CONTRACTUAL DOCUMENTS, GENERAL CONDITIONS, SPECIAL PROVISIONS AND TECHNICAL SPECIFICATIONS, AND INSTRUCTION TO BIDDERS

FOR

THREE (3) NATURAL GAS-POWERED ENGINE-GENERATORS

CITY OF GULF SHORES, ALABAMA

November, 2011

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INVITATION FOR BIDS

Sealed Bids will be received, opened and read aloud in public session by the City of Gulf Shores, Alabama, for **THREE (3) NATURAL GAS-POWERED ENGINE-GENERATORS** at 2:00 P.M., **November 29, 2011**, in the Gulf Shores City Hall Council Chambers. Qualified contractors are invited to Bid. This contract is for the purpose of providing materials and labor to install Three (3) Natural Gas Powered Engine Generators in conformance with the Specifications.

Copies of the plans, specifications, and contract documents may be inspected and/or obtained at the following location:

Gulf Shores City Hall
Public Works Department
1905 W. First Street
Gulf Shores, AL 36542
Telephone No. (251) 968-1156

Or

Downloaded from the City's website:
http://www.cityofgulfshoresal.gov/procurement/index.html

A mandatory pre-bid conference will be held at 10:00 A.M. on Thursday, November 17, 2011, in the Council Chambers in City Hall. Bids from Bidders who do not attend this conference will be rejected.

The Contractor will be required to obtain a business license from the City to operate within the Corporate Limits.

Sealed Bids may be mailed or delivered directly to the Owner prior to the bid opening. Such sealed Bids must be clearly and legibly marked **"THREE (3) NATURAL GAS-POWERED ENGINE-GENERATORS"** on the outside envelope. Sealed Bids must be sent to the following address:

Mail to:	City of Gulf Shores Post Office Box 299 Gulf Shores, AL 36547	Physical:	City of Gulf Shores 1905 W. 1st Street Gulf Shores, AL 36542
Telephone No.	(251) 968-2425		

The lowest responsive, responsible Bid will be accepted with key consideration based upon the benefit to the public. However, the City of Gulf Shores, Alabama, reserves the right to reject any and all Bids, to waive any irregularity in the Bids received, and to accept or reject any items of the Bid for the benefit of the public. No conditional Bids will be accepted. No Bid may be withdrawn for a period of thirty (30) days after the scheduled closing date and time for the receipt of Bids.

THE CITY OF GULF SHORES, ALABAMA

INSTRUCTIONS TO BIDDERS

1. BID FORMS

A complete set of Bidding Documents is included herein.

2. EXAMINATION OF DOCUMENTS AND PROJECT SITE

A. Carefully examine the Bidding Documents, Specifications and the work site. Bids shall include all costs required to execute the work under the existing conditions.

B. Direct inquiries and questions to the Public Works Director in writing at macreman@gulfshoresal.gov .

C. Extra payments will not be made for conditions which can be determined by examining the documents and the site.

3. INTERPRETATIONS AND ADDENDA

A. Should the Bidder find discrepancies, ambiguities, or omissions in the Specifications, or should he be in doubt as to their meaning, he shall at once notify the Public Works Director

B. The Public Works Director will issue Addenda to clarify discrepancies, ambiguities, or omissions in the Specifications.

C. Addenda will be faxed or emailed to each bidder. Addenda shall become part of the contract and all bidders must acknowledge receipt of Addenda on their bid form or their bid will be rejected. Bidders shall be bound by ALL Addenda.

4. MODIFICATIONS AND WITHDRAWAL OF BIDS

A. Bids may not be modified after submittal.

B. Any bidder may withdraw his Bid, either personally or by written request, at any time prior to scheduled time for opening bids.

C. No Bidder may withdraw his Bid for a period of thirty (30) days after date set for opening thereof, and all Bids shall be subject to acceptance by the Owner during this period.

5. MANDATORY PRE-BID CONFERENCE

A mandatory pre-bid conference will be held prior to the bid opening. Bids from Bidders who do not attend this conference will be rejected. The date of the pre-bid conference is shown in the Invitation to Bid.

