECTED IN TOTAL.**
- IF BIDDERS ARE MAKING ANY CLARIFICATIONS AND/OR AMENDMENTS, OR TAKING EXCEPTION TO ANY PART OF THIS RFQ, THESE MUST BE SUBMITTED IN THE EXCEPTIONS, CLARIFICATIONS, AND AMENDMENTS SECTION OF THIS EXHIBIT A – RFQ RESPONSE PACKET. THE CITY, AT ITS SOLE DISCRETION, MAY ACCEPT AMENDMENTS/EXCEPTIONS, OR MAY DEEM THEM TO BE UNACCEPTABLE, THEREBY RENDERING THE RFQ RESPONSE DISQUALIFIED.**
- BIDDERS SHALL NOT MODIFY CITY LANGUAGE IN ANY PART OF THIS RFQ OR ITS EXHIBITS, NOR SHALL THEY QUALIFY THEIR RFQ RESPONSE.**



**BIDDER INFORMATION AND ACCEPTANCE**

1. The undersigned declares that all RFQ documents, including, without limitation, the RFQ, Addenda, and Exhibits, have been read and that the terms, conditions, certifications, and requirements are agreed to.
2. The undersigned is authorized to offer, and agrees to furnish, the products and services specified in accordance with the RFQ documents.
3. The undersigned acknowledges acceptance of all addenda related to this RFQ.
4. The undersigned hereby certifies to the City that all representations, certifications, and statements made by the bidder, as set forth in this RFQ Response Packet and attachments, are true and correct and are made under penalty of perjury pursuant to the laws of California.
5. The undersigned acknowledges that the bidder is, and will be, in good standing in the State of California, with all the necessary licenses, permits, certifications, approvals, and authorizations necessary to perform all obligations in connection with this RFQ and associated RFQ documents.
6. It is the responsibility of each bidder to be familiar with all of the specifications, terms, and conditions and, if applicable, the site condition. By the submission of an RFQ response, the bidder certifies that if awarded a contract it will make no claim against the City based upon ignorance of conditions or misunderstanding of the specifications.

Official Name of Bidder: \_\_\_\_\_

Name / Title: \_\_\_\_\_

Telephone Number: \_\_\_\_\_

E-mail Address: \_\_\_\_\_

Street Address: \_\_\_\_\_

City: \_\_\_\_\_ State: \_\_\_\_\_ Zip Code: \_\_\_\_\_

**SIGNATURE:** \_\_\_\_\_

Name and Title of Signer (printed): \_\_\_\_\_

Date \_\_\_\_\_

**BID FORM**

Cost shall be submitted on this Bid Form as is. The prices quoted shall not include Sales Tax or Use Tax; said tax, wherever applicable, will be paid by the City to the Supplier, if licensed to collect, or otherwise directly to the State.

No alterations or changes of any kind to the Bid Form(s) are permitted. RFQ responses that do not comply may be subject to rejection in total. The cost quoted below shall be the cost the City will pay for the term of any contract that is a result of this RFQ process.

Description	Unit of Measure	Unit Cost	Extended Cost
Material and delivery of One (1) 250 KW mobile diesel generator set, including related accessories, spare parts, and field services per this RFQ and specifications.	Lump Sum	\$	\$
Material and delivery of One (1) 50 KW mobile diesel generator set, including related accessories, spare parts, and field services per this RFQ and specifications.	Lump Sum	\$	\$
**The City may purchase multiple units of each size generator or only one of the two sizes proposed depending on bidders response, pricing and available budget.			

## REQUIRED DOCUMENTATION AND SUBMITTALS

All the specific documentation listed below is required to be submitted with the Exhibit A – RFQ Response Packet. Bidders shall submit all documentation, in the order listed below, and clearly label each section of the RFQ response with the appropriate title (i.e. Table of Contents, Letter of Transmittal, Key Personnel, etc.).

1. **Description of the Proposed Equipment/System:** RFQ response shall include a description of the proposed equipment, as it will be finally configured during the term of the contract. The description shall specify how the proposed equipment will meet or exceed the requirements of the City and shall explain any advantages that this proposed equipment would have over other possible equipment. The description shall include any disadvantages or limitations that the City should be aware of in evaluating the RFQ response. Finally, the description shall describe all product warranties provided by bidder.
2. **Delivery Schedule:** The RFQ response shall include a delivery schedule.
3. **Exceptions, Clarifications, Amendments:**
  - (a) The RFQ response shall include a separate section calling out all clarifications, exceptions, and amendments, if any, to the RFQ and associated RFQ documents, which shall be submitted with Bidder’s RFQ response using the template in the “Exceptions, Clarifications, Amendments” section of this Exhibit A – RFQ Response Packet.
  - (b) **THE CITY IS UNDER NO OBLIGATION TO ACCEPT ANY EXCEPTIONS, AND SUCH EXCEPTIONS MAY BE A BASIS FOR RFQ RESPONSE DISQUALIFICATION.**

**EXCEPTIONS, CLARIFICATIONS, AMENDMENTS**

**RFQ No. 2020-001**

**Two Mobile Diesel Generator Sets**

**Bidder Name:** \_\_\_\_\_

List below requests for clarifications, exceptions, and amendments, if any, to the RFQ and associated RFQ Documents, and submit with bidder’s RFQ response. **The City is under no obligation to accept any exceptions and such exceptions may be a basis for RFQ response disqualification.**

Reference to:			Description
Page No.	Section	Item No.	
p. 23	D	1.c.	<i>Bidder takes exception to...</i>

\*Print additional pages as necessary

# EXHIBIT B

## TECHNICAL SPECIFICATIONS

### RFQ No. 2020-001

### Mobile Diesel Generator Sets

#### 1.1 DESCRIPTION

- A. Furnish mobile diesel engine electrical generator set systems meeting the latest available CARB certification standard for the particular horsepower range. Each system shall include trailer-mounted diesel engine generator units, control panels, parallel function (or standalone paralleling control panel), low voltage distribution circuit breakers, panelboards, generator starting batteries and battery chargers, sound attenuation weather-proof outdoor enclosure, wiring and conduit, cooling and ventilation equipment, exhaust components, and appurtenances as specified herein.
- B. Provide training to operate and maintain, and startup of the mobile electrical generator and all associated equipment.

