ALASKA ENERGY AUTHORITY PROCUREMENT DEPARTMENT 813 W Northern Lights Blvd Anchorage, AK 99503 RETURN BY EMAIL OR FAX TO: kbentler@aidea.org fax 907.771.3044	**REQUEST FOR QUOTATION** **RFQ NO: 18058** Quotations due on/before **12:00 PM Local Time May 8, 2018 ON BEHALF OF CHIGNIK LAGOON**	**Chignik Lagoon** Engine Generator Package Page 1 of 28 Date: 4/27/18

VENDOR NOTICE (This is NOT a Purchase Order)

This is an informal quotation that will not be read at public opening. The information may be publicly reviewed after award. The terms and conditions should be reviewed and understood before preparing a quotation. The quotation shall be the best net price, F.O.B. destination, to include all delivery charges, but exclude applicable taxes. Delivery schedule and discount for early payment shall be indicated in the spaces provided below. Return the quotation by email or fax on or before the due date/time indicated above. If returned by fax, please reference the Buyer's name and the RFQ number on fax cover sheet.

DELIVERY LOCATION:	**BUYER:**
F.O.B. City Dock in Chignik Bay, Alaska 99564	Kris Bentler

VENDOR QUOTATION

Item	Description of Supply or Service	Qty	Unit	Total Price
1	**BASE BID:** 260 HP, 180 ekW prime, John Deere 6081AFM75, Tier 2 Marine engine generator, complete with Exhaust, Cooling System, Instrument Panel, Generator/Alternator, Wiring Interface, Spare Filters and accessories.	1	EACH	$
2	**ADDITIVE ALTERNATE:** 98 HP, 65 ekW prime, John Deere 4045TFM75, Tier 2 Marine engine with ECU, only. No generator or loose ship accessories.	1	EACH	$

Award will be made based on the lowest, responsive and responsible quote on the Base Bid that meets all specifications and delivery requirements. Alaska Energy Authority reserves the right to reject any or all quotes.	**REQUIRED DELIVERY** **On/Before 8/10/18**

THIS SECTION MUST BE COMPLETED BY VENDOR

Delivery to Chignik Bay, AK shall be made by_____(date).

Payment Terms: _____

Company Name		Street Address			
Alaska Business License No.	Vendor Tax I.D. No.	City	ST	ZIP Code	Phone Number

By signing this RFQ, you are attesting that you have read and understand the Scope of Work and requirements herein.	Email Address:
_____ _____ Signature Date	_____ Typed Name and Title

1. **Scope -** This Request for Quotes is for furnishing one complete engine generator with accessories, and one complete engine, fabricated, assembled, tested, and packaged in strict compliance with the specifications herein.
2. **Submittals -** Submittals shall be provided to the Engineer for review and approval prior to beginning fabrication. Submittals shall be prepared in accordance with the specifications.
3. **Progress Reports** – Upon commencement of fabrication, progress reports shall be provided to the Authority every week. Reports shall include a brief written description and digital photographs of work completed. Adequate photographs shall be provided to document each step in the fabrication process. Each report shall be submitted via email within one working day of completion of the work week.
4. **Inspection -** The work may be inspected by the Authority's representative at the engine generator Fabricator's facility during the fabrication process. A final inspection will be performed and approval will be issued prior to items being released for shipment. The Contractor shall provide a minimum of two weeks' notice prior to completion to allow the Authority adequate time to schedule the final inspection.
5. **Testing –** Test completed engine generator, and engine, in accordance with the specifications.
6. **F.O.B. Point -** All items shall be delivered F.O.B. to the **Chignik Bay Dock, Chignik, Alaska 99564**.
7. **Pricing -** The Bidder shall provide total prices as indicated on page 1 of the RFQ form. All prices shall be firm fixed prices, which include all costs and profit associated with furnishing the items as specified to the F.O.B. point by the date indicated. If awarded a contract, bidder's firm prices will be integrated into the contract.
8. **Required Delivery Date –** August 10, 2018 delivered to the F.O.B. point. If Bidder cannot meet the firm delivery date, Bidder shall seek guidance from the Authority prior to the RFQ due date.
9. **Method of Award** - An award will be made in accordance with the RFQ to the responsive and responsible bidder based on the lowest Base Bid price. The Authority reserves the right to add the alternate engine to the purchase.
10. **Progress Payments** - There will be no progress payments. Payments are NET30 on receipt of an invoice and acceptance of the materials at the F.O.B. point.
11. **Bidder Certification** - BIDDER'S NOTICE: By signature on the first page of the RFQ form, the Bidder certifies that:

    a. The price(s) submitted are independent and without collusion;
    b. The Bidder will comply with the laws of the State of Alaska;
    c. The Bidder will comply with applicable portions of the Federal Civil Rights Act of 1964;
    d. The Bidder will comply with the Equal Employment Opportunity Act and the regulations issued there under by the State and Federal Government; and
    e. The Bidder has reviewed all terms and conditions in this RFQ.

If any Bidder fails to comply with any of these requirements, the Authority may reject its quote, terminate the contract, or consider the Vendor in default.

Chignik Lagoon Power Plant

DERA Upgrade

RFQ 18058

Specifications

Section 26 32 13.10

Section 26 32 13.20

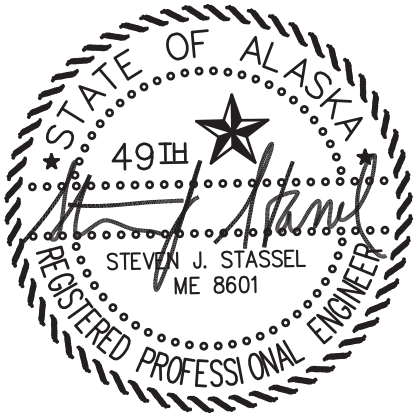
Drawing M6

Drawing E3

PREPARED BY:

Gray Stassel Engineering, Inc.

April 2018



SECTION 26 32 13.10
ENGINE GENERATORS

PART 1 - GENERAL

1.1 SCOPE

A. The Work included herein shall consist of providing, fabricating, and factory testing complete engine generator unit(s) as specified herein.

B. Each unit shall be harmonically balanced and shall be delivered complete and ready for installation.

C. Provide all accessories as specified for all engine generator units plus any additional components listed.

1.2 SUBMITTALS

A. Within one week of contract award provide a complete submittal in a single Adobe Acrobat PDF format file with bookmarks for each item.

B. Provide complete and accurate drawings of the equipment, including outline drawings and dimensional data which fully describe the height, width, and depth of the equipment; skid construction; schematics; wiring diagrams; and other relevant details.

C. Provide mechanical and electrical performance data including intake and exhaust air flow; charge air cooling requirements (if applicable); heat rejection; engine coolant pump curve at rated speed; fuel flow rate; fuel consumption at 100%, 75%, 50%, and 25% of rated prime power; and other relevant data.