6. AWARD OF CONTRACT

A. The Owner will award a single contract, dependent upon availability of funds.

B. The contract will be awarded to the lowest responsive qualified contract, subject to Owner's right to reject any or all Bids and to waive informality and irregularity in Bids and bidding.

7. PRE-QUALIFICATION OF CONTRACTORS

Each Bidder shall be prepared, if requested by the Owner, to present evidence of its experience, qualifications, and financial ability to carry out the terms of the Contract. The Owner reserves the right to disqualify any bidder who, in the judgment of the Owner, fails to adequately demonstrate qualifications and experience sufficient to enable that bidder to successfully complete the scope of work under this Contract.

8. EXECUTION OF CONTRACT

A. Within ten (10) days of Notice of Award, the Contractor shall deliver to Owner policies of insurance or insurance certificates as required by Contract Documents. All policies or certificates of insurance shall be approved by Owner before the successful Contractor may proceed with Work.

B. The Contractor shall commence work within ten (10) days following receipt of the Notice to Proceed or on a date stipulated in the authorization to proceed.

9. LAWS AND REGULATIONS

The Contractor's attention is directed to the fact that all applicable State laws, Municipal Ordinances and the Rules and Regulations of all authorities having jurisdiction over construction of the project shall apply to the contract throughout and they will be deemed to be included in the contract the same as though herein written out in full.

10. ALABAMA LICENSED CONTRACTOR

All Contractors submitting bids in excess of Fifty Thousand Dollars ($50,000.00) must be licensed Contractors in the State of Alabama and must give their License Number on their Bid Form. Contracts less than Fifty Thousand Dollars ($50,000.00) will not require a general Contractor's license; however, all other requirements shall remain the same.

11. BID BOND

All bids in excess of Fifty Thousand Dollars ($50,000) shall require a bid bond equal to 5% of contract amount or $10,000 whichever is lesser. Bid bonds will be returned by the Owner after the contract has been awarded.

12. PERFORMANCE BOND

If the winning bid is in excess of Fifty Thousand Dollars ($50,000), the Contractor shall obtain a performance bond equal to 100% of contract amount and shall be provided within ten (10) days of Notice of Award.

13. LABOR & MATERIALS BOND

If the winning bid is in excess of Fifty Thousand Dollars ($50,000), the Contractor shall obtain a Labor & Materials Payment Bond equal to but not less than 50% of contract amount and shall be provided within ten (10) days of Notice of Award. The bond shall include payment of reasonable attorney's fees incurred by successful claimants in civil actions.

14. COMPLETION DATE

A. Upon receipt of the Notice to Proceed, the Contractor shall commence the work within ten (10) days from the Date of the Notice and shall complete the work within **forty-five (45)** calendar days from the date of the Notice.

B. The completion date shall not be extended except for unavoidable delays caused by, but not limited to, fires, floods, storms, strikes, accidents, or other circumstances beyond the Contractor's control. The Contractor may request additional completion time within one week from the occurrence of the delay. The Public Works Director shall be the sole judge of such "unavoidable delays", and the extent thereof. In the event that such a determination is made, the date of completion shall be extended by a length of time equal to that lost by such circumstances.

15. LIQUIDATED DAMAGES

A. Deduction at the rate of Three Hundred Dollars ($300.00) per day shall be made from the total Contract price for each and every calendar day beyond the thirty (30) days from the date of Notice to Proceed that the work remains not satisfactorily completed.

B. The above mentioned sum shall be deducted as Liquidated Damages and not as penalty, the said sum being specifically agreed upon in advance as a measure of damage to the Owner on account of the delay, and the Contract price reduced by the aggregate of the entire damages so deducted shall be accepted in full satisfaction of all work executed under the contract.