#### 1.2 DEFINITIONS

- A. CITY shall be the City of Tehachapi.
- B. SUPPLIER shall be defined as the authorized agent, dealer, or distributor of the diesel engine electrical generator system manufacturer. The SUPPLIER is the successful bidder under this proposal.

#### 1.3 JOB CONDITIONS

- A. The operating environment of the mobile diesel engine electrical generator sets and the generator set enclosures shall be:
  - 1. Altitude: Approximately 4,000 feet above Mean Sea Level.
  - 2. Outside temperature, maximum: 120 degrees F.
  - 3. Outside temperature, minimum: 0 degrees F.
  - 4. Exposure: Outdoors, uncovered.
- B. Operating hours: Standby-duty, 24 continuous hours per day, 7 days a week.

#### 1.4 REFERENCES

- A. US EPA Nonroad Tier 4 Final Regulations.
- B. California Code of Regulations:
  - 1. Title 17, §93115 - Airborne Toxic Control Measures for Stationary CI Engines.
  - 2. Title 24, Part 3 – California Electrical Code (CEC)
- C. Institute of Electrical and Electronics Engineers (IEEE):
  - 1. IEEE 446 - Recommended Practice for Emergency and Standby Power Systems for Commercial and Industrial Applications.
- D. International Electrotechnical Commission (IEC):
  - 1. IEC 8528 part 4, Control Systems for Generator Sets.
  - 2. IEC 61000-2 and 61000-3 for susceptibility, 61000-6 radiated and conducted electromagnetic emissions.
- E. National Electrical Manufacturers Association (NEMA) Publications:
  - 1. MG 1 Motors and Generators.
- F. National Fire Protection Association (NFPA):
  - 1. NFPA 70 – National Electrical Code
  - 2. NFPA 110 – Standard for Emergency and Standby Power Systems.
- G. Underwriters Laboratories (UL):
  - 1. UL 2201 – Standard for Carbon Monoxide (CO) Emission Rate of Portable Generators.

#### 1.5 QUALITY ASSURANCE

- A. The engines, generators, and all major items of auxiliary equipment shall be manufactured in the U.S. by manufacturers currently engaged in the production of such equipment. The units shall be factory assembled and tested by the engine manufacturer and may be shipped to the local certified dealer facility where parts and services are performed. The performance of the mobile diesel engine generators and all associated equipment shall be certified by manufacturer as functional and to the full power rating stability, and the voltage and frequency regulation.
- B. The mobile diesel engine generators and all associated equipment and software offered under these Contract Documents shall be covered by the manufacturer's standard warranty for parts and labor for a minimum of two (2) years.
- C. Before the equipment is shipped to the certified dealer facility, an unwitnessed factory certified test log of each generator set and all associated equipment showing a minimum of  $\frac{3}{4}$  hour testing with a  $\frac{1}{2}$  hour at 100 percent rated load, continuously, shall be submitted to the CITY. Any defects which become evident during this test shall be corrected by the SUPPLIER at his own expense.

- D. The power system shall be produced by a manufacturer who has produced this type of equipment for a period of at least 10 years and the SUPPLIER shall have at least 10 years of experience in the sales and service of the equipment specified herein.
- E. All equipment and products specified herein shall be the responsibility of one SUPPLIER with factory-trained and certified service personnel.
- F. Equipment furnished shall meet the requirements of the California Electrical Code (CEC) and all applicable local codes and regulations.
- G. Equipment shall be fully assembled and shop tested at the manufacturing facility prior to shipment.

## 1.6 SUBMITTALS

- A. Submittals for approval shall be made in accordance with this specification.
- B. Submit the product data of the complete and assembled system specified herein.
- C. Submitted data shall be fully sufficient in detail for determination of compliance with the provisions and intent of this Proposal, and for coordination of all connections for installation by others.
  - 1. Air emission compliance certification including, but not limited to:
    - a. Manufacturer data on air emissions
    - b. Stack height and diameter
- D. Complete O&M Manual.
- E. Factory Test Report: Submit unwitnessed factory test report prior to shipping to the local certified dealer facility or service center for witness factory test.
- F. Within 10 days of contract award, provide submittals including the following:
  - 1. Model number of the two (2) mobile diesel engine generators and all associated equipment, including standalone paralleling control panels.
  - 2. Component List - A breakdown of all components and options, including quantity, description, manufacturer, and model number.
  - 3. Technical Data - Manufacturer produced specifications or data sheets for all mobile diesel engine generator supplied, including the following tabular data:
    - a. Engine type, aspiration, compression ratio, and combustion cycle, bore, stroke, displacement, and number of cylinders.
    - b. Power rating at 0.8 power factor with and without fan.
    - c. Engine lubricating oil capacity.
    - d. Engine coolant capacity without radiator.
    - e. Engine coolant capacity with radiator.

