REQUEST FOR PROPOSAL
Water Treatment Facility Backup Generator
CITY OF NEWPORT

PROJECT COMPLETION DATE: October 25th 2019.

DEADLINE FOR RECEIPT OF PROPOSAL: June 7th 2019 3:00 PM.

PROPOSAL MUST BE RECEIVED AND REGISTERED WITH THE PUBLIC WORKS DEPT. BY THE ABOVE SPECIFIED DEADLINE.

PROPOSALS MAY BE MAILED OR HAND-DELIVERED.

Submit mailed proposal to:
Chris Janigo
Sr. PROJECT MANAGER
City of Newport
169 SW Coast Highway
Newport, OR 97365

Deliver Proposal to:
Public Works Office
ATTN: Chris Janigo
PROJECT MANAGER
City of Newport City Hall
169 SW Coast Highway
Newport, OR 97365

Information Contact:
Chris Janigo
(541) 574-3376
c.janigo@newportoregon.gov

1. GENERAL

1.1 Introduction

The City of Newport is soliciting Proposals from qualified Supplier for the purchase and delivery of an 800 KW Backup Generator at the City's Water Treatment Facility at 2810 NE Big Creek Road, Newport OR. The Generator shall adhere to the attached minimum specifications. Supplier shall work within City of Newport Specifications and coordinate delivery with City Contractor.

1.2 Background

The City of Newport's Water Treatment Facility is in need of a backup generator to supply power in case of emergencies. The City of Newport requests an 800 KW generator with weather resistant enclosure to fulfill this need. A Newport Contractor will have the placement slab, conduit and electrical connections prepared at the time of delivery at the Water Treatment Facility.

1.3 Proposed Scope of Work

Provide 800 KW Generator to the Water Treatment Facility and means to unload the generator onto foundation slab using the attached plans and specifications as a basis for the completed work.

2. PROPOSAL CONTENT

There is no limit on proposal page number or the length of proposals. However, the City is not interested in brochures, boilerplate, or general information that is not relevant to the project at hand or required specifications. Suppliers responding to this request are advised to provide a clear and responsive equipment details addressing all specifications noted in this request and the proposed scope of work.

2.1 Project Understanding

The proposal should clearly state the proposal team's understanding of the project requirements, goals, and objectives.

2.2 Approach

Supplier's proposed approach to the project should be clearly outlined; including the anticipated schedule for delivery, product specifications, and all variances from the defined specifications attached must be disclosed. The approach should clearly identify any subcontractors and what tasks they will be working on.

2.3 Project Schedule

A proposed project timeline for the tasks within the scope of work shall be provided by the contractor within the proposal.

2.4 Experience and References

The proposer shall provide a list of **5 projects** completed by the contractor and/or subcontractors that are similar in scope and cost to the proposed work, such as generators installed outdoor in coastal environments. This list shall include the description, location, cost, completion date, and current client contact information for the project.

3. SELECTION CRITERIA

The City will screen and rank the proposals based on the criteria outlined in this RFP, using the following matrix:

	Weight	Rank
1. Cost	75%	Budget/Proposed Cost X 100 X Wt.
2. Experience and References	10%	(1 to 100) X Wt.
3. Understanding and Approach • Specifications • Schedule • Other	15%	(1 to 100) x Wt.

Total score up to 100. (Note: Score may exceed 100 if price is below budget amount.)

Applicants are encouraged to address these criteria in their proposals. Applicants may include any additional information they consider important or beneficial in the consideration of their proposal for this project.

4. REIMBURSEMENT

City of Newport will not be responsible for any costs associated with preparing this proposal.

5. CONFIDENTIALITY

To the extent permitted, under Oregon Public Records Law, the Proposal shall be considered confidential and shall not be disclosed to the public until after the date and time set forth above for receipt of the Proposal.

6. LIMITATIONS

This request does not commit the City of Newport to pay any costs incurred to prepare any proposal. Further, the City of Newport reserves the right to:

- Accept or reject any and all proposals received as a result of this RFP at any time,
- Negotiate with any of the proposers,
- Cancel the request, in part or in whole, if it is determined to be in the best interest of the City to do so,
- Award to the selected Supplier any subsequent contracts, in whole or in part,
- Seek further proposals for this work.
- Seek clarification on any point in any proposal at any phase of the selection process.

7. FALSE OR MISLEADING STATEMENTS

If the review committee feels, at any time, that a contractor's proposal contains false or misleading statements, references, or any other matter which does not support a function, attribute, capability, or condition as stated by the firm or firms submitting, the submittal shall be rejected, regardless of the status or the phase of the selection process.

8. AWARD OF CONTRACT

Once the final proposal has been selected and the fee proposal accepted or negotiated, the contractor will be asked to enter into a contract for the performance of the work. It is estimated that a contract will be awarded to the selected contractor by June 24, 2019. A sample contract is attached (see Schedule A).

9. PROPOSAL WITHDRAWAL

Any proposer may withdraw its proposal prior to the final deadline for submission by providing the City with a written request stating the desire to withdraw. Withdrawal of a proposal will not prejudice the right of a firm to file a new proposal before the deadline.

10. REJECTION

City of Newport may reject any Proposal not in compliance with all prescribed public contracting procedures and requirements and may reject for good cause all Proposals upon finding that it is in the public interest to do so.

Attachments

Schedule A	Sample - Goods and Services Agreement
26 32 14	Generator Minimum Specifications

(SCHEDULE A)
CITY OF NEWPORT, OREGON
GOODS AND SERVICES AGREEMENT
WATER TREATMENT FACILITY EMERGENCY GENERATOR

THIS AGREEMENT is between the City of Newport, an Oregon municipal corporation (City), and (Contractor). This Agreement shall be effective on the date last signed by a party below (Effective Date).

RECITALS

A. Contractor represents it has the training, ability, knowledge, and experience to provide services desired by the City; and

B. City selected Contractor to provide services, consistent with its public contracting rules.

1. SERVICES TO BE PROVIDED

A. Contractor will provide the services described in Exhibit A (hereinafter "Services").

B. In the course of providing Services under this Agreement, Contractor may have contact with the public. Contractor will maintain good relations with the public. The City may treat the failure to maintain good relations with the public as a non-curable breach of this Agreement and may disqualify Contractor from future work for the City.

2. COMPENSATION & TIMEFRAME

Contractor shall be compensated as described in Exhibit A. Unless otherwise set forth in Exhibit A, Contractor shall begin Services on the Effective Date and shall complete Services no later than such date set forth in Exhibit A or as agreed upon in writing by the parties.

3. STATUS OF CONTRACTOR

Contractor certifies that:

A. Contractor is an independent contractor as defined by ORS 670.700 and not an employee of City, shall not be entitled to benefits of any kind to which an employee of City is entitled and shall be solely responsible for all payments and taxes required by law. Furthermore, in the event that Contractor is found by a court of law or any administrative agency to be an employee of City for any purpose, City shall be entitled to offset compensation due, or to demand repayment of any amounts paid to Contractor under the terms of this Agreement, to the full extent of any benefits or other remuneration Contractor receives (from City or third party) as a result of the

finding and to the full extent of any payments that City is required to make (to Contractor or to a third party) as a result of the finding.