D. A torsional vibration analysis (TVA) has been prepared for the specified Base Bid engine generator combination which includes a Newage/Stamford UCI274H generator and a John Deere 6081AFM75 engine with the following option codes: Crankshaft & Bearing #4705, Flywheel #1505, and Pulley/Damper #1345 or #1307. A TVA is NOT required to be provided if the Contractor offers the specified generator and specified engine with these option codes. If a substitute generator or engine is offered, or if the engine does not have the specified option codes, the Contractor shall provide a TVA for the proposed engine generator combination within 14-days of contract award.

E. A torsional vibration analysis (TVA) has been prepared for the specified Additive Alternate No. 1 John Deere 4045TFM75 engine in combination with a Newage/Stamford UCI274C generator. A TVA is NOT required to be provided if the Contractor offers the specified engine with the following option codes: Crankshaft & Bearing #4715, Flywheel #1597, and Pulley #1333 under Additive Alternate No. 1. If a substitute engine is offered, or if the engine does not have the specified option codes, the Contractor shall provide a TVA for the proposed engine and a Newage/Stamford UCI274C generator combination within 14-days of contract award.

F. Provide manufacturer’s catalog literature for all accessories and equipment.

1.3 REGULATORY COMPLIANCE

The Environmental Protection Agency (EPA) has issued New Source Performance Standards (NSPS) regulations governing use of stationary diesel engines in remote areas of Alaska. The following provisions of 40 CFR Subpart IIII apply to this solicitation:

A. 40 CFR 60.4201(f) permits manufacturers to produce stationary, non-emergency engines certified to 40 CFR 94 and 40 CFR 1042 (Tier 2 and Tier 3 Marine) if used solely in remote areas of Alaska.

B. 40 CFR 60.4208(e) prohibits owners and operators from installing a new engine greater than or equal to 175 HP and less than 750 HP after December 31, 2012 unless it meets applicable 2011 model year emissions requirements. (A new Tier 2 Marine certified engine complies with this requirement because Tier 3 Marine engines in this horsepower category were not produced until model year 2014).

C. 40 CFR 60.4216(b) permits manufacturers, owners and operators to install engines in remote areas of Alaska certified to 40 CFR 94 and 40 CFR 1042 (Tier 2 and Tier 3 Marine).

To comply with EPA regulations and also be compatible with the intended service, diesel engine(s) furnished under this solicitation shall be Tier 2 Marine certified engine(s), with a block manufacture date prior to model year 2014. If the engine is rebuilt it shall be rebuilt in accordance with Section 26 32 13.20 and the requirements of 40 CFR 1068 and applicable NSPS standards.

1.4 QUALITY ASSURANCE

A. All equipment shall be designed, fabricated, and assembled in accordance with recognized and acceptable engineering and shop practices. Individual parts shall be manufactured to standard sizes and gauges so that repair parts, furnished at any time, can be installed in the field. Like parts of duplicate units shall be interchangeable. Except where specific allowance is made in this specification for rebuilt or remanufactured engines, equipment shall not have been in service at any time prior to delivery, except as required by tests.

B. Equipment and components furnished under these specifications shall be in accordance with the requirements of applicable UL, NEC, IEEE, NEMA, and ANSI standards.

1.5 FABRICATOR QUALIFICATIONS

The engine generators shall be supplied, coordinated, and assembled by a qualified fabricator (Fabricator) who is regularly engaged in the business of providing diesel engine driven generator equipment.

A. The Fabricator must have staff with extensive experience in packaging prime power diesel engine driven electrical generators. A list of five prior projects that key personnel have worked on may be requested by the Authority after the bid opening and prior to award in order to verify Fabricator qualifications. The list must include installation date, description of installation, key personnel, and a reference contact for each installation.

B. The Fabricator must maintain a competent service organization that is available for field service calls. A description of the organization including resumes of key personnel may be requested by the Authority after the bid opening and prior to award in order to verify Fabricator qualifications.

C. The Fabricator must have a fabrication facility with adequate space and appropriate equipment as required to perform the work. The Authority may inspect the Fabricator's facility after the bid opening and prior to award in order to verify Fabricator qualifications.

1.6 CONTRACTOR WARRANTIES

A. The Contractor shall warrant the work for a period of not less than one-year after energization of the equipment or 18 months after delivery to the F.O.B. point, whichever comes first. In the event of equipment or component failure during the warranty period, the Contractor shall replace such defective equipment or components and bear all associated costs. Costs shall include material, parts, and labor. The Contractor will be allowed to charge for travel and per diem expenses related to warranty service at actual cost plus 10%. The Contractor shall pursue manufacturer's warranties to the extent necessary to obtain replacement equipment and provide proof of action taken upon request. Assist Authority as directed in determining cause of failure.

B. The warranty shall state in clear terms exactly what warranty coverage the seller provides, for each unit and attachments. This shall include the terms, length of coverage, reporting responsibilities, how the warranty applies to accessory equipment, restrictions, locations of local facilities for handling warranty and other repairs (including contact names), and any other available information pertaining to warranty.

C. Provide a nametag on each piece of equipment that clearly identifies the party responsible for the warranty. Nametag shall include the name, address, and phone number, and shop order or Contractor's serial number.

1.7 OPERATION AND MAINTENANCE MANUALS.

A. Provide one (1) complete bound set of operation and maintenance (O&M) manuals for each unique engine generator unit. Identification symbols for all replaceable parts and assemblies shall be included. Provide manuals for the following equipment:

1. Engine.
2. Generator.
3. Voltage Regulator.
4. All accessories.

B. For each engine provide all available factory service publications including parts manuals, service manuals, component technical manuals, etc.

C. For all other components of each engine generator unit provide:

1. Equipment function, normal operating characteristics, and limiting conditions.
2. Assembly, installation, alignment, adjustment, and checking instructions.

3. Operating instructions for start-up, routine and normal operation, regulation and control, shutdown, and emergency conditions.
4. Lubrication and maintenance instructions.
5. Guide to "troubleshooting."
6. Parts list and predicted life of parts subject to wear.
7. Outline, cross section, elevation, and assembly drawings
8. Engineering data including all mechanical and electrical performance characteristics.
9. Complete AC connection and three-line diagrams.
10. Complete DC schematics including voltage regulator, fuel injector pump, sensors, switches, fuses, and all other devices.

D. The operation and maintenance manuals shall be in addition to any instructions or parts list packed with or attached to the equipment when delivered, or any information submitted for review.

E. Each copy of the final O&M manual shall be provided with original copies of the manufacturer's instruction books. Copies of manufacturer's instruction books shall not be inserted in any of the final O&M manuals.

F. Bind materials in locking three ring "D" style binders. Binder capacities shall not exceed 3 inches, nor shall material included exceed the designed binder capacity. If material to be bound exceeds capacity rating, multiple volumes shall be furnished. Binder capacity shall not be less than approximately 1/2 inch greater than the thickness of the material within the binder. Permanently label with project information on the front cover and edge.

G. Where reduction is not practical, larger drawings shall be folded separately and placed in envelopes, which are bound into the manuals. Each envelope shall bear suitable identification on the outside.