PROPOSAL FORM

TO: City of Gulf Shores
P.O. Box 299
Gulf Shores, Al 36547

BIDDER: _____
_____
_____
_____

OWNERS: City of Gulf Shores, Alabama

PROJECT: **THREE (3) NATURAL GAS-POWERED ENGINE-GENERATORS**

The BIDDER in compliance with the INSTRUCTIONS TO BIDDERS having received the Plans and Specifications for the PROJECT, and having received, read, and taken into account all ADDENDA as follows: (List number and dates of each Addendum) _____
_____
_____
and having inspected the site(s) and the conditions affecting and governing the accomplishment of the PROJECT, the undersigned proposes to furnish all materials and perform all labor, as specified to complete the base bid and any alternate bid(s) for the following:

Item	Description	Units	Quantity	Unit Price	Bid Total
1	Provide labor and materials to install Three (3) - 60kw/75kva, 120/208 volt, 3-phase, 60 hz, 1,800 rpm, Natural Gas Powered Engine Generators	Each	3		

_____
Name of Bidder

_____
Address

_____
Telephone/Fax Number

_____
Email address

Corporate Seal	Al. Contractor License No. (if applicable)
Witness	Signature
Date	Title

BID BOND

KNOW ALL MEN BY THESE PRESENTS:

THAT _____
(Name of Contractor)

_____, as Principal,
(Address)

and _____
(Name of Surety)

of _____, as Surety,
(Address)

are held and firmly bound unto **the City of Gulf Shores,** as oblige, in the full and just sum of:

_____

_____

lawful money of the United States, for the payment of which sum, well and truly to be made, we bind ourselves, our heirs, executors, administrators, successors and assigns, jointly and severally, firmly by these presents.

WHEREAS, the said Principal is herewith submitting its Proposal for:

THREE (3) NATURAL GAS-POWERED ENGINE-GENERATORS

The condition of this obligation is such that, if the aforesaid Principal shall be awarded the Contract, the said Principal will, within the time required, enter into a formal Contract, and give a good and sufficient bond to secure the performance of the terms and conditions of the Contract, then this obligation to be void; otherwise, the Principal and the Surety will pay unto the full amount of said bond. If no other bids are received, the full amount of the proposal guarantee shall be so retained or recovered as liquidated damages for such default.

SIGNED, SEALED AND DELIVERED _____

(Date)

Witness as to Principal:

_____ _____

(Name of Contracting Firm)

By: _____

Title: _____

_____ (Name of Surety)

By: _____

Title: _____

BIDS WILL NOT BE CONSIDERED
UNLESS BID BOND IS SIGNED BY
PRINCIPAL AND SURETY, OR IN
LIEU THEREOF, A CERTIFIED CHECK
MUST ACCOMPANY THE PROPOSAL.

NOTICE OF AWARD

DATED:

TO:

PROJECT: **THREE (3) NATURAL GAS-POWERED ENGINE-GENERATORS**

You have been awarded a contract for **THREE (3) NATURAL GAS-POWERED ENGINE GENERATORS**

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Within ten (10) days of the date of this Notice of Award, you must deliver to the OWNER the enclosed contract documents, fully executed, signed and witnessed, and a Certificate of Insurance as follows:

2 originals - Contract
1 original - Performance Bond
1 original - Labor and Material Bond
1 original - Certificate of Insurance certifying compliance with all insurance requirements specified in the General Conditions

Within ten (10) days after receipt of the above documents, OWNER will return to you one (1) fully signed original of the Contract.

Failure to deliver the aforementioned contract documents and insurance certificate within the time specified will entitle OWNER to consider your bid abandoned, to annul this Notice of Award, and to declare your Bid Security forfeited.

CITY OF GULF SHORES (OWNER)

By: _____

CONTRACT

THIS AGREEMENT, made and entered into the _____ day of _____, 2011, at Gulf Shores, State of Alabama, by and between _____, a corporation, hereinafter called the Contractor, and the **City of Gulf Shores, Alabama,** and/or its assigns, hereinafter called the Owner.

WITNESSETH;

That the Contractor, for the consideration hereinafter set out, hereby agrees with the Owner as follows:

1. That the Contractor shall perform all of the work in a satisfactory manner in accordance with the plans and specifications, Bid requirements and conditions, which are attached hereto and made a part hereof as if fully contained herein, for **THREE (3) NATURAL GAS-POWERED ENGINE-GENERATORS.**

2. That the Contractor shall commence the work to be performed under this agreement within the Contract Time as defined in the *General Conditions*.