B. Contractor is not an officer, employee or agent of the City as those terms are used in ORS 30.265.

C. No employee of the City, or any partnership or corporation in which a City employee has an interest, has or will receive any remuneration of any description from Contractor, either directly or indirectly, in connection this Agreement, except as specifically declared in writing.

D. Contractor currently has a City business license or will obtain one prior to delivering Services under this Agreement.

4. WARRANTY & INDEMNIFICATION

A. City has relied upon the professional ability and training of Contractor as a material inducement to enter into this Agreement. Contractor warrants that all its work will be performed with good workmanship and in accordance with generally accepted professional practices and standards of the industry in which Contractor operates as well as the requirements of applicable federal, state and local laws. Contractor's work will conform to the requirements of this Agreement. Acceptance of Contractor's work by City shall not operate as a waiver or release of this warranty.

B. Contractor is fully liable for the acts and omissions of Contractor and Contractor's subcontractors which cause any damage, injury, death, property damage or loss to any person or property.

C. Contractor will indemnify and defend the City, its officers, agents, employees and volunteers and hold them harmless from any and all liability, causes of action, claims, losses, damages, judgments or other costs or expenses including attorney's fees that may be asserted by any person or entity which in any way arise from, during or in connection with the performance of the work described in this Agreement. Contractor's indemnification shall also cover claims brought against the City under state or federal workers' compensation laws. If any aspect of this indemnity shall be found to be illegal or invalid for any reason whatsoever, the illegality or invalidity shall not affect the validity of the remainder of this indemnification.

5. INSURANCE

Contractor and its subcontractors shall maintain insurance acceptable to City in full force and effect throughout the term of this Agreement. The insurance shall cover all activities of the Contractor arising directly or indirectly out of Contractor's work performed hereunder, including the operations of its subcontractors of any tier.

The policy or policies of insurance maintained by the Contractor and its subcontractor shall provide at least the following limits and coverages:

A. Commercial General Liability Insurance

Contractor shall obtain, at Contractor's expense, and keep in effect during the term of this contract, Comprehensive General Liability Insurance covering Bodily Injury and Property Damage on an "occurrence" form (1996 ISO or equivalent). This coverage shall include Contractual Liability insurance for the indemnity provided under this contract. The following insurance will be carried:

Coverage	**Limit**
General Aggregate	$2,000,000
Products-Completed Operations Aggregate	$1,000,000
Personal & Advertising Injury	$1,000,000
Errors & Omissions	$1,000,000
Each Occurrence	$1,000,000
Medical Expense (Any one person)	$50,000

B. Commercial Automobile Insurance

Contractor shall also obtain, at Contractor's expense, and keep in effect during the term of the contract, Commercial Automobile Liability coverage including coverage for all owned, hired, and non-owned vehicles. The Combined Single Limit per occurrence shall not be less than $2,000,000.

C. Workers' Compensation Insurance

The Contractor, its subcontractors, if any, and all employers providing work, labor or materials under this Contract that are either subject employers under the Oregon Workers' Compensation Law and shall comply with ORS 656.017, which requires them to provide workers' compensation coverage that satisfies Oregon law for all their subject workers or employers that are exempt under ORS 656.126. Out-of-state employers must provide Oregon workers' compensation coverage for their workers who work at a single location within Oregon for more than 30 days in a calendar year. Contractors who perform work without the assistance or labor of any employee need not obtain such coverage. This shall include Employer's Liability Insurance with coverage limits of not less than $500,000 each accident.

D. Additional Insured Provision

The Commercial General Liability Insurance and Commercial Automobile Insurance policies and other policies the City deems necessary shall include the City as an additional insured with respect to this Agreement.

E. Notice of Cancellation

There shall be no cancellation, material change, exhaustion of aggregate limits or intent not to renew insurance coverage of Contractor's insurance without 30 days prior written notice to the City. Any failure to comply with this provision will not affect the insurance coverage provided to the City. The certificates of insurance provided to the City shall state that the insurer shall endeavor to provide 30 days prior notice of cancellation to the City

F. Certificates of Insurance

As evidence of the insurance coverage required by the Agreement, the Contractor shall furnish a Certificate of Insurance to the City. This Agreement shall not be effective until the required certificates have been received and approved by the City. The certificate will specify and document all provisions within this Agreement. A renewal certificate will be sent to the City 10 days prior to coverage expiration.

G. Primary Coverage Clarification

The parties agree that Contractor's coverage shall be primary to the extent permitted by law. The parties further agree that other insurance maintained by the City is excess and not contributory insurance with the insurance required in this section.

H. Cross-Liability Clause

A cross-liability clause or separation of insureds clause will be included in all general liability, professional liability, pollution and errors and omissions policies required by this Agreement.

The procuring of required insurance shall not be construed to limit Contractor's liability under this Agreement.

6. METHOD & PLACE OF SUBMITTING NOTICE, BILLS AND PAYMENTS

Unless otherwise set forth herein, payment to Contractor shall be made by City within thirty (30) days of receipt of an approved invoice. An approved invoice is an invoice that has been signed by an authorized City individual. Payment may be withheld in the event the Services performed or an invoice submitted is disputed by the City. All notices, bills and payments shall be made in writing and may be given by personal delivery mail. Payments may be made by personal delivery, mail, or electronic transfer. The following addresses shall be used to transmit notices and other information:

City: Tim Gross
Public Works Director/City Engineer
City of Newport
169 SW Coast Highway

Newport, Oregon 97365
P| 541-265-7421
F| 541-265-3301
E| s.stewart@newportoregon.gov

Contractor: Attn: Representative
Company
Address
Phone
Email

Notices mailed to the address provided for notice in this section shall be deemed given upon deposit in the United States mail, postage prepaid. In all other instances, notices, bills and payments shall be deemed given at the time of actual delivery.

7. TERMINATION WITHOUT CAUSE

At any time and without cause, City shall have the right in its sole discretion, to terminate this Agreement by giving notice to Contractor. If City terminates the Agreement pursuant to this Section due to no fault of Contractor, City shall pay Contractor for all approved and undisputed services rendered up to the date of termination.

8. TERMINATION WITH CAUSE

A. City may modify or terminate this Agreement effective upon delivery of written notice to Contractor, or at such later date as may be established by City, under any of the following conditions:

1. If City funding from federal, state, local, or other sources is not obtained and continued at levels sufficient to allow for the purchase of the indicated quantity of services.
2. If federal or state regulations or guidelines are modified, changed, or interpreted in such a way that the Services are no longer allowable or appropriate under this Agreement.
3. If any license or certificate required by law or regulation to be held by Contractor, its subcontractors, agents, and employees to provide the Services required by this Agreement is for any reason denied, revoked, or not renewed.
4. If Contractor becomes insolvent, if voluntary or involuntary petition in bankruptcy is filed by or against Contractor, if a receiver or trustee is appointed for Contractor, or if there is an assignment for the benefit of creditors of Contractor.

Any such termination of this Agreement under subsection A will be without prejudice to any obligations or liabilities of either party already accrued prior to such termination.

B. City, by written notice to Contractor, may terminate the whole or any part of this Agreement:

1. If Contractor fails to provide Services as set forth in this Agreement within the time specified herein or any extension thereof, or
2. If Contractor fails to perform any provisions of this Agreement, or fails to pursue the work of this Agreement in accordance with its terms, and after receipt of written notice from City, fails to correct such failures within ten (10) days or such other period as City may authorize.