H. All information in the O&M manuals shall be new and original publications.

I. The complete O&M Manual and all as-built drawings shall be provided in Adobe PDF format on CD.

PART 2 - PRODUCTS

2.1 GENERAL CONFIGURATION AND MANUFACTURERS

A. All units shall be complete skid mounted engine generators utilizing all new components except where specific allowance is made for rebuilt engines.

B. All units shall be configured as specified herein and shall include all accessories as indicated.

C. Engines shall have a manufacture date prior to Model Year 2014. The engine shall be new or at Contractors option rebuilt in accordance with Section 26 32 13.20.

D. Engines shall be rated for prime power duty at the horsepower (shaft) and electrical kilowatt (generator) ratings indicated for each unit. All engines shall be 1800 RPM unless specifically indicated otherwise. All starting systems shall be 12 VDC and all engine control (ECU) systems shall be 12 VDC.

E. Provide engines of the manufacturer and model as indicated in Paragraph 2.2 Specific Configuration. Substitutes shall not be permitted except as specifically noted below.

F. Approved equal substitutions of engines will be allowed only by Engineer's approval. To obtain approval, submittals must clearly demonstrate the following:

1. The substitute engine must meet all of the requirements of Section 2.3
2. The substitute engine manufacturer must have at least one factory authorized service representative with a permanent shop in Southcentral Alaska.
3. The size and weight of the substitute engine must not exceed that of the specified engine by more than 10%.
4. The physical layout, piping connections, and service access area of the substitute engine must be sufficiently similar to that of the specified engine so that no major changes will be required to the power plant design. The engine must not be equipped, or require to be equipped, with any exhaust emissions equipment including Exhaust Gas Recirculation, Diesel Oxidation Catalyst, Diesel Particulate Filter, or Selective Catalytic Reduction.
5. The substitute engine must meet or exceed the fuel efficiency rate of the specified engine. Provide fuel curve showing fuel consumption (kWh/gallon) at 25%, 50%, 75% and 100% of prime rated capacity.
6. The substitute engine must be provided with a single jacket water cooling circuit without a separate aftercooler circuit.
7. The substitute engine must meet or exceed the heat rejection to the jacket water circuit of the specified engine.

G. Provide Newage/Stamford generators as indicated in Paragraph 2.2 Specific Configuration, or Kato equal. Substitutes shall not be permitted except as specifically noted below in Paragraph H. The generator shall be rated for continuous output at the value and temperature rise indicated at 0.8 power factor. The generator shall be 2/3 pitch winding, 3 phase, 277/480 volt, 12 lead reconnectable, with PMG excitation.

H. If a Marathon or other generator of equivalent or greater capacity is provided it shall be modified and upgraded prior to installation. Upon receipt of the generator from the factory it shall be taken to a manufacturer’s authorized warranty service shop and the following tasks shall be performed:

1. Remove rotor assembly, bearing, exciter, diode plate and inspect for defects.
2. If any defects are encountered immediately file a warranty claim with the manufacturer.
3. Electrically test all windings.
4. Encapsulate exciter rotor winding with epoxy.
5. Replace bearing prior to reinstalling exciter. Bearing shall meet the minimum requirements of these specifications.

6. Replace diode plate mounting bolts with grade 8 bolts and use Loctite.
7. Insulate main rotor leads with phase paper. Secure leads with heat shrinkable polyester tape using epoxy on all knots.
8. Spray coat all windings with epoxy.
9. Dynamically balance and re-assemble.
10. Test at rated RPM.
11. Provide to the Authority the service shop report documenting completed work, and any defects encountered and resolution of defects, prior to installing generator on engine.

2.2 SPECIFIC CONFIGURATION

Furnish an engine generator of the capacity and configuration listed below:

Base Bid: **Engine** - 260 hp, 180 ekW prime, John Deere 6081AFM75, Tier 2 Marine.
ECU Control Voltage = 12 VDC
Starting Voltage = 12 VDC.
Generator - Minimum 185kW continuous at 105°C rise, Newage/Stamford UCI274H or Kato equal.
Accessories – Furnish with all accessories as specified herein.

Furnish an engine of the capacity and configuration listed below:

Add. Alt. #1: **Engine** - 98 hp, 65 ekW prime, John Deere 4045TFM75, Tier 2 Marine.
ECU Control Voltage = 12 VDC
Starting Voltage = 12 VDC.
Generator/**Accessories -** None. Furnish complete engine with ECU, only.

2.3 ENGINE

A. Provide an 1800 RPM diesel engine, as specified herein, ready for service. Except where specific allowance is made in this specification for rebuilt or remanufactured engines, engines shall be of newest design and of recent manufacture.

B. Marine engines shall be furnished without a charging alternator, heat exchanger, coolant expansion tank, or accessory reduction gear drive. Factory installed components shall be removed as required.

C. The engine shall be a four-cycle, water-cooled, direct injection diesel engine of 4 or 6 cylinder in-line configuration as indicated by model number and shall be provided with a gear driven coolant pump where offered by manufacturer.

D. Cylinder Liners: The engines shall be provided with removable cylinder liners to facilitate field rebuilding.

E. Horsepower: Certified engine power curves and fuel consumption at 25%, 50%, 75%, and 100% loading, shall be submitted showing the manufacturer's approval of the engine rating for engine generator prime power application. Special ratings or "continuous standby" ratings will not be acceptable.

F. Engine Control: All engine control functions will be performed by remote switchgear which will perform all start/stop, speed, paralleling, and load sharing control functions in addition to all engine function monitoring and safety shut downs. Engine manufacturer's electronic control panels shall not be provided as part of this package.

G. ECU and Isochronous Governor: The engine speed shall be 1800 RPM over the entire load range. The frequency at any constant load, including no load, shall remain within +/- 0.5% isochronous control for rated frequency operation. Provide an Engine Control Unit (ECU) for interface with the switchgear.

H. Fuel: The engine shall be capable of satisfactory performance on No. 1 Arctic Grade Fuel or No. 2 Domestic Burner Oil.

I. Fuel System: The engine shall have manufacturer's engine mounted fuel filters with replaceable elements. Fuel supply and return lines shall be routed to the front of generator skid for field connection to the plant piping. See design drawings for detailed configuration.

J. Lubrication: The engine shall have a gear type lubricating oil pump for supplying oil under pressure to the main bearings, crankshaft bearings, pistons, piston pins, timing gears, camshaft bearings and valve rocker mechanism. Threaded spin-on type, full flow lubricating oil filters shall be provided. The oil drain line shall be terminated with a ball valve and bulkhead fitting through the skid on the side of the unit. See design drawings for detailed configuration.

K. Fuel and Oil Hoses: All hoses for fuel, lube oil, vents, mechanical gauges, etc., shall be Aeroquip type FC300, Eaton Weatherhead H569 or approved equal. Minimum hose size shall be 5/16" (#6). Provide with re-useable JIC swivel type fittings. Push-on or barb type hose connections will not be allowed. Route hoses to avoid wear points and to ensure access to normal service points on the engine. Securely support hoses from engine and skid.