- f. Coolant pump external resistance (maximum).
- g. Coolant pump flow at maximum resistance.
- h. Fuel consumption: 50, 75, and 100 percent standby load (gallons per hour).
- i. Maximum continuous duty horsepower with fan.
- j. Total operating weight including all coolant, engine oil, fuel, diesel exhaust fluid, and all other material necessary for operation.
- k. Diesel Exhaust Fluid (DEF) tank volume
- l. DEF consumption: 50, 75, and 100 percent standby load (gallons per hour).
- m. Generator:
  - 1) Ratings, prime and standby power kW.
  - 2) Line to Line Voltage.
  - 3) Phases.
  - 4) Connections.
  - 5) Parallel function.
  - 6) Frame number.
  - 7) Insulation class.
  - 8) Number of leads.
  - 9) Total weight.
  - 10) Rotor weight.
  - 11) Air flow required.
  - 12) Fuel to line and generator efficiency at 0.8 power factor for 25, 50, 75, and 100 percent load.
  - 13) Time constants, short circuit transient (T'D).
  - 14) Time constants, armature short circuit (TA).
  - 15) Reactance, subtransient - direct axis (X''D).
  - 16) Reactance, transient - saturated (X'D).
  - 17) Reactance, synchronous - direct axis (XD).
  - 18) Reactance, negative sequence (X2).
  - 19) Reactance, zero sequence (X0).
  - 20) Reactance, fault current, 3 phase symmetrical.
- n. Radiator:
  - 1) Fan drive ratio.
  - 2) Fan power.
  - 3) Air flow and maximum external pressure differential.
  - 4) Radiator coolant capacity and protection level in degrees F.
- o. Engine-generator Set:
  - 1) Dimensions: Length, width, height, access clearances.
  - 2) Sound level.
  - 3) Total weight.



- p. Exhaust silencer:
  - 1) Dimensions: Length, width, height.
  - 2) Weight (pounds).
  - 3) Inlet and outlet sizes (inches).
  - 4) Attenuation (db vs. frequency).
  - 5) Pressure loss.
  
- q. Sound-attenuating weatherproof enclosure:
  - 1) Dimensions: Length, width, height.
  - 2) Weight (pounds).
  - 3) Insulation material, thickness, flame rating
  - 4) Attenuation (db vs. frequency).
  - 5) Nominal (free-field) exterior sound level at 23 feet.
  - 6) Configuration and size of: access doors; control panels; fluid connections, fill ports, and drains; electrical connections; air inlet and discharge; exhaust discharge.
  - 7) Mounting details.
  
- r. Trailer:
  - 1) Dimensions: Length, width, height.
  - 2) Gross Vehicle Weight Rating (GVWR) (pounds).
  - 3) Hitch mount type
  - 4) Brake type
  - 5) Electrical connector type.
  
- s. Fuel Tank:
  - 1) Dimensions: Length, width, height.
  - 2) Materials of construction.
  - 3) Size (Gallons).
  - 4) Double wall containment volume (Gallons).
  
- t. Lube oil sump capacity
  
- u. Vibration Isolators:
  - 1) Load ratings.
  - 2) Dimensions: Length, width, height.
  
- v. High Temperature Insulation Blankets:
  - 1) Materials of construction and dimension details.
  - 2) R-factor and personnel protection capability; touch temperature.
  
- w. Generator Distribution Circuit Breakers and Control Panels:
  - 1) Distribution Circuit Breakers Rated Maximum Voltage.
  - 2) Distribution Circuit Breakers Operating Voltage.

- 3) Distribution Circuit Breaker Continuous current and short circuit ratings.
  - 4) Distribution circuit breaker types.
  - 5) Current transformer type, ratings, and accuracy.
  - 6) Potential transformer type, ratings, and accuracy.
  - 7) Control power transformer type and capacity.
  - 8) Internal control wiring conductor and insulation information.
  - 9) Instruments, human machine interface (HMI) display, meters, protective relays, circuit breaker control switches, alarms and indicating lights.
  - 10) Genset parallel ready and status connections.
  - 11) Terminal blocks.
  - 12) Nameplates.
  - 13) Enclosure NEMA rating and materials type.
- x. Camlock Distribution Panel:
- 1) The mobile generator shall have Camlock connector type for load connection, paralleling connection, and loadbank connection.
  - 2) Camlock connectors model number, dimension, rating, and colors.
- y. Starting Batteries:
- 1) Type.
  - 2) Dimensions.
  - 3) Weight.
  - 4) Volume.
  - 5) Number of plates.
  - 6) Ratings.
  - 7) Battery sizing calculations.
  - 8) Battery container information.
- z. Battery Charger:
- 1) Nominal voltage and current ratings.
  - 2) Adjustable float and equalize voltages.
  - 3) Recommended float voltages.
  - 4) Voltage regulation.
  - 5) Input voltage.
  - 6) Weight.
  - 7) Dimensions.
  - 8) Ambient temperature ratings.
  - 9) Enclosure NEMA rating.
- aa. Distribution panelboard and circuit breakers.
- bb. Light fixtures, switches, and convenience receptacles.

- cc. Nameplates.
  