   All work shall be accomplished with quality in a manner which will maintain safety to life and property, and reduce to a minimum any interference with abutting property or public travel. All work shall be inspected and approved by the City Public Works Director and his staff as Owner's representatives before payment shall be made.

3. The Owner hereby agrees to pay to the Contractor for satisfactory performance of the agreement, subject to additions and deductions as provided in the contractual Documents, in lawful money of the United States as follows:_____

   _____.

4. It is mutually agreed between the Owner and the Contractor that timely performance is of the essence to this Contract, and the Contractor agrees to keep a working force on the job of the size that is adequate to perform all work in accordance with the Contractor's approved work schedule.

IN WITNESS WHEREOF, the parties hereto have executed this agreement on the day and date first above written in two (2) counterparts, each of which shall, without proof or accounting for the other counterpart, be deemed an original contract.

(Corporate Seal) _____ **(Contractor)**

By: _____

Its _____

Attest: _____

Its _____

(Seal) **City of Gulf Shores, Alabama (Owner)**

By: _____

Robert Craft, Mayor

Attest: _____

Wanda Parris, City Clerk

NOTICE TO PROCEED

TO: DATE: _____

PROJECT: **THREE (3) NATURAL GAS-POWERED ENGINE-GENERATORS**

You are hereby notified to commence work in accordance with the Agreement dated _____, 2011, on or before _____, 2011. The Agreement shall expire on_____.

City of Gulf Shores, Alabama (OWNER)

By _____

ACCEPTANCE OF NOTICE

Receipt of the above NOTICE TO PROCEED is hereby acknowledged this _____ day of _____, 2011.

_____

By: _____

WAIVER AND RELEASE OF LIEN

FROM:

TO: **City of Gulf Shores, Alabama** (Owner of Project)

PROJECT NAME: **THREE (3) NATURAL GAS-POWERED ENGINE-GENERATORS**

KNOW ALL MEN BY THESE PRESENTS:

1. The undersigned, having been employed by the **City of Gulf Shores** to furnish labor and/or materials for the referenced project, does hereby waive and release any and all lien and claim or right to lien and claim against the **City of Gulf Shores** on the referenced project on account of labor or materials, or both furnished for the referenced project.

2. The undersigned further certifies that to the best of his knowledge and belief, there are no unsatisfied or outstanding claims of any character arising out of the furnishing of labor and/or materials for the referenced project.

3. The undersigned further agree that, after execution of this document, it will defend at its expense, and save the **City of Gulf Shores** harmless from any and all claims or liens arising out of the undersigned's furnishing of labor and/or materials for the referenced project.

4. The undersigned has executed this document in order to induce the **City of Gulf Shores** to make final payment to and in no way acts as a release of any claim the undersigned may have against parties other than the **City of Gulf Shores** arising out of the furnishing of labor and/or materials for the referenced project.

IN WITNESS WHEREOF, the undersigned has signed and sealed this instrument this _____ day of _____, 20__.

_____

STATE OF ALABAMA
COUNTY OF BALDWIN
Personally appeared before me the undersigned Notary Public in and for said County and State, _____, who is known to me and who, after being duly sworn, deposes and says that the facts stated in the above affidavit are true.

_____
NOTARY PUBLIC

GENERAL CONDITIONS

1. OWNER

The Owner for **THREE (3) NATURAL GAS-POWERED ENGINE-GENERATORS** is the City of Gulf Shores, Alabama. The mailing address for the Owner is Post Office Box 299, Gulf Shores, Alabama 36547.

2. LOCAL LICENSE REQUIREMENT

Attention is called to the fact that all companies performing work on this Contract must obtain a Business License from the City of Gulf Shores available at City Hall.

3. CONTRACT DOCUMENTS

The Owner will furnish the Contractor free of charge two (2) sets of plans and specifications. Additional sets may be purchased at cost to Contractor.