The rights and remedies of City provided in this Section are not exclusive and are in addition to any other rights and remedies provided by law or under this Agreement. If City terminates this Agreement under Section, Contractor shall be entitled to receive as full payment for all Services actually satisfactorily rendered and expenses incurred, provided however, that there shall be deducted from such amount the amount of damages, if any, sustained by City due to breach of this Agreement by Contractor.

9. ACCESS TO RECORDS

For a period of not less than three years after City's final payment to Contractor, Contractor shall permit the City, the State of Oregon and the Federal Government (if State or Federal funding is involved) to have access to all books, documents, papers and records of Contractor which are pertinent to the Services provided hereunder for purposes of audit, examination, excerpts and transcripts. Contractor shall retain those records for at least three years, or until litigation is resolved if litigation is instituted.

10. FORCE MAJEURE

Neither City nor Contractor shall be considered in default because of any delays in completion and responsibilities due to causes beyond the control and without fault or negligence on the part of the parties so disenabled, including but not restricted to, an act of nature or of a public enemy, civil unrest, earthquake, fire, flood, epidemic, quarantine restriction, strike, freight embargo, unusually severe weather; provided that the parties so disenabled shall notify the other party in writing of the cause of delay. Each party shall make reasonable efforts to remove or eliminate the cause of delay or default and shall, upon cessation of the cause, diligently pursue performance of its obligations under the Agreement.

11. NON-DISCRIMINATION

Contractor agrees to comply with all applicable requirements of federal and state civil rights and rehabilitation statues, rules, and regulations. Contractor also shall comply with the Americans with Disabilities Act of 1990, ORS 659.425, and all regulations and administrative rules established pursuant to those laws.

12. ERRORS

Contractor will perform additional work as may be necessary to correct errors in Services performed under this Agreement without undue delay and without additional cost.

13. GOVERNING LAW

The provisions of this Agreement shall be construed in accordance with the laws of the State of Oregon. Any action or suits involving any question arising under this Agreement will be brought in the appropriate court of the State of Oregon. In any action arising under this Agreement, the losing party shall pay such sum as the court may adjudge including reasonable attorney fees and court costs.

14. COMPLIANCE WITH LAWS AND RULES

Contractor shall comply with all applicable federal, state and local laws, rules and regulations, including, but not limited to, requirements concerning working hours, overtime, medical care, workers compensation insurance, health care payments, payments to employees and subcontractors and income tax withholding contained in ORS Chapter 279, some provisions of which are attached to this Agreement as Exhibit B.

15. CITY OWNERSHIP

All Contractor's work product accomplished under this Agreement, whether in the form of designs, drawings, as-builts, diagrams, specifications, reports, or other writings, shall become the exclusive property of the City. The City is the owner of any copyrights thereto, upon City's final payment to Contractor.

16. AGREEMENT

A. This writing is intended both as a final expression of the Agreement between the parties with respect to the included terms and as a complete and exclusive statement of the terms of the Agreement. This Agreement incorporates the City's Request for Proposal/Solicitation of Bids document and Contractor's Response/Bid. In the event of a conflict between the terms of this Agreement and any incorporated document, unless otherwise specifically stated, this Agreement will control.

B. No modification of this Agreement shall be effective unless and until it is made in writing and signed by both parties. Payment shall not be made for any Services not set forth in Exhibit A without the written agreement with the City. In the event Contractor and City agree to any modification in the Services set forth in Exhibit A, the parties will execute an amendment to this Agreement, reflecting such modification.

C. Neither party shall assign or transfer any interest in or duty under this Agreement without the written consent of the other party.

D. This Agreement and all exhibits and addenda hereto are complementary and what is required in one shall be binding as if required by all. If there is a conflict between terms of the documents, the more specific requirement shall govern over the more general. No term of this Agreement is intended to waive or supersede a legally mandated term of this Agreement under ORS Chapter 279, 279A, 279B, and 279C, and Administrative Rules promulgated to implement those ORS Chapters.

E. The failure of City to insist upon or enforce strict performance by Contractor of any of the terms of this Agreement or to exercise any rights hereunder should not be construed as a waiver or relinquishment to any extent of its rights to assert or rely upon such terms or rights on any future occasion.

By authorized signature hereunder, each party sets their hand to this Agreement:

CITY OF NEWPORT (CITY):

_____ _____

By: Spencer Nebel, City Manager Date

(CONTRACTOR):

_____ _____

By: Date

EXHIBIT B

ORS CHAPTER 279B PUBLIC CONTRACTING REQUIREMENTS
FOR PERSONAL SERVICES CONTRACTS

(1) Contractor shall pay promptly, as due, all persons supplying labor or materials for the prosecution of the work provided for in the contract, and shall be responsible for such payment of all persons supplying such labor or material to any Subcontractor. ORS 279B.220(1).

(2) Contractor shall promptly pay all contributions or amounts due the Industrial Accident Fund from such Contractor or Subcontractor incurred in the performance of the contract. ORS 279B.220(2).

(3) Contractor shall not permit any lien or claim to be filed or prosecuted against the Contracting Agency on account of any labor or material furnished and agrees to assume responsibility for satisfaction of any such lien so filed or prosecuted. ORS 279B.220(3).

(4) Contractor and any Subcontractor shall pay to the Department of Revenue all sums withheld from employees pursuant to ORS 316.617. ORS 279B.220(4).

(5) Contractor shall promptly, as due, make payment to any person, co-partnership, association, or corporation, furnishing medical, surgical and hospital care or other needed care and attention, incident to sickness or injury, to employees of such Contractor, of all sums which the Contractor agrees to pay for such services and all monies and sums which the Contractor collected or deducted from the wages of employees pursuant to any law, contract or agreement for the purpose of providing or paying for such service. ORS 279B.230(1).

(6) Contractor shall pay employees for overtime work performed under the contract in accordance with ORS 653.010 to 653.261 and the Fair Labor Standards Act of 1938 (29 USC 201, *et seq.* ORS 279B.235(3).

(7) The Contractor must give notice to employees who work on this contract in writing, either at the time of hire or before commencement of work on the contract, or by posting a notice in a location frequented by employees, of the number of hours per day and the days per week that the employees may be required to work. ORS 279B.235(2).

(8) All subject employers working under the contractor are either employers that will comply with ORS 656.017, or employers that are exempt under ORS 656.126. ORS 279B.230(2).

(9) All sums due the State Unemployment Compensation Fund from the Contractor or any Subcontractor in connection with the performance of the contract shall be promptly so paid. ORS 701.430.

(10) The contract may be canceled at the election of Contracting Agency for any willful failure on the part of Contractor to faithfully perform the contract according to its terms.

(11) Contractor certifies compliance with all applicable Oregon tax laws, in accordance with ORS 305.385.

(12) Contractor certifies that it has not discriminated against minorities, women or emerging small business enterprises in obtaining any required subcontractors. ORS 279A.110.

(13) Contractor may not assign this contract, delegate its duties, or subcontract these services without prior written approval from Contracting Agency.