L. Glycol Hoses: All hoses for glycol shall be Teflon hose with stainless steel outer braid, Eaton Weatherhead H243 or approved equal. Provide with re-useable plated steel straight JIC swivel ends with NPT adapters. Route hoses to avoid wear points and to ensure access to normal service points on the engine. Securely support hoses from engine and skid.

M. Wire Loom: All wiring for control and instrumentation shall be routed in plastic loom. Provide tee fittings for all branch connections. Route loom to avoid wear points and to ensure access to normal service points on the engine. Securely support loom from engine and skid.

N. Protective Guards: All moving parts and hot surfaces shall be provided with protective guards in accordance with U.L Standard 2200.

O. Air Cleaners: The engine shall be provided with a dry-type, replaceable element air cleaner with a metal canister, Donaldson or approved equal. Open disposable type air filters or plastic canisters will not be accepted. Provide visual air restriction indicator, 20" water column limit, manual reset, Donaldson X002251 or approved equal.

P. Starting: The engine shall be equipped with a 12 VDC electric starting system. The starting system shall be of sufficient capacity to crank the engine at a speed which will allow full diesel starting. A starter auxiliary relay shall be remote mounted in control wiring junction box, Caterpillar 9X-8112 or approved equal.

Q. Control Power: To provide 12VDC power to the control wiring junction box, a 30A circuit breaker with switch shall be mounted on the engine in the vicinity of the starter, Cooper 187-030-F-00 or approved equal.

R. Safety Controls: The automatic switchgear provided by others shall be equipped with automatic safety controls which will shut down the engine in the event of high jacket water temperature (primary), high lubricating oil temperature, low lubricating oil pressure, high or low lubricating oil level, high air filter restriction, and engine overspeed based on J1939 CANbus and engine mounted sensors. Note that a single low water shut down switch will be installed on the external cooling system.

2.4 EXHAUST SYSTEM

A. A flexible, continuous, 18 inch long stainless steel exhaust flex connector with welded connections shall be furnished for each engine generator, Alaska Rubber or approved equal. Provide a 5” size ANSI 125# flange at one end and an appropriate engine mating connection at the opposite end. Slotted cuff connections are not acceptable. Provide gasket, bolts, v-clamp, or any other components required for connection to the engine. Provide a 90° elbow where required for the flex to be installed vertically. Note that if the exhaust temperature sensor cannot be installed directly in the outlet connection, a 1/4” FPT stainless steel thread-o-let shall be welded into the flex between the engine connection and the corrugated hose.

B. A critical grade silencer shall be furnished for each engine generator, 5” pipe size, ANSI 125# flanged connections, middle side in and end out configuration. Miratech-EM Model JCGE0-05PF or approved equal. Furnish with optional one piece mounting bands.

C. A rain cap shall be furnished for each engine generator, 5” pipe size, all stainless steel construction. G.T. Exhaust Systems or approved equal.

D. An insulated wall thimble shall be furnished for each engine generator, 5” pipe size, all stainless steel construction, triple-wall, insulated, ventilated, and listed for zero clearance to combustibles, HARCO WT 470500, or approved equal.

2.5 ACCESSORIES

Provide the following accessories for each engine generator (unless otherwise indicated):

A. Caldyn spring vibration isolators complete with mounting hardware, four (4) per each unit, sized for the complete engine generator package weight.

B. Provide one each minimum 800 cold crank amp 12-volt starting battery. Battery shall be sealed maintenance free, Optima Red Top NAPA Part Number BAT N993478RED or approved equal. Each battery shall be installed in a battery rack sized to securely hold the battery and shall include a minimum 5/8” plywood base.

C. Provide with two 15 ft. long 2/0 AWG arctic flex battery cables. Cables shall include compression type terminal ends shipped loose. One battery cable shall be red for the positive lead and the other shall be black for the negative lead.

D. Provide one each combination visual oil level site gauge with adjustable high and low level switches, Murphy L129CK1 or approved equal. Mount on rubber isolators and connect to engine with minimum #8 hoses. Carefully route upper vent hose to avoid any low point traps and connect directly into crankcase. Route lower hose to a connection directly on the oil pan. Do not tee lower hose into oil drain line. See design drawings for installation detail.

2.6 COOLING SYSTEM

A. Provide one each glycol radiator shipped loose. Single pass, 4 row, vertical core, 3" flanged connections, Hempel 134US epoxy-ester coating, expanded metal guard. Minimum capacity 6000 BTU/MIN at 77°F ambient, 50 GPM 50% ethylene glycol at 192F IN, 0.22 PSI max glycol pressure drop. 3 HP, 460 V, 3 PH motor suitable for VFD operation at 10:1 turndown ratio. Diesel Radiator Part #DR3490-A or approved equal.

B. Provide one each low coolant level switch shipped loose, FW Murphy EL150K1 or approved equal.

C. Provide one each thermostatic valve. ANSI 125# flat faced flanges, cast iron body, factory set non-adjustable field replaceable thermostatic elements, 3" size, 180F nominal temperature, FPE #A3010-180 or approved equal.

D. Furnish and install glycol filter on each engine. Screw-on canister style filter element with 3/8" NPT connections on head, Wix #24019 head with #24069 element. Mount head on steel bracket fixed to front or side of engine. Connect to engine with glycol hoses with 3/8” NPT quarter turn gauge cock isolation valves. Connect inlet to thermostat housing and connect outlet to water pump inlet. On thermostat housing connection provide 3/8” NPT tee fitting with plug for field connection of pre-heat line by others.

E. On marine engines provide modifications as follows:

John Deere 4045TFM/AFM - Upon removal of coolant expansion tank and other accessories that are not required, install 2” diameter steel tube coolant line extensions to the front of the engine as required for 2” coolant hose connection.

2.7 INSTRUMENT PANEL

A. Provide a J1939 multi-function monitoring panel, Murphy PV101-C or approved equal. The panel shall be mounted on the side of the control wiring junction box. Provide with wiring harness as required for connection to ECU and battery power.

2.8 GENERATOR/ALTERNATOR

A. Generator shall be a single bearing, four pole, synchronous type. Generator shall be directly connected to the engine flywheel housing and driven through a flexible coupling to ensure permanent alignment. The generator shall be rated three phase, 277/480V, 60 Hz, 1800 RPM, brushless, 12 lead reconnectable, and

winding pitch of 2/3 design. Windings shall be random wound and lashed at the end turns to provide superior mechanical strength.

B. The rotating assembly shall be dynamically balanced to less than 2 mils peak to peak displacement and shall be designed to have an over speed withstand of 125% of rated speed for 3 minutes when operating at stable rated operating temperature.

C. Cast iron end brackets with bearing bores machined for an O-Ring to retard bearing outer race rotation and fabricated steel frames shall be used. Bearings shall be pre-lubricated, double shielded, ball type, single row Conrad, C3 fit. Minimum B-10 bearing life shall be 30,000 hours for single bearing units.