  - 4. Certification that the engine generator meets the specified CARB/EPA emissions standards.
  - 5. Complete specifications, outline dimensional drawings, and descriptive literature.
  - 6. General assembly drawings.
  - 7. Front, side, and section views.
  - 8. Three-line and control schematic (elementary) diagrams in ladder type format for the entire system.
  - 9. Complete schematic, wiring, and interconnection diagrams showing all terminal and destination markings for all equipment, as well as the functional relationship between all electrical components.
  - 10. Factory and certified dealer facility test procedures.
  - 11. Warranty Statements: Warranty verification published by the manufacturers of the components and the generator and parallel enclosure manufacturer.
  - 12. Written certification from the SUPPLIER that it has reviewed the proposed installed operating conditions, operating environment, and range of operating conditions as shown described in these specifications, and that equipment proposed is in all respects suitable for these conditions.
  - 13. Extended maintenance service contract: A detailed list and schedule of the maintenance services to be performed for the duration of the contract.
  - 14. Provide proof that the diesel engine electrical generator set systems have been designed and constructed to withstand the specified requirements.
  - 15. Provide proof that the generator set parallel enclosures have been designed and constructed to withstand the specified requirements.
  - 16. Complete bills of material accounting for all equipment including loose spare parts.
  - 17. Weather proof and sound attenuated enclosure dimensions and mounting details.
- G. Prior to contract closeout:
- 1. Operating, maintenance, and testing manuals for all equipment, including, but not limited to the following:
    - a. Engine.
    - b. Generator.
    - c. Voltage Regulator.
    - d. Electronic Governor.
    - e. Distribution Circuit Breakers and Control Panels.
    - f. Batteries.
    - g. Battery Charger.
    - h. Coolant or block heaters.
    - i. Silencer.
    - j. Generator set parallel enclosures.
  - 2. Recommended spare parts and current price list.
  - 3. The name, address, and phone number of the local sales representative and technical assistance for each piece of equipment.

4. The name, address, and phone number of the local parts distributor for each piece of equipment.
5. Certification shall be supplied with each system that verifies the torsional vibration compatibility of the rotating element of the prime movers and generators for the intended use.
6. O&M Manuals shall be made in 3-ring bound hard copy and electronic PDF on a CD-ROM. Provide four (4) hard copies and two (2) electronic CD-ROM copies.
7. Include all final factory and certified dealer facility test reports. Test reports to be inserted after testing completed.
8. Any modifications made to equipment shall be documented in the O&M manuals.

1.7 DELIVERY, STORAGE, AND HANDLING

- A. Ship equipment, material, and spare parts complete except where partial disassembly is required by transportation regulations or for protection of components.
- B. All mechanical and electrical equipment shall be coated, wrapped, and otherwise protected from snow, rain, drippings of any sort, dust, dirt, mud, flood and condensed water vapor during shipment and while stored or installed in place during construction.

1.8 MANUFACTURER’S FIELD SERVICES

- A. Field services including field startup assistance and training shall be provided.
- B. Certified factory-trained manufacturer’s representative shall be present at the site or classroom designated by the CITY, for the minimum person-days listed, travel time excluded.

Person-Days	Manufacturer's Services
1	<p><b>Training of City personnel (person-days listed is total training days):</b></p> <ul style="list-style-type: none"> <li>• 1 training session of 4 hours with no more than 10 persons maximum, schedule to be determined.</li> </ul> <p>Provide all training and presentation materials.</p>

- C. Training shall include operations of the mobile diesel engine-generators and the associated equipment, function of each component, alarms and control logic, startup and shutdown procedures, safety precautions, emergency and lockout procedures, interconnections, towing safety and procedures, procedures for contacting manufacturer’s representative for field service, discussion of warranty, and basic troubleshooting and preventative maintenance.

1.9 WARRANTY

- A. The manufacturer of the diesel engine electrical generator systems and all the associated equipment including the generator parallel control panels shall have within a one hundred (100) mile radius of the project site an authorized dealer who can provide factory-trained servicemen, the required stock of replacement parts, technical assistance, and warranty administration. Standard service and replacement parts shall be available within 24 hours of service call.
- B. Warranty shall be manufacturer's standard, but in no event be for a period of less than two (2) years with 2,000 runtime hours, whichever comes first. In the first year of the warranty, runtime hours are unlimited.
- C. Warranty shall be of all components of the system.
- D. Warranty shall include repair labor, travel expense necessary for repairs at the jobsite, and expendables (lubricating oil, filters, antifreeze, and other service items made unusable by the defect) used during the course of repair.
- E. Warranty date and runtime shall start from the date of acceptance of the system. Runtime incurred during startup and testing does not count.

2.1 GENERAL

- A. Unless otherwise noted, all products shall be factory installed into an integrated, mobile unit, UL 2200 listed enclosed diesel engine electrical generator set package.
- B. Diesel engine electrical generator set system shall be new. Total engine runtime shall be certified by the SUPPLIER.
- C. One (1) mobile diesel generator set shall provide a rated standby power of a minimum of 250 kw when operating at 277/480 volts delta connected, three-phase, 60 Hz, 0.80 power factor.

AND/OR

One (1) mobile diesel generator set shall provide a rated standby power of a minimum of 50 kw when operating at 277/480 volts delta connected, three-phase, 60 Hz, 0.80 power factor.

- D. The mobile diesel generators and associated equipment (including parallel control panels) shall be outdoor rated.
- E. Acceptable manufacturers for the engine-generator set system:
  - 1. Cummins,
  - 2. Generac,
  - 3. Kohler,
  - 4. Or equal.