(14) Contractor will comply with ORS 279B.225 relating to the salvaging, recycling, composting or mulching yard waste material.

SECTION 26 32 14
ENGINE GENERATOR: DIESEL (OWNER-FURNISHED)

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes:
   1. Engine generator set and accessories.
   2. Sound attenuating walk-in enclosure.

B. Related Sections include but are not necessarily limited to:
   1. Division 0 - Bidding Requirements, Contract Forms, and Conditions of the Contract.
   2. Division 1 - General Requirements.
   3. Section 26 05 00 - Electrical: Basic Requirements.

1.2 QUALITY ASSURANCE

A. Referenced Standards:
   1. National Electrical Manufacturers Association (NEMA):
      a. 250, Enclosures for Electrical Equipment (1000 Volts Maximum).
      b. MG 1, Motors and Generators.
   2. Environmental Protection Agency (EPA):
      a. 40 CFR Part 60, Subpart IIII, Protection of Environment, Standards of Performance for New Stationary Sources, Standards for Performance for Stationary Compression Ignition Internal Combustion Engines.
   3. National Electrical Manufacturers Association (NEMA):
      a. 250, Enclosures for Electrical Equipment (1000 Volts Maximum).
      b. MG 1, Motors and Generators.
   4. National Fire Protection association (NFPA):
      a. 70, National Electrical Code (NEC).
         1) Article 702, Optional Standby Systems.
   5. Underwriters Laboratories, Inc. (UL):
      a. 2200, Standard for Stationary Engine Generator Assemblies.

B. The engine generator set manufacturer or authorized supplier is designated to have single source responsibility for the supply of all components and installation of the unit.

1.3 SYSTEM DESCRIPTION

A. The engine generators will be used and rated for:
   1. Optional standby power during a utility power outage, NFPA 70, Article 702.

1.4 SUBMITTALS

A. Shop Drawings:
   1. See Section 01 33 00 for requirements for the mechanics and administration of the submittal process.
   2. Product technical data:
      a. Provide submittal data for all products specified in PART 2 of this Specification:
   3. Dimensioned outline drawings showing plan and elevation of the proposed engine generator set and drive system with sub-base fuel tank and weatherproof enclosure.
      a. Drawings shall indicate locations of all accessories.
      b. Drawings shall indicate anchoring locations and requirements.
   4. Weights of entire assembly and individual weights of engine, generator, enclosure, and fuel tank.

5. Catalog information and technical description of the proposed engine generator set. Include proposed materials and dimensions for the block, heads, valves, rings, cylinders, pistons, crankshaft, and major bearings and wear surfaces.
    a. Engine and generator manufacturer's names.
    b. Number of cylinders and configuration.
    c. Bore and stroke/piston at rated rpm.
    d. Displacement.
    e. Brake Mean Effective Pressure (BMEP) at rated capacity.
    f. Generator capacity in kW, kVA, and power factor.
    g. NEMA MG 1-22.40 temperature rise rating of generator stator and rotor insulation.
    h. Automatic voltage regulator manufacturer performance criteria.
    i. Number and type of bearings.
    j. Type of generator exciter.
    k. Certified engine horsepower at the ambient and elevation specified.
    l. Fuel tank capacity calculation.
6. List of accessories provided.
7. List of spare parts provided.
8. Performance curves showing engine efficiency, gross fuel consumption rate, and kW output at design rated output, one-half load, and one-quarter load. Account for design altitude and temperature corrections and for engine parasitic loads.
9. Generator reactances and time constants in per unit.
10. Generator output waveform and telephone interference factor (TIF).
11. Electrical schematic and wiring diagrams:
    a. Generator control panel.
    b. Main generator.
    c. Voltage regulator.
    d. Battery charging system.
    e. Governing system.
    f. Interconnection wiring diagram for interface with automatic transfer switch.
12. Control panel instrument identification inscriptions.
13. Engine generator set motor starting capability and percent voltage dip curve.
14. Heater sizes and voltages.
15. Panelboard Schedule.
16. Fabrication and/or layout drawings.
    a. Dimensional plan and elevation drawings.
    b. Wire interconnection drawings.
17. Test reports:
    a. Factory test reports.

B. Operations and Maintenance Manuals:
1. See Section 01 33 00 or requirements for:
    a. The mechanics and administration of the submittal process.

C. Miscellaneous:
1. Unit installation, startup and operational statement.
2. Field Quality Control test reports.

1.5 SITE CONDITIONS

A. Ambient air temperature:
1. Minimum: 20 DegF.
2. Maximum: 104 DegF.

B. Altitude: 150 FT above sea level.

C. Exhaust Emission at Emission Point to Atmosphere shall meet the applicable EPA emissions requirements

PART 2 - PRODUCTS

2.1 ACCEPTABLE MANUFACTURERS

A. Subject to compliance with the Contract Documents, the following manufacturers are acceptable:
   1. Engine generator unit:
      a. Caterpillar.
      b. Cummins Onan.
      c. Kohler.
      d. Generac.
   2. Silencers:
      a. Maxim.
      b. GT Exhaust Systems.
      c. Nelson.
      d. Cowl.
      e. Hapco.
   3. Battery charger:
      a. Manufacturer’s standard.
   4. Governor:
      a. Manufacturer’s standard.
   5. Radiator:
      a. Manufacturer's standard.
   6. Vibration isolators:
      a. Caldyne.
      b. Mason Inds.
      c. Ace.
      d. Korfund Dynamics.
   7. Automated Diesel Fuel Maintenance System:
      a. Fuel Technologies International
   8. Sub-base fuel tank:
      a. Alum-Tek Industries Ltd., British Columbia.
   9. Sound attenuating, walk-in generator enclosure and sub-base fuel tank:
      a. Alum-Tek Industries Ltd., British Columbia.
      b. Koontz Wagner.
      c. Enercon.
      d. Chillicothe Metal.

2.2 EQUIPMENT

A. Emissions Requirements:
   1. A single units emissions shall meet all Federal, State and Local government requirements, including but not limited too:
      a. Environmental Protection Agencies (EPA) New Source Performance Standards (NSPS), 40 CFR Part 60, Subpart IIII.

2.3 COMPONENTS

A. Engine Generator Unit EG-101 General:
   1. Diesel engine direct-connected to alternating current generator mounted on suitable rigid steel skid supports.
   2. Mount unit on skid suitable for installation on concrete foundation.
   3. Base rating on operation at rated RPM when equipped with all operating accessories.
   4. Performance: Establish net rating of each generator set under operating conditions specified when equipped and fully loaded with all necessary operating accessories. Substantiate ratings with manufacturer's standard published curves and data.
      a. Minimum ratings:
         1) Standby rating:

a) 800 kW, 1000 kVA at 0.8 pf.
2) Frequency: 60 Hz.
3) Voltage: 480Y/277V, 3-phase, 4-wire.
4) Engine speed, max: 1800 rpm.
5) Motor starting capability:
a) Step 1:
(1) Lighting: 10 kVA
(2) HVAC: 20 AC Tons
(3) Instrumentation: 9 kVA
b) Step 2:
(1) Raw Water Pump: 300 hp motor with VFD.
c) Step 3:
(1) High Service Pump: 350 hp motor with VFD.
d) Step 4:
(1) Air Compressor/Dryer: 25 hp motor with FVNR starter.
e) Step 5:
(1) Backwash Supply Pump: 40 hp motor with VFD.
f) Step 6:
(1) Backwash Recovery Pump: 20 hp motor with VFD.
g) Step 7:
(1) CIP Circulation Pump: 7.5 hp motor with FVNR starter.
(2) Acid CIP Pump: 7.5 hp motor with FVNR starter.
(3) Sanitary Pump: 2 hp motor with FVNR starter.
6) Assume a load factor of 90% for all loads in the generator sizing calculations.
7) Minimum Engine Displacement: 1710 cubic inches.
8) Maximum temperature rise on alternator: 125 DegC.
9) Maximum starting voltage dip: 20 percent.
10) Maximum peak voltage dip: 20 percent.
11) Maximum frequency dip: 5 percent.