D. Generator wiring diagram shall be permanently installed on the inside of the terminal enclosure cover.

E. The insulation system of both the rotor and stator shall be of NEMA Class H materials or better and shall be synthetic and non-hygroscopic. The stator winding shall be given multiple dips of resin, plus a final coating of epoxy for extra moisture and abrasion resistance. The rotor shall be layer wound with thermosetting 100% solids epoxy between each layer, plus a final coating of epoxy for moisture and abrasion resistance. The shaft exposed metal surfaces and rectifier assembly shall be coated with an epoxy varnish.

F. The generator shall be equipped with a permanent magnet generator (PMG) excitation system. Both the PMG and the rotating brushless exciter shall be mounted outboard of the bearing. The system shall supply a minimum short circuit support current of 300% of the rating for 10 seconds. The rotating exciter shall use a three-phase full wave rectifier assembly with hermetically sealed silicon diodes protected against abnormal transient conditions by a multi-plate selenium surge protector. The diodes shall be designed for safety factors of 5 times voltage and 3 times current.

G. Voltage Regulator: An existing voltage regulator located in the remote switchgear will be used to the control the generator. Provide a wiring harness and terminal strips for connecting the generator to the voltage regulator in the remote switchgear as indicated in the design drawings.

H. Nameplate: On the side of the generator housing, provide a nameplate that provides the following information. The nameplate shall be located in a clearly visible location and shall not be obscured by the terminal enclosure or located such that the nameplate is behind any part of the generator or housing.

1. Rated kW as specified.
2. Full load amps.
3. Rated voltage, phase, and power factor.
4. Rated voltage and current of the field exciter.

I. Each generator shall be provided with a standard sized terminal compartment. The terminal compartment shall be provided with a load connection block to allow easy field termination of the load, neutral, and ground conductors. The generator neutral connection shall not be connected to the mounting skid or the generator frame. The neutral shall be isolated for field grounding at the switchgear or transformer.

J. The generator shall be self-ventilated with a direct drive one-piece, cast aluminum alloy, unidirectional internal fan for high volume, low noise air delivery. Airflow shall be from opposite drive end through generator to drive end. The exciter shall be in the airflow.

2.9 MOUNTING SKID

A. The engine and generator shall be equipped with a suitable full length base frame (skid) for mounting the engine and generator. The skid shall be constructed from structural steel channel with ends beveled and plated for short term skidding and rolling of unit. **No formed or stamped steel base frame designs will be accepted.** Provisions shall be made so that the generator can slide back a minimum of 12" to access the rear main seal on the engine without removing the generator end off of the skid or requiring the use of blocking to support it. See the design drawings for skid design and layout.

B. Provisions shall be made in the skid for the mounting of vibration isolators at locations as indicated on the design drawings. Wedge washers shall be welded in place on the skid to provide a flat surface for the vibration isolator lock nuts.

C. Each engine generator shall be placed on the skid at the location indicated on the design drawings.

2.10 WIRING INTERFACE WITH REMOTE SWITCHGEAR

A. A control wiring junction box shall be furnished for each generator as follows:

1. The junction box shall be steel, NEMA 4, with hinged door and screw down latches. Hoffman or approved equal. See design drawings for size.

2. The junction box orientation, device layout, terminal block layout, and labeling shall be as indicated on the design drawings.

3. Install the specified instrument panel in the junction box as shown on the design drawings.

4. All wiring for control, monitoring, and safety shall be terminated on terminal blocks within the control wiring junction. The terminals shall be IDEC or approved equal, BNH15LW except where indicated 50A provide BNH50W. Terminals shall be mounted on DIN rail with heavy duty end anchors. Each terminal block and all wire terminations shall be individually numbered as indicated.

5. The engine and generator mounted control wiring shall be provided with a maintenance loop of sufficient length to allow the generator to be slid back 12" minimum for maintenance of the engine without disconnecting any control wiring.

B. The DC power supply for the switchgear shall be provided from the engine starting batteries through the engine-mounted circuit breaker. Terminals shall be provided as indicated on the design drawings for supplying 12 VDC to the switchgear. The engine start systems shall be 12 VDC. The engine run systems shall be 12 VDC. All remote indication will be 12 VDC, 4-20mA, or as otherwise

indicated. All switches used for remote indication shall be rated for operation at 24 VDC.

2.11 PAINTING

Each unit shall be painted John Deere industrial tan including engine, skid, and generator.

2.12 SPARE FILTERS

In addition to the filters installed on the engines, provide the following quantities of replacement filters for each engine. Package spare filters in boxes and label each box with the community name.

A. Twelve (12) oil filters.

B. Six (6) fuel filters.

C. Three (3) air filters.

D. Three (3) glycol filters.

PART 3 - EXECUTION

3.1 FACTORY TESTS

A. Prior to shipment, the engine generator Fabricator shall perform factory tests on each unit at the shop where the engine generator is assembled. Provide certified copies of all Fabricators' test data and results. Supply sufficient notice to the Authority prior to performing tests. The Authority reserves the right to witness all tests. Test procedures shall conform to ASME, IEEE, and ANSI standards, and NEMA standard practices section on testing, as appropriate and applicable.

B. The Fabricator shall provide all required mechanical and electrical equipment including but not limited to fuel supply, radiator, and load bank.

C. The Fabricator shall provide all required measuring and indicating devices. All devices shall be certified correct or correction data furnished for the device.

D. Engine Tests: Shop test each engine generator with the associated control wiring junction box permanently connected. **Note that for an engine provided without a generator, tests may be performed with a dynamometer**. Perform customary commercial factory tests on each engine generator including, but not limited to, the following:

1. Perform hydrostatic test on water jackets to assure that water seals and water jackets are watertight. Test report shall indicate pressure at which test was made and the results.

2. Place engine in continuous operation without stoppage for a period of not less than eight hours. Operate not less than one hour at each load point (1/2, 3/4, and full load) and 1 hour at 110 percent of rated load. If stoppage becomes necessary during this period, repeat the 8-hour run. Also record the following data at the start, at 15-minute intervals, and at the end of each load run: Hz, kW load, fuel consumption, exhaust temperature, intake air temperature, jacket water temperature, lube oil

temperature, lube oil pressure, manifold (boost) pressure, and crankcase vacuum.

E. Tests shall indicate satisfactory operation and attainment of guarantees and specified performance. Contractor shall not ship equipment without approval by the Authority of the shop test reports.

3.2 SHIPPING

A. After testing, and immediately prior to shutdown for shipping perform the following steps:

1. Operate the engine three to five minutes with oil, which has 3% to 4% VCI (volatile corrosion inhibitor) oil per engine crankcase volume. The oil does not have to be removed from the engine.

2. Remove any dirt from the air cleaner; check all seals and gaskets. Put lubricant on all points given in the lubrication chart of the engine operation guide.

3. Turn the engine at cranking speed with governor control in full off position and use a sprayer to add a mixture of 50% VCI oil and 50% 30 weight oil into the air intake or turbocharger inlet.