## 2.2 DIESEL ENGINE

- A. The diesel engine electrical generator system shall meet or exceed the latest available CARB certification standard for the particular horsepower range for non-road compression ignition engines.
- B. The system shall meet or exceed NFPA 110 requirements for providing Level 1, Type 10 life safety emergency power.
- C. Generator Set #1 engine shall be liquid cooled, four-cycle design, turbocharged, compression ignition diesel design. Continuous rated standby power of a minimum of 250kw when operating at 277/480 volts delta connected, three-phase, 60 Hz, 0.80 power factor, when driving a synchronous generator at a speed not to exceed 1,800 RPM. The engine shall have 6 cylinders minimum, and be designed to use ultra low sulfur diesel fuel.
- D. Generator Set #2 engine shall be liquid cooled, four-cycle design, turbocharged, compression ignition diesel design. Continuous rated standby power of a minimum of 50kw when operating at 277/480 volts delta connected, three-phase, 60 Hz, 0.80 power factor, when driving a synchronous generator at a speed not to exceed 1,800 RPM. The engine shall have 6 cylinders minimum, and be designed to use ultra low sulfur diesel fuel.
- E. The engine shall be equipped with air filters, fuel filters and pressure gauge, water pump and temperature gauge, fuel level gauge, battery voltage gauge, and service hour meter.
- F. The engine shall be provided with a full pressure lubricating oil system arranged to distribute oil to all moving parts of the engine and to cool the pistons. The system shall include pressure regulating valves, oil filter, oil strainer, oil cooler, oil level indicator, low oil pressure shutdown, crankcase ventilator, and necessary piping and fittings.
- G. Provide lubricating oil filters of the full-flow type, capable of filtering the full rate of oil flow of the oil pump at maximum engine speed. The filter shall provide a means of automatically bypassing lubricating oil if the condition of the filter so requires.
- H. Lubricating oil strainer and filter shall be cleanable, or replaceable, without disconnecting any piping.
- I. The engine shall be electronically controlled, fuel injected, and shall be provided with all necessary fuel system equipment including piping, fittings, valves, pump, filters, strainer and appurtenances.
- J. A fuel oil filter shall be installed in the piping ahead of the injection pumps on each unit. Pressure transducers shall be provided on both sides of the filter to indicate condition of the filter.
- K. Install a fuel oil solenoid valve in the piping ahead of the fuel filters on the unit, if required to prevent flooding of the engine's fuel system.

L. Acceptable manufacturers for diesel engine:

1. Cummins,
2. John Deere,
3. Or equal.

### 2.3 FUEL TANK, DEF TANK

- A. Provide double walled, subbase fuel tank constructed of corrosion resistant steel for a minimum of 24-hour run time with 75% load at prime rating.
- B. Secondary containment for engine fluids shall be sized for 110%.
- C. Provide fuel fill and fuel level gauge or level transmitter. Access to fuel shall be protected with locking cap or locking door.
- D. Provide auxiliary connections for connection of a user-supplied external fuel tank.
- E. Fuel tank shall meet requirements of NFPA 30.
- F. Provide DEF tank sized for a minimum of 24-hour run time at full load at standby rating with lockable caps or locking door.

### 2.4 TRAILER

- A. Provide generators sets mounted on towable USDOT compliant trailers with approved tail, side, brake, and directional lights, rear stabilizer trailer jacks, and heavy duty front tongue jack.
- B. Provide Lunette Eye hitch for connection to vehicles equipped with Pintle Hitch.
- C. Provide trailer with hydraulic surge brakes and 7 way RV flat electronic connector or furnish appropriate adapter.

### 2.5 RADIATOR, ENGINE MOUNTED

- A. The radiator shall be sized to cool the engine continuously while operating at full rated load and at site conditions.
- B. The fan, fan drive, and fan belts shall be covered by a strong grille for personnel protection.
- C. The cooling system shall be filled with a permanent anti-freeze solution capable of protecting the engine at site conditions.

## 2.6 INLET AIR SYSTEM

- A. The air cleaner shall be engine mounted with dryelement requiring replacement no more frequently than 250 operating hours or once each year. The air cleaner shall be designed to permit easy replacement of the element.

## 2.7 EXHAUST SYSTEM

- A. The exhaust silencer shall effectively reduce exhaust noise and arrest spark propagation. Exhaust silencer shall be sized as recommended by engine manufacturer. Exhaust piping system shall not exceed engine manufacturer's engine backpressure requirements. Exhaust silencer shall be housed inside enclosure.
- B. If exhaust direction is upward, provide a stub stack and suitable rain cap. If exhaust direction is horizontal, miter the pipe end to prevent intrusion of rainwater, and direct the exhaust into the upward discharge of the radiator fan.

## 2.8 WIRING AND CONDUIT

- A. Engine and generator control wiring shall be multi-strand, minimum 14 gauge, insulated copper wire rated at 600 volts AC, 90 degrees C dry or wet, resistant to heat, abrasion, oil, water, antifreeze, and diesel fuel. Each cable will be heat stamped throughout the entire length to identify the cable's origin and termination. Cables shall be enclosed in nylon flexible conduit which is slotted to allow easy access and moisture to escape. Reusable bulkhead fittings will attach the conduit to generator set mounted junction boxes.

## 2.9 STARTING SYSTEM

- A. The engine starting system shall include 12 or 24 volt DC batteries, starting motor, starting relay, and automatic reset circuit breaker to protect against butt engagement. Starting system equipment shall meet the requirements of NFPA 110, Paragraph 5.6.4 – Prime Mover Starting Equipment for Level 1 installations.
- B. The storage batteries for each unit shall be low maintenance, high output, lead- acid type, 12 or 24 volt system. Batteries shall be mounted in a leak-proof rubber or plastic lined caustic resistant frame and enclosure. Battery shall be provided with intercell connectors, bolts, racks, etc., as required for a complete system. The batteries shall have full warranty for two (2) years and shall have a minimum one- minute rating of 850 amperes for 12 volt system or 1400 amperes for 24 volt system to a voltage of 1.0 volts per cell.
- C. The batteries shall be accessible from the outside of the sound enclosure using lockable doors.