5. Standards: UL 2200.

B. Engine:
1. Four-cycle, full compression ignition, single acting, solid-injection unit, either vertical or V-type pistons naturally aspirated or turbo charged with after cooling.
2. Fuel supply: No. 2 Diesel.
3. Removable full wet-type cylinder liners of close grained alloy iron, heat treated for proper hardness to obtain maximum life.
4. Capable of operating at idle or light loads for extended periods of time.

C. Injection Pumps and Valves:
1. Type not requiring adjustment in service, which may be individually removed and replaced.
2. Individual injection pump and valve for each cylinder.
3. Fuel injection pumps: Positive action, constant-stroke, actuated by cam driven by gears from engine crankshaft.
4. Fuel lines between injection pumps and valves: Heavy seamless steel tubing.
5. Flexible fuel line connectors for supply and return connections at pump.

D. Oil Pump:
1. Gear-type lubricating oil pump to supply oil under pressure to main bearings, crank pin bearings, pistons, timing gears, camshaft bearings and valve rocker mechanism.
2. Spray cool and lubricate pistons.
3. Oil filters so located that lubricating oil is continuously filtered, except during periods when oil is automatically by-passed to protect vital parts when filters are clogged.
4. Filter elements accessible and easily removable.
5. Filter elements: Effective full flow, replaceable resin-impregnated cellulose type.
6. Equip filter system with spring-loaded by-pass valve.
7. Oil cooler: Water-cooled, engine-mounted.

E. Fuel System:
   1. Fuel pump: Built-in gear-type, engine-driven fuel transfer pump, capable of supplying fuel at constant pressure against head of 12 FT.
   2. Fuel filters:
      a. Equip fuel system with replaceable primary and secondary fuel filter elements arranged for easy removal without breaking any fuel line connections or disturbing fuel pumps or any other part of engine.
      b. Fuel filters shall be constructed with glass bottom housing to allow inspection for water or other fuel contaminants.
      c. Locate all fuel filters in an accessible housing, ahead of injection pumps to thoroughly filter fuel before it reaches the pump.
   3. Use no screens or filters requiring cleaning or replacement of injection pumps or valve assemblies.

F. Governor: Fully enclosed electronic type governor with actuator capable of providing accurate speed control within 1 percent of rated speed, complete with panel-mounted electronic assembly with ramp generator and speed-sensing modules.

G. Air Cleaners: Engine-mounted, dry type air cleaners of sufficient capacity.

H. Electric Starting System:
   1. Sufficient capacity to crank at speed which will start engine under normal operating conditions.
   2. Controls to provide automatic cranking of engine when generator is called to start.
   3. Prevent excessive cranking which could damage cranking motor.
   4. Automatic stop controls.
   5. Starter motors with positive-engagement feature.

I. Cooling System:
   1. Capacity for cooling engine at the specified operating conditions.
   2. Engine driven, centrifugal type water circulating pump and thermostatic valve to maintain the engine at recommended temperature level.
   3. Unit mounted radiator.
      a. Core guard flexible duct adapter.
      b. Site glass at top of unit.
      c. Engine driven blower fan.
      d. Low water level cutoff switch.
      e. Radiator fluid cap shall be readily accessible. Radiator fluid shall be able to be inspected without having to be on top of the enclosure.
   4. Provide fan guards.

J. Heater:
   1. Thermostatically controlled jacket water heater(s) to maintain cooling jacket at the manufacturer's recommended temperature at the specified low ambient temperature.
   2. Voltage: 208 VAC, single or three-phase.

K. Silencer:
   1. Suitable type for critical silencing.
   2. Seamless, stainless steel, flexible, exhaust adapter for exhaust outlet to silencer.
   3. Shall be located within the generator enclosure.

L. Exhaust:
   1. Roof thimble, outlet elbow and rain cap constructed from type 304 stainless steel.
   2. Carrier pipe of the same diameter and wall thickness as the interconnecting engine exhaust pipe.

M. Engine Instruments and Controls:
   1. Engine-mounted instruments:
      a. Fuel pressure gauge.

b. Oil pressure gauge.
c. Oil temperature gauge.
d. Water temperature gauge.
e. Run time meter.
f. Battery voltage meter.

2. Automatic cycle cranking and over-crank protection.
3. Safety controls: Equip engine with automatic safety controls to shut down engine in event of low lubricating oil pressure, high jacket water temperature, overspeed or overcrank.
4. Auxiliary control devices: Either integral with specified engine instruments, control, and safety devices or as separate devices as required to operate various signal circuits specified for remote annunciator panel.
5. Three (3) NO auxiliary contacts for interface with louvers, fans or other miscellaneous equipment.
   a. Contacts shall close when generator is started.

N. Fuel Day Tank:
1. Base-mounted tank with integral secondary containment in accordance with UL requirements.
2. Minimum capacity: 3000 gallons.
3. Fuel tank capacity (e.g., "3000 GALLONS") shall be painted on a visible section of the tank with 2 IN high letters, minimum.
4. Mechanical fuel gauge.
5. Steel construction, top and bottom baffles, steel channel side supports, weatherproof secondary containment, rust preventive interior coating, rust-proofed and finish painted exterior.
6. Primary vent with breather shall be constructed of 304 SST.
7. External NPT drain fittings for fuel tank and containment basin.
8. Tank connections: Fuel level gauge, fuel lines to generator, fill, vent, drain and pressure relief. Tank connections accessible from outside the weather-proof enclosure and with the enclosure fully closed.
9. Manual overfill protection.
10. Critical low level shutoff with contacts for remote alarm.
11. Leak detection alarm with contacts for remote alarm.
12. Fuel tank shall include leak detection in the interstitial space between the inner and outer tank shells and low fuel level detection.
13. Fuel tank leak and low level alarms shall be provided with local indication at the engine generator control panel.
14. Fuel tank shall be configured for full coverage of unit base area and with electrical stub-up area within enclosure perimeter.
15. Generator set assembly shall be configured such that the top of the Control Panel is 79 IN or less above finished floor.
16. Standards: UL 142.

O. Fuel Tank Level and Leak Detection Monitoring:
1. Fuel leak sensors shall be monitored by the generator control panel for alarm indication.
2. Accessories, fittings, etc. as required.
3. Provide and install complete and fully-functional, configured fuel tank and leak detection monitoring system integrated with the equipment provided.

P. Batteries:
1. Lead acid type.
2. Furnish electrolyte separately for use when installation is complete and unit is ready for testing.