4. Continue spraying the mixture of 50% VCI oil and 50% 30-weight engine oil into the air intake or turbocharger inlet to ensure the cylinders and exhaust ports are coated with the oily mixture.

5. Clean the outside of the engine and inspect and ensure that the engine and generator are covered by good quality paint. Correct any deficiencies.

6. Spray a thin amount of 50% VCI oil and 50% 30-weight engine oil on the flywheel, ring gear teeth, and starter pinion. Install the covers to keep the vapors in.

7. Put a heavy layer of multipurpose grease on all outside parts that move, i.e. threaded rod, ball joints, linkage, etc.

8. Flush the cooling system with extended life 50/50 ethylene glycol mix, Shell Rotella ELC or approved equal. Install covers over the connections.

9. Install a positive mechanical seal consisting of a fitting plate and gasket on exhaust opening. Then install all covers and/or tape on openings, air intake, exhaust openings, flywheel housing, etc. Ensure all coves are air tight and weatherproof. Use waterproof, weather resistant type tape. Do not install tape in such a manner as will damage paint when the tape is removed. Install a mechanical protective device over any protruding items, which may be vulnerable to breakage during transportation.

B. After preparing the equipment for shipping, package each engine generator separately as follows:

1. Coil wiring harnesses and secure control wiring junction box to generator.

2. Put a waterproof cover over the entire engine generator unit. Make the cover tight, but loose enough to let air circulate around the unit to prevent damage to exposed metal parts from condensation.

3. All other included components (spare parts, loose items, etc.) shall be packaged individually in waterproof wrapping. Each individual component package shall then be packed in a box or crate, and each box/crate wrapped in waterproof wrapping to prevent corrosion to the components during extended periods of outside storage. All boxes or crates shall be palletized onto the minimum number of pallets, as required for the quantity and size of the boxes/crates.

4. Each pallet shall be provided with a packing slip identifying the number of each box/crate on the pallet, and a list of items within each box/crate. Each pallet shall be marked (with two inch high letters/numbers), on all four sides and the top, with the purchase order number and **Chignik Lagoon DERA Project**. Provide to the Authority, in a single Adobe Acrobat PDF format file, a copy of each packing slip.

END OF SECTION

SEE SECTION 26 32 13.20 FOR REBUILT ENGINE REQUIREMENTS

SEE DRAWING M6 FOR SKID & ASSOCIATED GENERATOR ASSEMBLY DETAILS

SEE DRAWING E3 FOR CONTROL WIRING JUNCTION BOX DETAILS

SECTION 26 32 13.20
REBUILT DIESEL ENGINES

PART 1 - GENERAL

1.1 SCOPE

A. The Work included herein shall consist of furnishing diesel engine(s) as specified herein.

B. The purpose of this solicitation is to procure used diesel engine(s), rebuilt to original equipment manufacturer (OEM) tolerances, durability, and quality. The diesel engine(s) will be used in a prime power, 1800 rpm, genset application. Rebuilt engines shall be delivered complete, tested, and ready for installation.

C. The Authority will not be furnishing cores. The Rebuilder shall furnish cores in compliance with Section 26 32 13.10 Engine Generators, Paragraph 1.3, Regulatory Compliance.

D. Engine(s) shall be rebuilt in accordance with this specification and the requirements of 40 CFR 1068 and applicable NSPS standards.

1.2 RELATED REQUIREMENTS

A. Section 26 32 13.10 Engine Generators

1.3 SUBMITTALS

A. Provide submittals in accordance with Section 26 32 13.10 Engine Generators.

B. Provide the following a minimum of seven days prior to beginning final engine assembly:

1. An action plan specifying all work to be performed on existing engine components and a complete list of all new and remanufactured parts to be installed on each engine, with indication of new/remanufactured status.

2. All NDT inspection reports, existing component and original OEM dimensions and clearances, recorded by engine serial number for each engine. Note that if the contractor is furnishing OEM factory remanufactured engines the above information may not be available prior to final assembly. The information shall be provided as soon as available. If the results of the above inspections do not meet the requirements of these specifications for any engine that engine will be rejected.

1.4 REGULATORY COMPLIANCE

See Section 26 32 13.10 Engine Generators

1.5 QUALITY ASSURANCE

A. Engines shall not have been in service at any time after rebuilding and prior to delivery except as required to comply with Section 26 32 13.10 requirements for Factory Tests.

B. All new and refurbished parts, castings, assemblies and components furnished under these specifications shall meet original OEM specifications and be provided with contractor’s warranty.

C. All work shall be performed by certified and experienced technicians trained and authorized to work on the engines being rebuilt and furnished.

D. All nondestructive testing (NDT) of castings and parts provided under these specifications to be performed to ASTM standards. All NDT inspections shall be performed by a Level II or Level III certified NDT inspector using a certified Quality System.

E. Where items are described as factory rebuilt or remanufactured, the term factory shall mean a machine shop that is regularly engaged in the practice of remanufacturing the type of items required.

1.6 REBUILDER QUALIFICATIONS

Engines shall be rebuilt by a qualified rebuilder (Rebuilder) who is regularly engaged in the business of rebuilding diesel engines.

A. The Rebuilder must have personnel with extensive experience in rebuilding diesel engines. A list of five prior projects that key personnel have worked on may be requested by the Authority after the bid opening and prior to award in order to verify Rebuilder qualifications. The list must include date and description of work, key personnel, and a reference contact for each project.

B. The Rebuilder must have a fabrication facility with adequate space and appropriate equipment as required to perform the work. The Authority may inspect the Rebuilder's facility after the bid opening and prior to award in order to verify Rebuilder qualifications.

1.7 CONTRACTOR WARRANTIES –

See Section 26 32 13.10 Engine Generators for Warranty Requirements

1.8 OPERATION AND MAINTENANCE MANUALS

See Section 26 32 13.10 Engine Generators for Operation and Maintenance Manual Requirements

PART 2 - PRODUCTS

2.1 ENGINE MANUFACTURER, MODEL, CONFIGURATION, AND MODEL YEAR

See Section 26 32 13.10 Engine Generators

2.2 ENGINE REBUILD STANDARDS AND PROCEDURES

A. Replacement Parts: These specifications require that some existing engine components be reconditioned and reused. Other components are required to be replaced with either new or factory remanufactured parts. For the remaining components, the Rebuilder may recondition the existing part, or replace it with either a new or factory remanufactured part. All parts and components, whether new, remanufactured, or reconditioned, shall meet or exceed original OEM specifications, tolerances, durability and quality. Refer to the specific components listed below in this section.

B. Disassembly & Cleaning: The used engine furnished for rebuilding shall be fully disassembled for cleaning, part inspection, qualification and reconditioning. All cylinder liners, core plugs, passage plugs and other fittings shall be removed from all castings, including the cylinder block, cylinder head, oil cooler/filter housing, exhaust manifold, intake manifold, flywheel housing, front cover, etc., to enable complete and thorough cleaning. All bearings and bushings shall be removed. All castings and other parts to be inspected shall be cleaned in a caustic cleaning solution to remove all grease, oil, loose paint, surface corrosion, carbon deposits and any other foreign material. All oil passages shall be mechanically cleaned where possible and confirmed to be free of any obstructions. After cleaning, all parts subject to corrosion must be lightly oiled and wrapped.