## 2.10 BATTERY CHARGER

- A. Provide a 12 or 24 volt automatic float battery charger with constant voltage regulation, suitable for maintaining the diesel engine generator set starting batteries. The rated output shall be such that this rating is not exceeded when charging the batteries from a totally discharged condition back up to equalize voltage. Chargers shall operate at 120 volts AC, single phase 60 HZ, with shore power connection.
- B. Provide batterychargers that meet the requirements of NFPA 110, Paragraph 5.6.4 – Prime Mover Starting Equipment for Level 1 systems.
- C. The battery chargers shall be accessible from the outside of the soundenclosure using lockable doors.

## 2.11 SOUND ENCLOSURE

- A. General:
  - 1. Enclosure shall be designed and constructed for use with UL 2200 listed generator set package. Enclosure shall be factory installed as part of the package generator assembly.
  - 2. Louvers: Provide screens for all louvers to permit air circulation when engine is not running while excluding birds and rodents.
  - 3. Provide lockable, hinged doors with hold back hardware to keep door fully open during maintenance. Doors shall fully open (180degrees).
  - 4. Lockable access for oil fill, coolant fill, DEF fill, distribution circuit breakers, local panelboard, battery, and battery charger access.
  - 5. Externally mounted emergency stop pushbutton, appropriately identified for the purpose.
  - 6. Acoustic insulation - Reduce the sound level of the engine generator while operating at full rated load to a maximum of 78 dBA measured at any location 23 feet from the engine generator in a free field environment.
  - 7. No wood or other combustible or flammable materials shall be incorporated as part of the enclosure.

## 2.12 GENERATOR

### A. General:

1. Generator set #1 shall provide a rated standby power of a minimum of 250 kw when operating at 277/480 volts connected, three-phase, 60 Hz, 0.80 power factor, at 1800 rpm alternator speed.
2. Generator set #2 shall provide a rated standby power of a minimum of 50 kw when operating at 277/480 volts connected, three-phase, 60 Hz, 0.80 power factor, at 1800 rpm alternator speed.
3. The generator sets shall be capable providing the following selectable output voltages:
  - a. 120/240 Volt, 1 Phase, 60 Hz;
  - b. 120/208 Volt, 3 Phase, 60 Hz;
  - c. 277/480 Volt, 3 Phase, 60 Hz.
4. The generator shall be capable of starting loads with a transient voltage dip on application of each step not exceeding 15 percent of rated voltage.
5. The generator shall be close-coupled, open drip-proof, single bearing construction, brushless revolving field, synchronous alternating current type with windings in the pole faces of the rotating field.
6. The generator shall be supplied with a side mounted terminal box which is designed to accommodate the connections to the load. The terminal box shall be equipped with hardware for padlock.
7. The rotor assembly shall demonstrate 125 percent over speed capability at 170 degrees C for 2 hours. Rotor dynamic, two plane balance shall not exceed 0.002 inch peak to peak amplitude at operating speed.
8. All winding insulation materials shall be at least Class F with no more than a Class B temperature rise in accordance with NEMA standards. No materials shall be used which support fungus growth. Materials shall be impervious to oil, dirt, and fumes encountered in diesel engine operating environments.
9. The alternator shall be brushless, 4 pole, has a minimum of winding insulation Class H and 150 degree C rating.
10. The generator shall be supplied with permanent magnet generators (PMG) to provide power to the voltage regulator.

- B. Stator: The generator stator core shall be constructed of laminated electrical grade steel. The laminations shall be secured under pressure and clamped to steel end rings. Windings shall be inserted into the stator slots and the entire assembly shall be vacuum pressure impregnated with 100 percent epoxy resin. The stator leads shall terminate in standard connection lugs for connection to bus bar terminal assemblies.
- C. Rotor:
1. The shaft shall be machined from high strength steel stock or forging. The mechanical centerline shall be scribed on the drive end for proper alignment.
  2. The spider shall be laminated, and be an integral part of the rotor pole.
  3. The poles shall be individually punched of high strength laminations which are held together with rivets or bolts. The field windings shall use insulated copper wires which are wet layer wound on the laminated poles. The wound poles shall be anchored to the spider with specially made tapered keys. Damper bars shall be inserted below the surface of the pole face and shall be welded/brazed to a continuous shorting ring or plate. The rotor assembly shall be shrunk and keyed on the shaft. The rotor shall be dynamically balanced to assure compliance with NEMA vibration limits and long bearing life. A dynamically balanced blower shall be mounted on the shaft at the drive end.
- D. Exciter:
1. The generator exciter shall be brushless with the circuit consisting of an inverted synchronous AC generator with the field winding stationary and three-phase armature windings rotating with the generator rotor. The AC output shall be rectified through a three-phase full wave semiconductor bridge rectifier mounted on the rotor shaft.
  2. The exciter armature shall be constructed from laminations and riveted under pressure. The three-phase windings shall be inserted in the slots and the entire assembly shall be vacuum pressure impregnated with 100 percent epoxy resin. The exciter armature shall be pressed on a tubing and keyed into position.
  3. The three-phase full wave rectifier shall be constructed of three forward and three reverse diodes, and shall be mounted on two separate rings acting as negative and positive polarity heat sinks. The rectifier assembly shall be keyed on the same tubing as the exciter armature. Both the exciter armature and the rectifier assembly shall be dynamically balanced. The sleeve tubing shall be pressed and keyed on the main rotor shaft.
  4. The exciter stator shall be constructed of laminations stacked under pressure and welded. Field windings shall be inserted and the entire assembly vacuum pressure impregnated with 100 percent epoxy resin. The stator shall be mounted on the bearing bracket.