4. PAYMENTS AND COMPLETION

Once in each month, the Contractor may submit an Application for Payment for completed work in place on the enclosed form. Payment shall be made to the Contractor within thirty (30) days of receipt and approval of Application for Payment. The final monthly payment prior to the expiration of the Contract shall not be made until: 1) Submission by the Contractor of evidence satisfactory to the Owner that all payrolls, material bills, and other costs incurred by the Contractor in connection with the work under this contract have been paid in full including a Waiver and Release of Lien on the form included in the Contract Documents; 2) FOR CONTRACTS OF $50,000 OR MORE, legal notice of advertisement of completion has been advertised four (4) consecutive weeks in some newspaper of general circulation in Baldwin County, Alabama (approved by the Owner); 3) Final inspection of the work by the Owner. Final payment will be made to Contractor within thirty (30) days after satisfactory completion of (1), (2) and (3) above.

5. INSURANCE

General

Certificate of Insurance
Submit certificate of insurance on AIA Document G-705 entitled "Certificate of Insurance", or other suitable form provided by the Insurance Company.

Notification of Owner Re: Termination/Expiration
Each and every policy shall contain an endorsement stating that insurance company will not, prior to completion of project or any policy expiration date shown on policy and certificate, whichever occurs first, terminate policy or change any coverage therein without first mailing by registered mail, written notice of such action at least thirty (30)

days prior to termination or change, to Owner at whose request the policy and certificate are issued.

Insurance Companies
Coverage of all insurance shall be in acceptably strong companies with a minimum rating of A+AA in Best's Insurance Guide, or lacking that, must be approved by the Owner.

Owner Liability
The Contractor shall name the Owners, the City of Gulf Shores as additional insured in the Contractor Comprehensive Liability Policy.

Additional Coverage
Coverage shall include liability arising from property in care, custody and control of Contractor.

Limits of Coverage
Specific policies and amounts of coverage required are as follows:

(1) Workmen's Compensation - Employers Liability Insurance.

A. Statutory - amount and coverage as required by law of the place of building.

B. Employers Liability $100,000 minimum.

(2) Comprehensive - General Liability Insurance

A. Public Liability: Including Premises-Operations, Independent Contractors, Products-Completed Operations, Broad Form Property Damage Including Products Liability and Broad Form Contractual Liability.

1.	Bodily Injury Liability -	$100,000 per person per occurrence $300,000 aggregate per occurrence
2.	Property Damage Liability -	$100,000 aggregate per person

(3) Comprehensive - Automobile Liability Insurance including owner, nonowned, and hired vehicles.

A.	Bodily Injury Liability -	$100,000 per person per occurrence $300,000 per occurrence
B.	Property Damage Liability -	$100,000 aggregate

6. WORK SCHEDULE

After contract award, the contractor shall coordinate his work schedule with the Public Works Director. Any modifications to the established work schedule shall be first approved by the Public Works Director.

7. SANITARY FACILITIES

The Contractor shall provide on site sanitary facilities, if he so deems sanitary facilities to be necessary. No sanitary facilities shall be provided by the Owner.

8. STORAGE OF MATERIALS

All equipment and materials may be stored within the City at a location(s) approved by the Owner.

9. DISPOSAL OF MATERIALS

Any waste and excess materials shall be disposed of in a safe manner conforming to all Federal and State Occupational and Environmental Laws and Regulations including, but not limited to, the Occupational Safety and Health Act (OSHA), the Clean Air Act (CAA), the Clean Water Act (CWA), the Safe Drinking Water Act (SDWA), the Toxic Substances Control Act (TSCA), and Alabama Department of Environmental Management (ADEM) Regulations.

10. DRAWINGS AND CONTRACTUAL DOCUMENTS

The Contractual Documents shall consist of the Request for Proposals, Instructions for Bidders, Proposal, Proposal Forms, Contract, General Conditions, Special Conditions, Technical Specifications, all amendments and addenda thereto, and Drawings attached hereto.