Q. Battery Charger:
1. Output current rating of at least 1/20th of ampere hour capacity of battery and capable of automatically switching between low rate (float) mode and high rate (equalize) mode.

2. Solid state rectifiers, DC voltmeter and ammeter, fuse input and output, and 115 Vac input.
3. Malfunction alarm contacts (minimum): low and high battery voltage, weak battery and charger failure.

R. Generator:
1. Brushless, 4 pole drip-proof revolving field type with permanent magnet, 2/3 pitch stator, direct-coupled rotor, Class H insulation.
2. Minimum continuous standby ratings:
   a. Specified herein, substantiated by manufacturer's standard published curves and conform to NEMA MG 1 specification.
   b. Special ratings or maximum ratings are not acceptable.
3. Rated to serve up to 75 percent non-linear load without exceeding rated temperature rise.
4. Minimum efficiency: 92 percent at 50 to 110 percent of nominal standby rating, less than 30 percent instantaneous voltage dip at full load and rated power factor and suitable for simultaneous operation with other future units connected in parallel.
5. Stator and rotor: 105 DegC temperature rise with minimum Class F insulated with 100 percent epoxy impregnation and overcoat of resilient insulating material to reduce possible fungus and/or abrasive deterioration.
6. Directly connect stator to engine flywheel housing.
7. Drive rotor through semiflexible driving flange to ensure permanent alignment.
8. Self ventilating with suitable blower, air inlet and outlet openings.
9. Provide terminal box of adequate size for entrance of conduit and termination of conductors.
10. Generator drive free from critical torsional vibration within operating range.
11. Provide generator mounted main circuit breaker:
   a. Solid state molded case type.
   b. Ratings as indicated.
   c. Main circuit breaker shall be accessible and shall be installed so that the center of the grip of the operating handle of the circuit breaker, when in its highest position, is not more than 79 IN above the floor.

S. Voltage Regulator:
1. SCR type, to maintain 2 percent voltage regulation from 0 to full load with steady state modulation not exceeding plus 1/2 percent including cross-current compensation to provide maximum of 5 percent unbalance in kVA load sharing between this unit and possible future generators.
2. Automatic protection against short circuits on system.
3. Permit unit to operate at no load below rated frequency for engine start up and shut down procedures.
4. Provide voltage level and gain controls for normal operating adjustments.
5. Provide voltage level control with minimum range of plus or minus 5 percent from rated voltage.
6. Mount regulator, volts per hertz type, in generator housing on suitable vibration isolators.

T. Generator Instruments and Controls:
1. Generator mounted NEMA 1 type, illuminated vibration isolated instrument and control panel(s).
2. AC voltmeter and phase selector switch.
3. AC ammeter and phase selector switch.
4. Frequency meter.
5. Run-off-auto engine, start-stop control switch.
6. Emergency stop.
7. Run time meter.
8. Governor control rheostat.
9. Voltage level adjustment rheostat.
10. Cool down time delay 0-15 minute adjustable.
11. Cycle cranking control.
12. Minimum red shut down indicating lights as follows:

a. Overcrank.
b. Overspeed.
c. Low lubricating oil pressure.
d. High engine water temperature.

13. Minimum amber alarm indicator lights as follows:
    a. Control switch not in auto position.
    b. Low engine water temperature (less than 70 DegF).
    c. Low fuel in day tank.
    d. Fuel tank leak.
    e. Battery charger malfunctioning.
    f. Low battery voltage.
14. Minimum amber prealarm indicator lights as follows:
    a. High engine water temperature.
    b. Low lubricating oil pressure.
15. External Interface Signals:
    a. Outputs with SPDT, dry relay contacts:
        1) General Warning condition.
        2) General Alarm (shutdown) condition.
        3) Engine Running condition.
        4) Generator in Auto condition.
    b. Accept remote dry Start contact closure from automatic throwover controls equipment, rated 10 amps at 32 Vdc.

U. Vibration Isolators: Vibration system shall consist of engine and generator mount isolators with or without additional mechanical spring isolators rubber pads to control both high and low frequency vibrations between major components, sub-base and structural foundation and to provide required vibration isolation for the seismic zone of the Project.

2.4 ACCESSORIES

A. Provide interposing relays (24 Vdc to 120 Vac) as required for interfacing with customer's 120 Vac monitoring system.

B. Generator Enclosure:
1. Drop-over style, walk-in, sound attenuating, weatherproof, self-contained, freestanding generator containment.
2. The enclosure shall be designed to withstand corrosion from the salty marine air.
3. The generator enclosure shall fully encompass the fuel tank to prevent corrosion.
4. The package shall comply with the requirements of the National Electrical Code for all wiring materials and component spacing.
5. The generator set, enclosure, and sub-base fuel tank shall be designed to be lifted into place using spreader bars.
6. Housing shall provide ample airflow for generator set operation at rated load in an ambient temperature of 100 DegF.
7. Atteneuate engine generator produced sound to an A-weighted sound level of 80 dB(A) at 23 FT from enclosure in a free field condition.
8. Construction:
    a. Marine-grade 5052 aluminum alloy frame and exterior panels, painted.
    b. Marine grade paint process on fuel tank and enclosure.
    c. Construction of enclosure shall include isolation of dissimilar metals.
    d. Structurally stable in 150 mph wind.
    e. Support roof load of 40 PSF.
    f. Exterior wall: 10 gauge aluminum.
    g. Exterior roof: 10 gauge aluminum, seam welded.
    h. Walls: 3-1/2 IN double stud construction.
    i. Base: 3 IN x 2 IN x 3/16 IN perimeter mounting angle.

j. Exterior components such as hinges, hardware, door latches, drip rails, bird screens, exhausts, rain caps and vents shall be constructed from stainless steel and shall be corrosion resistant.
k. Enclosure roof shall be cambered to prevent rainwater accumulation.
l. Openings shall be screened to limit access of rodents into the enclosure.
m. Interior:
    1) Fully insulated with 3-1/2 IN rigid fiberglass insulation, ceiling and walls.
    2) Interior lined with 22 gauge perforated galvanized steel screwed in place.
    3) Fiberglass or mineral wool insulation to provide minimum R11 insulation in side walls and roof for thermal transmission, sound attenuation material can be in addition to or include the thermal insulation.
n. Design, provide and install stairs with a landing and railings per the local AHJ requirements for each of two generator enclosure doors.
    1) The stairs shall be built in compliance with IBC.
    2) Hot-dipped galvanized after fabrication.
    3) Factory prefabricated steel stair system design:
        a) Factory fabricate entire stair assembly and ship knocked down for field erection.
        b) Ship to site in as large an assembly as practicable.
        c) Provide all miscellaneous angles, plates, brackets, fasteners, etc., as required for complete assembly.
    4) Factory prefabricated steel stair system design:
        a) Factory fabricate entire stair assembly and ship knocked down for field erection.
        b) Ship to site in as large an assembly as practicable.
        c) Provide all miscellaneous angles, plates, brackets, fasteners, etc., as required for complete assembly.
        d) Set beam or column base plates
o. The generator enclosure, including all material and accessories, like control devices, batteries, battery charger, battery rack, etc. shall be designed and built to withstand local seismic conditions and wind loading. The installation shall be designed for 150 mph wind speed minimum. A statement shall be made on physical drawing that enclosure meets these requirements of Seismic and wind-speed conditions. The drawings shall be stamped by a Structural Engineer registered in the State of Oregon.