- E. Permanent Magnet Generator: The permanent magnet generator (PMG) shall provide power to the voltage regulator under all operating conditions regardless of the main generator output. The PMG shall be a single-phase AC generator with rotating permanent magnets providing excitation.
- F. Bearings: Provide regreasable type bearings with grease fill and drain ports.
- G. Acceptable manufacturers for generator:
  - 1. Baldor/Generac,
  - 2. Marathon Electric,
  - 3. Or equal.

### 2.13 VOLTAGE REGULATOR

- A. The voltage regulator shall be digital, microprocessor based, with fully programmable operating and protection characteristics. The regulator shall be capable of sensing true RMS voltage in all three phases of the generator output, or operating in single phase sensing mode. The regulator shall exhibit the following operational characteristics:
  - 1. Generator output voltage maintained within +/- 0.25 percent at steady state conditions.
  - 2. Generator output voltage maintained within +/- 0.25 percent of rated value for any load variation between no load and full load.
  - 3. Generator output voltage drift less than +/- 0.25 percent of rated value at constant temperature.
  - 4. Generator output voltage drift less than +/- 0.5 percent of rated value within a 40 degree change in temperature over an ambient temperature range of -40 degrees C to 70 degrees C.
  - 5. Response time of less than 20 milliseconds.
  - 6. Voltage buildup with generator output as low as 6 volts.
  - 7. At full throttle engine starting, the regulator output voltage overshoot shall be less than 5 percent of its rated value with respect to the volts per hertz curve (meets ISO 8325-3 Class G2 Specifications).
  - 8. Power dissipation of 55 watts at 15 amperes under normal operating conditions; less than 55 mA while at rest.
  - 9. Telephone Influence Factor (TIF) of less than 50.
  - 10. Electromagnetic Interference/Radio Frequency Interference (EMI/RFI) suppressed to MIL Standard 461C, Part 9, and VDE 875, level N.
  - 11. Maintain stable voltage control with less than 5 percent total harmonic distortion.

- C. The regulator shall include the following features:
1. A voltage level rheostat to provide generator output voltage adjustment from -10 percent to +10 percent of nominal voltage, in addition to a programmable output voltage level from -25 percent to +25 percent.
  2. Automatic gain adjustment to provide output voltage compensation for changes in load or frequency.
  3. Manual gain adjustment from 0 to 10 percent to provide compensation for line losses between generator output terminals and the load.
  4. In parallel mode the system shall adapt power match varying load demand, line and phase sensing, synchronization, and capable of sharing of information among parallel generator sets.
- D. The regulator shall allow system parameter setup and monitoring and provide fault alarm and shutdown information through a diagnostic interface allowing connection to an external personal computer (not provided). The regulator shall be factory set and field programmable for the following:
1. Voltage output.
  2. Minimum voltage.
  3. Voltage droop/crosscurrent adjustment.
  4. Voltage gain (IR compensation).
  5. Internal voltage gain.
  6. Current output.
  7. Field current variation.
  8. Single or three phase sensing.
  9. Dual voltage/frequency slopes.
  10. Slope intersect (knee) frequency.
  11. Under frequency set point.
  12. Overvoltage trip.
  13. Overvoltage trip time.
- E. The regulator shall include the following alarm and shutdown features:
1. Overvoltage/undervoltage.
  2. Overfrequency/underfrequency.
  3. Overcurrent.
  4. Over Speed.
  5. Over Temperature.
  6. Overexcitation.
  7. Loss of excitation.
  8. Rotating diode failure.
  9. Instantaneous overcurrent trip.
  10. Loss of sensing.
  11. Loss of frequency.
  12. EEPROM failure.

- F. The regulator shall be protected against long term overcurrent conditions. Generator output shall shut off when shorted, or when the excitation current exceeds normal values for more than 15 seconds. The regulator shall not be damaged or operate improperly when subjected to an open or shorted input due to sensing loss, or when the sensing source has shorted to ground or an adjacent conductor.
  - G. The regulator shall be suitable for operation in a temperature range from 0 degrees F to 120 degrees F.
  - H. The regulator shall be manufactured by the manufacturer of the engine-generator set.
- 2.14 HIGH TEMPERATURE INSULATION BLANKETS
- A. General: Exhaust silencer and exhaust piping shall be insulated with high temperature insulation blankets, as required by the manufacturer.
- 2.15 ENGINE MOUNTED CONTROL PANEL
- A. General: Provide an engine mounted UL 508 listed control panels for local monitoring, control, and indication of engine parameters. Control panels shall be a NEMA Type 3R enclosure or weatherproof, vibration isolated, and approved for NFPA 110 Level 1 system installations.
  - B. Panels shall include an LCD display to monitor the following parameters:
    - 1. Engine Oil Pressure.
    - 2. Fuel Pressure.
    - 3. Coolant Temperature.
    - 4. DC battery voltage.
    - 5. Operating hours.
    - 6. Generator AC Voltage, each phase, line to line, 1 percent accuracy.
    - 7. Generator AC current, each phase, 1 percent accuracy.
    - 8. Generator power, kW total and per phase.
    - 9. Generator power, kVA total and per phase.
    - 10. Generator power, kVAR, total and per phase.
    - 11. Generator power, kWh total.
    - 12. Generator power, kVARh total.
    - 13. Generator percent of rated power, total.
    - 14. Fault History.
  - C. Provide panels with a local annunciator that includes all the safety indicator functions that meets the requirements of NFPA 110, Table 5.6.5.2 – Safety Indications and Shutdowns for Level 1 systems, and include the following additional status/fault indicators and optional shutdowns:
    - 1. Diagnostic LED status indicators, one red, one amber.
    - 2. Engine status indicators, run, auto, stop.
    - 3. Engine protection alarms with configurable High/Low limits.