GENERAL SPECIFICATIONS
FOR

THREE (3) NATURAL GAS-POWERED ENGINE-GENERATORS

I. Location

The Project locations are: Erie Hall Meyer Municipal Annex at 203 and 205 Clubhouse Drive and Gulf Shores Police Station at 220 Clubhouse Drive, Gulf Shores, Alabama.

II. Description of Work

SPARK-IGNITED GENERATOR SET
PART 1 – GENERAL

1.1 Scope of Work

Provide a natural gas or liquid propane vapor gas-powered engine-generator set of the latest, newest commercial type and design.

1.2 Materials

A. The Supplier shall furnish:

1. A 60 kw Standby rated natural gas Engine-generator set, along with accessories, per this Specification.
2. Labor to test the generator with resistive load banks upon completion of installation.
3. Owner training services.

1.3 Manufacturer

The generator set shall be a factory package of one manufacturer who has been regularly engaged in the design and production of generator sets for a minimum of 10 years. To qualify as a manufacturer, the supplier must manufacture the engine, the generator, or both items. Made in the U.S.A. only.

1.4 Supplier

The completed engine-generator set shall be supplied by the Manufacturer's authorized distributor only.

1.5 Power Rating

Power rating of the engine-generator set shall be based on operation at rated rpm when equipped with all necessary operating accessories, such as air cleaners, oil pump, jacket water pump, governor, alternating current generator, and exciter regulator. Radiator fan shall be included as necessary operating accessory.

A prototype test to the demands of NFPA 110, Level 1 and an endurance test of at least 1,000 hours at 100% of the Standby rating shall have been conducted for the engine-generator set being bid.

Package will be EPA certified for emergency power applications with air/fuel ratio controls built into the control panel.

1.6 Submittal Data

A. Make and model of engine-generator.
B. Makes and models of major auxiliary equipment, including vibration isolators, and radiator.
C. Manufacturer-produced dimension drawings of the complete engine-generator set clearly showing entrance points for each of the interconnections required.
D. Combustion air requirements.
E. Location and descriptions of the supplier's parts and service facilities within a 75 mile radius of the job site, including parts inventory and number of qualified engine-generator set service personnel.
F. Actual electrical diagrams, including schematic diagrams and interconnection wiring diagrams for all equipment to be supplied.
G. Minimum manufacturer warranty statements.
H. Service agreements for the routine maintenance or total maintenance and repair of the engine-generator set shall be offered for a period of no less than 3 years. Listed separately on quote.

PART 2 – PRODUCTS

2.1 General

References and Standards

The generator set covered by these specifications shall be designed, tested, rated, assembled and installed in strict accordance with all applicable standards below:

ISO8528-5
BS5514
SAEJ1349
ISO3046-1
DIN6271
UL2200

Designed to allow for installed compliance to NFPA 70, NFPA 99 and NFPA 110

2.2 Engine

A. The engine shall be spark ignited, natural gas, water-cooled, four-stroke cycle. The engine shall not use turbocharging to achieve needed horsepower to achieve needed horsepower. The engine shall be equipped with fuel, lube oil, intake air filters, lube oil cooler, service meter, gear-driven water pump, instruments, water temperature gauge, and lubricating oil pressure gauge. The engine shall run during exercising; with an internal exerciser that will provide an option to test at reduced speed (rpm) so as to minimize unnecessary noise.

B. Governor: Engine governor shall be Electronic type which shall control the frequency within 3% of rated frequency from no load to full load for drop operation of isochronous frequency regulation when supplying electronic or other non-linear loads. The frequency of any constant load shall remain within a stead-state band width of +/- 0.25% of rated frequency.

C. Mounting: The engine-generator set shall be mounted on a structural base supplied by the manufacturer.

D. Protective Devices: Safety shutoffs for high water temperature, low oil pressure, electrical over-speed, and engine over-crank shall be provided.

E. Enclosure: The generator shall be enclosed by a weather-protective enclosure fabricated of 14-gauge steel. The enclosure shall have hinged lockable doors for access to the equipment. Doors shall be lift-off removable type with bolted stainless-steel hinges and hardware. The use of pop rivets as fasteners is not acceptable.