C. Inspection and Measurement: After disassembly and cleaning, the following castings shall be visually and magnetic particle NDT inspected for defects: cylinder block external surfaces, cylinder block main bearing housing bore, cylinder head, crankshaft and camshaft (remove galley plugs, counterweights and gears), flywheel housing, timing gear cover, intake manifold and exhaust manifold. All components that are to be reused in engine assembly shall be inspected and measured to confirm tolerances are within OEM specifications.

D. Corrective Action Plan: After cleaning, inspecting, and measuring all engine components to be reused in the engine assembly, provide a corrective action plan, including a complete parts list with measured dimensions and OEM specified tolerances, for each engine serial number and submit to the Engineer for approval prior to proceeding with engine assembly. All engine components shall be upgraded to include the latest factory design improvements and shall be included in the corrective action plan.

E. Threaded Connections, Hardware and Fasteners: All threaded holes shall be inspected and tapped. Fasteners and hardware that are corroded, damaged, or do not meet original OEM specifications shall be replaced with new. All head bolts, flywheel bolts and any other torque-to-yield bolts shall be replaced with new. Any locking devices (such as lock washers and lock nuts) shall be replaced with new. During reassembly all fasteners shall be paint pen marked at the conclusion of final torque tightening.

F. Cylinder Block: After cleaning and inspection, the existing cylinder block shall be reconditioned.

1. The cylinder block shall be measured for deck height and deck surface flatness. The condition of all gasket and sealing faces as well as all O-ring lands and bolt holes shall also be inspected. All block surfaces shall be machined as necessary to meet OEM specifications. Furnish all new expansion plugs.

2. The cylinder block main bearing housing bore shall be checked for proper fit of caps to block, bore roundness, diameters and alignment. If fit, dimensions, and alignment meet OEM specifications, hone existing caps. If fit, dimensions and alignment meet do not meet OEM specifications, replace caps and perform line bore.

3. After resurfacing block, recut cylinder counter bores to proper dimensions. Note that upper and lower bore inserts are permitted as long as they meet

or exceed factory repair procedures and factory new counter bore depth is maintained. Ensure that all cylinder parent bores meet OEM specifications and check O-ring and crevice ring liner sealing areas for pitting prior to installing new cylinder liners.

4. If the reconditioned block does not meet all original OEM specifications, the block shall be replaced with a used block that that meets all original OEM specifications and has a manufacture date prior to Model Year 2014.

G. Crankshaft: The crankshaft shall be either reconditioned or replaced with a factory remanufactured crankshaft. Undersized journals and repair sleeves shall not be allowed. As a minimum, reconditioning shall include confirmation that dimensional, hardness, alignment, wear surface finish, and seal surface finish conditions meet OEM specifications. If the crankshaft has passed all other inspections, the journals shall be polished and checked with a surface profilometer to meet or exceed OEM smoothness requirements.

H. Connecting Rods: The connecting rods shall be reconditioned or replaced with new. If reconditioned only the castings shall be reused. After magnetic particle NDT inspection and checking for straightness, connecting rod big end shall be machined to OEM specifications using new bolts. Connecting rod small end shall receive a new bushing and be machined to OEM specifications.

I. Pistons, Rings, and Sleeves: The pistons, piston rings, and cylinder liners shall be new OEM parts. Remanufactured or Aftermarket parts shall not be used.

J. Camshaft: The camshaft shall be either reconditioned or replaced with new. As a minimum reconditioning shall include confirmation that dimensional, hardness, alignment, wear surface finish, and seal surface finish conditions meet OEM specifications. If the camshaft has passed all other inspections, the lobes shall be ground to meet or exceed OEM specifications.

K. Rocker Arms and Push Rods: The rocker arms and push rods shall be new OEM parts. Remanufactured or Aftermarket parts shall not be used.

L. Cylinder Head: The cylinder head shall be either reconditioned or replaced with a factory remanufactured complete assembly that meets or exceeds OEM specifications. If reconditioned, only the casting shall be reused with all parts replaced new. Welded, spray welded or otherwise repaired cylinder head castings shall not be allowed. Following are guidelines for reconditioning the existing cylinder head:

1. After inspection, the cylinder head shall be measured for surface flatness and resurfaced as necessary to meet OEM specifications. Ensure that no pitted or corroded areas remain outside of the gasket sealing area.

2. The overhead camshaft bores shall be measured for size and checked to ensure that roundness, taper, and alignment meet OEM specifications. Machining, line boring and straightening are acceptable practices for restoration of camshaft alignment. Fitting of replacement bearing shells, installing oversize components or performing metal build up are not acceptable practices for restoration of camshaft alignment.

3. All fuel injector sleeves, valves, seats, guides, springs, rotators and keepers shall be replaced new. Grind valves and seats to meet OEM

specifications. After assembly, test valves and seats using a vacuum pump maintaining a minimum of 25in HG.

M. Electrical and Controls: Furnish a new or remanufactured ECU, flashed to the service and emissions certification specified under Section 26 32 12.10 Engine Generators, Paragraph 1.3, Regulatory Compliance. Furnish new engine sensors and new wiring harnesses. Furnish new or remanufactured starter.

N. Fuel System: Furnish new or remanufactured fuel injection pump, fuel transfer (lift) pump, injectors, and metering valves, Furnish new governor springs, filters, screens, gaskets, seals, O-rings, and fuel hoses. See Section 26 32 12.10 Engine Generators for hose type and installation. Inspect all metallic fuel tubing and replace with new if corroded, pitted, damaged, or otherwise not in compliance with OEM original specifications.

O. Lubrication System: Furnish new or remanufactured oil pump and pressure valve. Furnish new oil cooler, thermetic regulating valve, filters, screens, gaskets, seals, O-rings and hoses. See Section 26 32 12.10 Engine Generators for hose type and installation. Inspect all metallic lubrication tubing and replace with new if corroded, pitted, damaged, or otherwise do not meet OEM original specifications.

P. Cooling System: Furnish new or remanufactured water pump. Furnish new thermostat, filters, gaskets and hoses. See Section 26 32 12.10 Engine Generators for hose type and installation. Inspect all metallic coolant tubing and replace with new if corroded, pitted, damaged, or otherwise do not meet OEM original specifications.

Q. Air Intake and Exhaust Systems: The existing intake and exhaust manifolds shall be reconditioned and reinstalled if deemed suitable for reuse after NDT and visual inspections. If either casting is deemed unsuitable for reuse, replace with new OEM casting. Furnish a new or remanufactured turbocharger. Furnish all new gaskets, clamps and seals.