9. Exterior shall be mill pre-painted in color selected by Owner.
    a. Clean to specification SSPC-SP1.
    b. Primed with Tower T113 epoxy primer to 1.5 mils D.F.T.
    c. Top coated with semi-gloss polysiloxane to 2.0 mils D.F.T.
    d. Color to be determined.
10. Resist intake of blown sand or rain through intake air assembly.
11. One (1) 36 IN wide man door in one (1) side and either a pair of 36 IN wide doors in one (1) side or removable air intake and louver assembly for removal of large assemblies.
    a. All doors shall be lockable, and include retainers to hold the door open.
12. Space for routine maintenance and service shall be provided on all four (4) sides of generator.
13. Anchor bolts for casting into concrete base for attaching enclosure to pad.
14. Provision for exit of exhaust in roof, flashed and sealed to prevent entry of moisture.
15. Support for critical silencer inside enclosure, internally mounted.
16. Muffler installed with wire-on insulation blanket to mitigate radiated heat load being imposed into the ventilation airflow,
17. Lighting fixtures to provide light for servicing.
18. Motorized dampers or louvers for control of air intake and discharge openings.
19. Two electric unit heaters to maintain internal temperature at 50 DegF rated at 3KW minimum each, 208 volts, 3 phase.
20. Coordinate the enclosure with the engine generator furnished to assure physical clearances, sound attenuation, airflow and pressure drop through the system.

21. Provide package power supply per specification 16470.
    a. Installed within the generator enclosure to provide 120/208V, 3 PH power for serving loads inside enclosure to include but not be limited to lights, unit heaters, engine block heaters, battery chargers, ventilation fans, fuel maintenance system.
    b. All electrical components, raceways, and wiring to be installed at factory. Provide labels that indicate the completed raceway and wiring system is UL-labeled and NEC compliant.
    c. Input Power: 460 VAC, 60Hz.
    d. Rating of package power supply as required for generator enclosure loads.
22. Ventilation fan with gravity damper, thermostatically controlled to operate continuously at internal temperatures adjustable from 60 to 90 DegF and interlocked to prevent them from running when the engine generators are running.
    a. Interlock ventilation fan with motorized inlet dampers.
23. Oregon Gold Seal Certification:
    a. The equipment manufacturer shall hold a currently valid registration with the Building Codes Division of the Oregon State Department of Consumer and Business Services as a qualified manufacturer of prefabricated structures. The equipment enclosure shall comply with the current Oregon State Building Code, including the Structural, Mechanical, Plumbing, and Electrical Specialty Codes as well as the Oregon Non-Residential Energy Code. Structure shall bear Oregon Gold Seal Certification. The equipment enclosure shall bear an Insignia of Compliance, issued by the State of Oregon, demonstrating compliance with Oregon regulations governing closed construction of prefabricated structures. The manufacturer shall be responsible for submitting all applications, fees, plans, specifications, engineering calculations, and other design data to the proper authority for review. Items that must be submitted for review include, but are not necessarily limited to, the following:
        1) Application forms and associated fees.
        2) Documentation of compliance with the Oregon Structural Specialty Code including structural plans, details, and calculations.
        3) Documentation of compliance with the Oregon Mechanical Specialty Code.
        4) Documentation of compliance with the Oregon Electrical Specialty Code for both AC and DC systems including electrical schematics; panel schedules; feeder riser diagrams; one-line riser diagrams showing bonding, grounding, and conductor sizes; available fault current on line side of service disconnect; and complete load calculations.
        5) Documentation of compliance with the Oregon Non-Residential Energy Code covering the building envelope, HVAC systems, and lighting.
        6) Technical specifications for the equipment.
        7) The manufacturer’s arrangement drawings and Bill of Material.
    b. Approval of all such documents shall be obtained prior to manufacturing the equipment. The State of Oregon requires that submitted engineering plans and calculations be sealed and prepared under the responsible charge of a Professional Engineer who is registered in the State of Oregon. The manufacturer shall also be responsible for obtaining any required building permits for their prefabricated construction, for obtaining the final inspections of the completed equipment, and for correcting any deficiencies identified during the final inspections.

C. Permanent Diesel Fuel Maintenance System:
1. Automatically pumps diesel fuel through particle filter.
2. Particulate removal:
    a. Size: 2 micron.
    b. Effective: 99%.
3. Near 100% water removal.
4. UL listed controller.
5. NFPA compliant.
6. Includes a 3-position, Manual/Off/Auto selector switch.

7. Alarms:
    a. Water Detection
    b. Filter Saturation
    c. Leak Detection
8. Installed on wall within the generator walk-in enclosure.

D. Dry-Type Transformer:
1. Ventilated or non-ventilated, air cooled, two (2) winding type.
2. Cores:
    a. High grade, non-aging silicon steel with high magnetic permeability, and low hysteresis and eddy current losses.
    b. Magnetic flux densities are to be kept well below the saturation point.
3. Coils: Continuous wound with electrical grade aluminum.
4. Ventilated Units:
    a. Core and coils assembly impregnated with non-hygroscopic, thermosetting varnish and cured to reduce hot spots and seal out moisture and completely isolated from the enclosure by means of vibration dampening pads.
    b. Dripproof, NEMA 1, steel enclosure finished with a weather-resistant enamel and ventilation openings protected from falling dirt.
5. Furnish Taps for Transformers as follows:
    a. 3 PH, 3 to 15 kVA: Two (2) 5 percent FCBN.
    b. 3 PH, 15 kVA and above: Two (2) 2.5 percent FCAN and four (4) 2.5 percent FCBN.
6. Efficiency:
    a. Ventilated, 15 kVA and larger: Energy efficient meeting NEMA TP 1 requirements.
7. Insulating Material (600 V and below):
    a. 3 to 15 kVA units: 185 DegC insulation system with a 115 DegC rise.
    b. 15 kVA and above units: 220 DegC insulation system with a 150 DegC rise.
8. Ratings: 60 Hz, voltage, KVA and phase, as indicated on the Drawings.
9. Finish: Rust inhibited primer and manufacturers standard paint inside and out.
10. Standards: IEEE C57.96, NEMA ST 20, NEMA TP 1, UL 506, UL 1561.

E. Panelboard:
1. Standards: NEMA PB 1, NFPA 70, UL 50, UL 67.
2. Ratings: 208Y/120 volts, 100A bus, 3-phase, 4-wire, 10,000 AIC.
3. Construction:
    a. Interiors factory assembled and designed such that switching and protective devices can be replaced without disturbing adjacent units and without removing the main bus connectors.
    b. Multi-section panelboards: Feed-through or sub-feed lugs.
    c. Main lugs: Solderless type approved for copper and aluminum wire.
4. Bus Bars:
    a. Main bus bars:
        1) Plated aluminum or copper sized to limit temperature rise to a maximum of 65 DegC above an ambient of 40 DegC.
        2) Drilled and tapped and arranged for sequence phasing of the branch circuit devices.
    b. Ground bus and isolated ground bus, when indicated on the Drawings: Solderless mechanical type connectors.
    c. Neutral bus bars: Insulated 100 percent rated or 200 percent rated, when indicated on the Drawings and with solderless mechanical type connectors.
5. Enclosure:
    a. Boxes: Code gage galvanized steel, furnish without knockouts.
    b. NEMA 12 rated enclosure.
    c. Trim assembly: Code gage steel finished with rust inhibited primer and manufacturers standard paint inside and out.
    d. Lighting and appliance panelboard:
        1) Trims supplied with hinged door over all circuit breaker handles.