All enclosure access points must use oil and rubber gasketing to provide protection against environmental wear.

Minimum wind ratings of 120 mph are required.

Proper intake and exhaust louvers shall be provided. Critical grade silencer must be enclosed within the unit in a separate discharge box with thermal grade wrapping. The enclosure shall be primed and painted with two coats of baked-on enamel paint; enclosure color shall be white.

2.3 Generator

A. Rating: The generator shall be rated for standby electrical service as follows: 60 kw/ 75 kva, at 0.8 pf, 120/208 volts, 3-phase, 60 hz, 1,800 rpm.

B. Type: The generator shall be three-phase, synchronous type, and built to NEMA standards. The exciter field will be brushless type. Class H insulation shall be used on the stator and rotor, and both shall be further protected with an asphalt modified epoxy on all end coils. The rating will be at a generator temperature rise not to exceed 120 degree C at 40 degree C ambient so as to provide an extended life. The generator shall also include a resettable thermal protector and fuse for exciter/regulator protection against extended low power factor loads and faults. The generator rotor shall be dynamically balanced within 0.0005" peak-to-peak amplitude displacements at both ends of shaft and shall sustain 25% over-speed.

C. Regulator: A digital automatic volts-per-hz type, solid-state exciter/regulator, manufactured by the generator manufacturer, shall be included and shock mounted inside the generator control panel enclosure. Voltage regulation shall be +/- 25% from no load to full-rated load. Readily accessible voltage droop, voltage level, and voltage gain controls shall be included in the module. Voltage level adjustment shall be a minimum or +/- 10%.

The module shall include the following protective features:

1. Current limit circuits shall restrain the exciter field current while allowing full forcing voltage to be applied to obtain rapid response during transient conditions or service overloading on the generator.

2. A time-delay circuit shall sense the current limit operation and cut off all field current to the generator after 10 seconds.

2.4 Cooling System

A. Radiator: An engine-mounted radiator with Puller-type fan shall be provided to maintain safe operation at 110 degree F ambient temperature. Total airflow restriction to and from the radiator shall not exceed 0.5" H2O (0.12 KPA). The radiator shall have at minimum two core sections to service the engine jacket water and aftercooler circuits. Cores are to be enclosed in a single housing. The aftercooler core shall be designed for 130 degree F maximum water temperature.

B. Cooling System Treatment: The engine cooling system shall be pre-treated by the engine supplier for the inhibition of internal corrosion. A solution of 50% ethylene glycol shall be added.

2.5 Fuel System

The engine-generator shall be capable of operation on low pressure natural gas. A normally closed 12 VDC gas valve and secondary pressure regulator will be factory installed. A braided flexible fuel connector will be furnished for installation between the gas valve and the gas piping.

2.6 Exhaust Silencer

Critical grade silencer must be enclosed within the unit in a separate discharge box with thermal grade wrapping.

2.7 Starting Motor

The engine shall be equipped with an electric starting system with positive engagement drive and of sufficient capacity to crank the engine at a speed which will start the engine under operating conditions. The starting pinion will disengage automatically when the engine starts.

2.8 Automatic Controls

Fully automatic generator set start-stop controls in the generator control panel shall be provided. Controls shall provide shutdown for low oil pressure, high water temperature, low coolant level, over-speed, over-crank, over-voltage and on auxiliary contact for activating accessory items. Controls shall include cranking cycle without lockout and manual reset feature.

2.9 Jacket Water Heater

An engine-mounted thermal circulation water heater incorporating an adjustable thermostatic switch shall be furnished to maintain engine jacket water to 90 degree F (32.2 degree C).

2.10 Battery and Battery Charger

A. A lead/acid storage battery set of the heavy-duty diesel starting type shall be provided. Battery voltage shall be compatible with the starting system. A battery rack constructed in conformance with the NEC requirements and necessary cables and clamps shall be provided.