4. High coolant temperature alarm indication.
  5. Any distribution circuit breaker (serving loads within the packaged engine-generator assembly) trip alarm indication.
  6. Low coolant level shutdown.
  7. The battery charger AC failure alarm shall be provided with an adjustable time delay (on delay) with a range of 1 to 999 seconds.
- D. Panels shall accept an external dry contact closure for low fuel main tank safety indication from the aboveground diesel fuel storage tank level monitoring panel. This circuit shall be powered from the generator control system 24VDC batteries, and shall be provided with an adjustable time delay (on delay) with a range of 1 to 999 seconds.
- E. The panel shall include the following controls:
1. Three position lockable switch for the following voltages:
    - a. 120/240 Volt, 1 Phase, 60 Hz;
    - b. 120/208 Volt, 3 Phase, 60 Hz;
    - c. 277/480 Volt, 3 Phase, 60 Hz.
  2. Emergency stop pushbutton (externally mounted on the outside of the sound enclosure).
  3. Three position control switch: Run, Auto, Off.
  4. Lamp test pushbutton.
  5. Alarm acknowledge pushbutton.
  6. Keypad for access to LCD display values.
- F. The panel shall be provided with a minimum of 600VAC and 400A rated Camlock style load connectors in different colors for paralleling and connecting to load. The Camlock connectors shall be sized to carry the maximum current capacity when the generator is performing parallel function.
- G. The panel shall have the following receptacles:
1. Two 20A, 120V, 1 phase, GFCI duplex (includes circuit breakers);
  2. Three 50A, 240V, 3-pole, 4-wire twistlock (includes circuit breakers);
- H. The panel shall be manufactured by the diesel engine generator set manufacturer.

## 2.16 LOW VOLTAGE DISTRIBUTION CIRCUIT BREAKERS

- A. Provide generator mounted low voltage distribution circuit breakers. Circuit breakers shall be UL listed, three pole, 600V rated with shunt trip and auxiliary contacts, and shall be capable of being padlocked in the OPEN position or shall be in a padlockable enclosure.
- B. The distribution circuit breakers shall be accessible from the outside of the sound enclosure using pad-lockable doors.

2.18 INSTRUCTION AND NAMEPLATES

- A. The engine and generator shall have corrosion resistant nameplates at a visible location on the generator.

2.19 DESCRIPTION OF OPERATION

- A. Manual operation: The diesel engine electrical generator shall manually start and stop in response to controls located at the local control panel.
- B. Automatic operation: NONE
- C. Shutdowns: The diesel engine electrical generator set shall stop immediately, and shall be prevented from starting, after one or more of the shutdown alarms listed in NFPA 110, Table 5.6.5.2 – Safety Indications and Shutdowns for Level 1 systems or any the following alarms have occurred, regardless of the mode of operation (MANUAL or AUTO):
1. High coolant temperature.
  2. Low coolant level.
  3. Low oil pressure.
  4. Overcurrent.
  5. Any distribution circuit breaker trip.

3.1 FIELD TRAINING

General:

1. SUPPLIER shall provide factory-trained manufacturer's employees for the diesel engine generator set and the generator set parallel enclosure to be present at the jobsite for the full duration of the field training to CITY staff.
2. SUPPLIER shall provide training materials for up to 10 City staff.
3. Field training shall be in class and field environments.
4. At minimum training shall include the following topics:
  - a. Theory and operations of the mobile diesel engine electrical generators;
  - b. Theory and operation of the generator set parallel enclosures;
  - c. Interconnection of the mobile diesel engine electrical generators to the parallel enclosures;
  - d. Maintenance of the mobile diesel engine electrical generators and the generator set parallel enclosures;
5. CITY shall provide fuel for the training.



**MANUFACTURER'S CERTIFICATE OF PROPER CONSTRUCTION**

This is to certify that the equipment supplied by (MANUFACTURER'S NAME) and described as (NAME OF EQUIPMENT) has been constructed in accordance with manufacturer's recommendations. The equipment was inspected by an authorized manufacturer's representative on (DATE) and has been serviced with the proper initial lubricants and is free from any undue stress. Applicable safety equipment has been properly constructed and proper electrical and mechanical connections have been made. Proper adjustments have been made and the equipment is ready for operation. All reports have been submitted to the CITY and the equipment and or system is certified for field testing and startup.

\_\_\_\_\_  
Authorized Manufacturer's  
Representative

\_\_\_\_\_  
SUPPLIER's Representative

\_\_\_\_\_  
Title

\_\_\_\_\_  
Date

\_\_\_\_\_  
Title

\_\_\_\_\_  
Date

**MANUFACTURER'S CERTIFICATE OF FUNCTIONAL TESTING**

**Functional testing, including checks for proper rotation, alignment, speed, excessive vibration, and noisy operation has been performed, and the equipment has been operated under full-load conditions and is ready for full-time operation. Controls, protective devices, instrumentation, and control panels are properly installed and calibrated. The control logic for startup, shutdown, sequencing, interlocks, etc. has been tested and is properly operating. This testing, including initial equipment and system adjustment and calibrations, was performed in the presence of the manufacturer's representative on (DATE).**

\_\_\_\_\_  
Authorized Manufacturer's  
Representative

\_\_\_\_\_  
SUPPLIER's Representative

\_\_\_\_\_  
Title

\_\_\_\_\_  
Date

\_\_\_\_\_  
Title

\_\_\_\_\_  
Date