2) Trims for surface mounted panelboards, same size as box.
3) Doors lockable with corrosion resistant chrome-plated combination lock and catch, all locks keyed alike.
4) Nominal 20 IN wide and 5-3/4 IN deep with gutter space in accordance with NFPA 70.
5) Clear plastic cover for directory card mounted on the inside of each door.

6. Overcurrent and Short Circuit Protective Devices:
   a. Main overcurrent protective device:
      1) Molded case circuit breaker.
   b. Branch overcurrent protective devices:
      1) Mounted molded case circuit breaker.
   c. Factory installed.

2.5 SOURCE QUALITY CONTROL

A. Individually test each prime mover.
   1. Apply derating factors for the proposed site to test data.
   2. Continuously test for a period no less than 2 HRS.
   3. Test procedure shall be as follows:
      a. Start prime mover and upon reaching rated RPM, pick up 100 percent of nameplate KW rating at rated power factor in one (1) step.
      b. Observe and record the cranking time(s) required to start and run for each prime mover.
      c. Observe and record the time required to come up to operating speed for each prime mover.
      d. Record voltage and frequency overshoot for each prime mover.
      e. Record voltage, frequency and amperes.
      f. Record oil pressure, water temperature where applicable and battery charge rate at first load acceptance and at 15 minute intervals thereafter for each prime mover.

2.6 MAINTENANCE MATERIALS

A. Spare Parts:
   1. Furnish, tag, and box for shipment and storage the following spare parts and special tools:

ITEM	QUANTITY
Diesel fuel line filter elements	3 complete sets
Lubricating oil filter elements with gasket	3 complete sets
Air cleaner filter element	1 complete set
Auxiliary fuel and jacket water pump packing/seals	1 complete set
Cooling fan drive belt (if applicable)	2 complete sets
Hydrometer	1 each
Two-pronged battery voltmeter	1 each
Special tools required to maintain or dismantle engine generator set	1 complete set
Spare fuses, if used in the control panel	1 complete set
Spare indicating lamps	4 each type used

   2. Provide a spare parts list with associated costs which includes, but is not limited to the following:
      a. Fuel oil filter element and gasket.
      b. Lubricating oil filter element and gasket.
      c. Air cleaner filter element.
      d. Packing set for each auxiliary pump.
      e. V-belts for fan and pump drives.
   3. Accessories:
      a. Universal General Purpose Spill Kit

b. Manufacurer:
   1) Interstate Products - Model GPSK30, or equal
c. Design and Fabrication (minimum requirements):
   1) Absorbent pads: 50
   2) Absorbent socks: 6
   3) Absorbent pillows: 4
   4) Goggles: 1
   5) Gloves: 1
   6) Disposable bag: 1
   7) 30 Gallon Poly Drum with Lid suitable for outdoor storage: 1

PART 3 - EXECUTION

3.1 INSTALLATION

A. Install all components as indicated and in accordance with manufacturer's recommendations and instructions and Section 26 05 00.

B. Fill cooling system with solution of 50-50 water and ethylene glycol anti-freeze to prevent freezing at temperatures as low as minus 30 DegF.

C. Provide fuel for a full diesel storage tank.

D. Install all wiring to engine in conduit.
   1. Control wiring on engine may be factory installed in high temperature loom.

E. Provide control wiring in conduit between generator control panel and remote devices as described under generator instrument and controls paragraph and remote annunciator paragraph of this Specification.

F. Mount on concrete pad utilizing vibration/seismic isolators, see structural drawings for pad detail.

G. Provide and install steps and platforms to access unit for operation and maintenance activities.
   1. Materials: hot-dipped galvanized steel.

3.2 FIELD QUALITY CONTROL

A. Employ and pay for services of equipment manufacturer's field service representative(s) to:
   1. Inspect equipment covered by this Section.
   2. Supervise pre-startup adjustments and installation checks.
   3. Conduct initial startup of equipment and perform operational checks.
   4. Provide Owner written statement that manufacturer's equipment has been installed properly, started up, tested, and is ready for operation by Owner's personnel.
   5. Provide 4 HRS of the manufacturer's technical representative's time for on-site training of Owner's personnel.

B. Provide two (2) load tests and one (1) cycle crank test.
   1. Tests one (1) and two (2) shall be for continuous period of no less than 2 HRS each.
   2. Engineer and Owner shall be notified seven (7) days prior to testing.
   3. Test number one:
      a. With prime mover(s) in a “cold start” condition and emergency load at normal operating level, initiate a normal power failure by opening all switches or breakers supplying normal power to facility.
      b. Observe and record the time delay on engine start.
      c. Observe and record the cranking time(s) required to start and run for each prime mover.
      d. Observe and record the time required to come up to operating speed for each prime mover.
      e. Record voltage and frequency overshoot for each prime mover.

f. Observe and record time required to achieve steady-state condition with all switches transferred to emergency position.
g. Record voltage, frequency, and amperes.
h. Record oil pressure, water temperature where applicable and battery charge rate at 5-minute intervals for the first 15 minutes and at 15 minute intervals thereafter for each prime mover.
i. Return normal power to facility, record time delay on retransfer to normal for each switch and cooldown time delay for each prime mover.

4. Test number two:
   a. Immediately after completion of test number one, start prime mover and upon reaching rated RPM, pick up 100 percent of nameplate KW rating in one (1) step.
      1) Unity power factor is acceptable for on-site testing
   b. Observe and record the cranking time(s) required to start and run for each prime mover.
   c. Observe and record the time required to come up to operating speed for each prime mover.
   d. Record voltage and frequency overshoot for each prime mover.
   e. Observe and record time required to achieve steady-state condition.
   f. Record voltage, frequency, and amperes.
   g. Record oil pressure, water temperature where applicable and battery charge rate at first load acceptance and at 15 minute intervals thereafter for each prime mover.
5. Cycle crank test:
   a. Perform test for each prime mover.
      1) Utilize any method recommended by manufacturer to prevent prime mover(s) from running.
      2) Put control switch into "run" position to cause prime mover to crank.
   b. A complete cranking cycle shall consist of an automatic crank period of approximately 15 seconds duration followed by a rest period of approximately 15 seconds duration.
      1) Upon starting and running of the prime mover, further cranking shall cease.
      2) Two (2) means of cranking termination shall be utilized so that one (1) will act as a backup to the other to prevent inadvertent starter engagement.
      3) Cranking limiter time shall be 75 seconds for cycle crank.
6. Furnish load banks of required ratings necessary for tests.
7. Record engine fuel consumption by means of test equipment.
8. Test all safeties specified for generator instruments and controls as recommended by manufacturer and as required to verify proper operation.
9. Contractor shall be responsible for fuel and all consumables use during the test.

END OF SECTION