B. A current-limiting, float-equalize charger shall be installed inside the generator enclosure to automatically recharge batteries. The charger shall float at 2.17 volts per cell and equalize at 2.33 volts per cell. It should include overload protection, silicon diode full wave rectifiers, voltage surge suppressors, DC ammeter, and fused AC output, and battery malfunctions alarm relay. AC input voltage shall be 120 volts, single phase. Amperage output shall be no less than 10 amperes.

2.11 Main Line Circuit Breaker

A. A main line circuit breaker carrying the UL mark shall be factory installed. The circuit breaker shall meet standards established by UL, NEMA, and the NEC. The breaker shall be rated per the manufacturer's recommendations.

B. The trip unit for each pole shall have elements providing inverse time delay during overload conditions and instantaneous magnetic tripping for short circuit protection.

C. Generator/exciter field circuit breakers do not meet the above electrical standards and are unacceptable for line protection.

2.12 Generator Control Panel

A. Control panel shall be obtained from same manufacturer as generator set and shall include factory warranty and manufacturer's parts and service support. Control panel will operate in -40 to +70 degrees C.

B. Generator-mounted Control Panel: Designed and built by the system manufacturer and incorporating 100% solid-state circuitry, sealed dust-tight, watertight modular components and instrumentation. The panel shall be mounted to the generator.

1. General AC Output Metering Devices:
   AC voltmeter 3-1/2" 2%
   AC ammeter 3-1/2" 2%
   Dial Frequency Meter 3-1/2" 2%

2. Engine Monitoring Devices
   Water temperature gauge
   Running time meter
   Oil pressure gauge

3. Start/Stop Controls:
   1 Start-stop switch, cycle cranking with cooldown timer, auto start-stop, manual start, off, and reset positions.
   1 voltage adjust rheostat
   1 alarm horn with silence switch. Horn must be 100db. minimum
   1 panel light and on/off switch for same
   1 alarm module with five red flashing lights to annunciate shutdowns for over-speed, low oil pressure, high water temperature, and over-crank

C. Voltage regulator shall be internal to control panel in order to protect from environmental damage.

PART 3 – EXECUTION

3.1 After Sales Product Support

On completion of the installation, two copies of parts books covering the engine, generator, and major auxiliary equipment shall be provided to the Owner. Procedures on operating and maintenance of the standby power system shall be explained to operating personnel.

3.2 Start-Up and Testing

Coordinate all start-up and testing activities with the Engineer and Owner. After installation is complete and normal power is available, the manufacturer's local dealer shall perform the following:

Perform a four hour load bank test at a 1.0 PF at full nameplate rating. Loadbank, cables and other equipment required for this test to be supplied by the genset supplier.

3.3 Generator Set Distributor

It is essential that the engine-generator supplier maintain a local parts and service facility within 75 miles of this installation. Further, the supplier shall have factory-trained service technicians to furnish all installation, test, and start-up supervision necessary for final approval and acceptance as well as perform maintenance and repairs on all components as required.

Supplier must have a factory fill rate for emergency orders of greater than 90% of all parts within two business days. Manufacturer must guarantee availability of spares for a period of no less than 10 years after final production of the model offered.

Distributor must make technical support available 7 days a week, 24 hours per day; in addition, the manufacturer must have 7 days a week, 24 hours per day emergency phone support available.

3.4 Service

The supplier shall maintain a national service organization that is factory trained and certified. In addition, the generator dealer organization shall be available 24 hours per day, 365 days per year.

3.5 Warranty

The engine-generator set shall be warranted against defects in materials and workmanship for a period of two years for standby applications; coverage to include both 100% parts and labor. Limits will be based upon the date of delivery to user. If a defect in material or workmanship arises during the warranty period the Supplier will during normal working hours:

A. Replace or, at the Supplier's discretion, repair the defective parts.

B. Provide for reasonable and customary labor costs to correct the defect.

C. Provide for the cost of service supplies such as coolant oil and filters which are made unserviceable by the defect.

D. Provide travel labor, if the generator set is inoperative due to a defect and, in the opinion of the Supplier, it cannot reasonably be transported to an appropriate service location.

The distributor shall maintain all tooling required by the manufacturer to complete warranty and service repairs.