R. Painting: See Section 26 32 12.10 Engine Generators for painting

PART 3 - EXECUTION

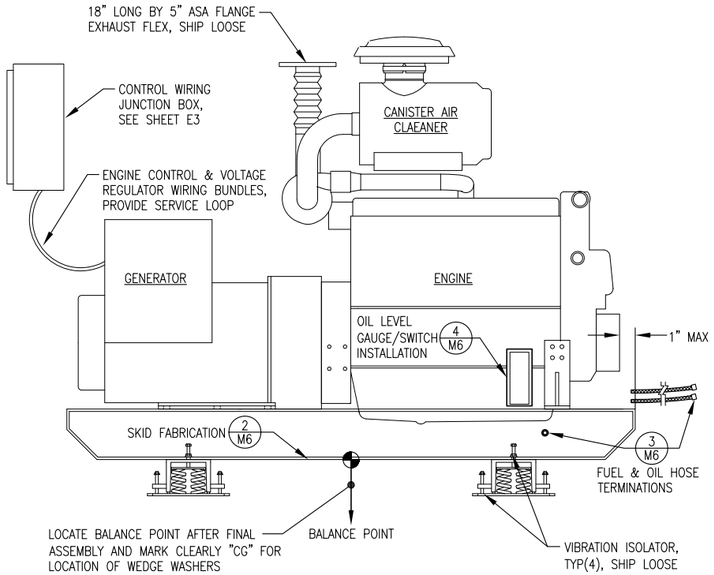
3.1 FACTORY TESTS

See Section 26 32 13.10 Engine Generators for Testing Requirements

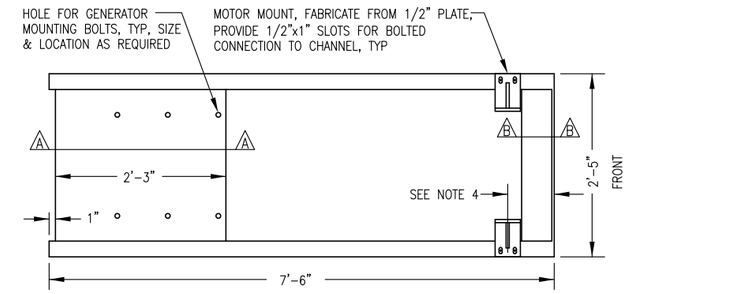
3.2 SHIPPING

See Section 26 32 13.10 Engine Generators for Shipping Requirements

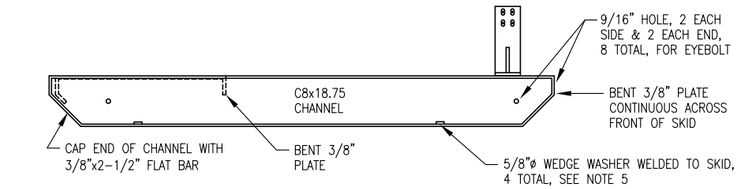
END OF SECTION



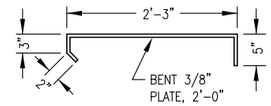
1 M6 GENERATOR ASSEMBLY
NO SCALE



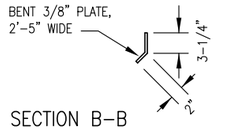
PLAN (TOP) VIEW



ELEVATION (SIDE) VIEW



SECTION A–A

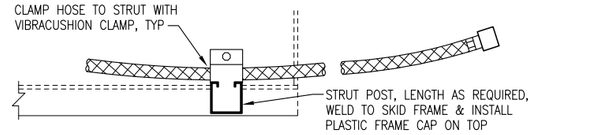


SECTION B–B

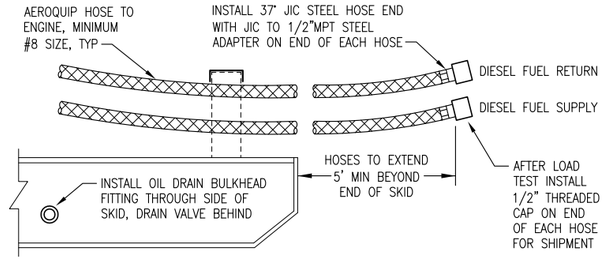
NOTES:

1) FABRICATE FROM ASTM A-36 STEEL. BEND PLATES & CUT ENDS OF CHANNELS AT 90° & 45° AS SHOWN. CONTINUOUSLY WELDED PLATE SECTIONS MAY BE SUBSTITUTED FOR BENT PLATE.
2) EXCEPT WHERE INDICATED AS BOLTED MAKE ALL CONNECTIONS WITH CONTINUOUS WELDS (FILLET OR FULL-PENETRATION GROOVE AS REQUIRED) IN ACCORDANCE WITH CURRENT AWS STANDARD CODE.
3) ROUND ALL CORNERS & GRIND WELDS SMOOTH AFTER FABRICATION. PAINT TO MATCH ENGINE-GENERATOR.
4) PLACE ENGINE ON SKID SO THAT THE EXTREME FRONT FACE (INCLUDING GUARD) IS WITHIN 1" OF THE FRONT TO THE SKID.
5) LOCATE WEDGE WASHERS EQUAL DISTANCE FROM BALANCE POINT, 12" MIN AND 20" MAXIMUM FROM ENDS OF SKIDS.

2 M6 JOHN DEERE 6081AFM75 SKID DESIGN
NO SCALE

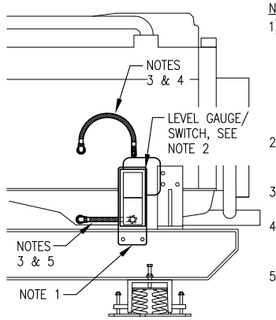


PLAN (TOP) VIEW



ELEVATION (SIDE) VIEW

3 M6 FUEL & OIL HOSE TERMINATIONS
NO SCALE



NOTES:

1) 1/4" STEEL SUPPORT PLATE PRE-DRILLED TO MATCH GAUGE/SWITCH MOUNTS, CHANNEL SKID HOLES AND BOTTOM HOSE ENTRANCE. BOLT TO INSIDE (BACK) OF CHANNEL SKID AT HEIGHT AS REQUIRED TO CENTER GAUGE AT NORMAL FULL OIL LEVEL. ADJUST SWITCH CONTACTS 1/2" ABOVE & BELOW.
2) MOUNT OIL LEVEL GAUGE/SWITCH TO STEEL SUPPORT PLATE WITH RUBBER SHOCK MOUNTS .
3) #8 HOSE WITH 1/2" OR 3/8" NPT JIC SWIVEL ENDS AS REQUIRED.
4) CONNECT TOP (VENT) PORT TO ENGINE CRANK CASE WITH HOSE. ROUTE UPPER HOSE TO AVOID LOW POINT TRAPS.
5) CONNECT BOTTOM PORT TO ENGINE OIL PAN WITH HOSE. DO NOT TEE INTO OIL DRAIN LINE. ROUTE LOWER HOSE BACK THROUGH PRE-DRILLED HOLE IN STEEL PLATE.

4 M6 OIL LEVEL GAUGE/SWITCH INSTALLATION
NO SCALE

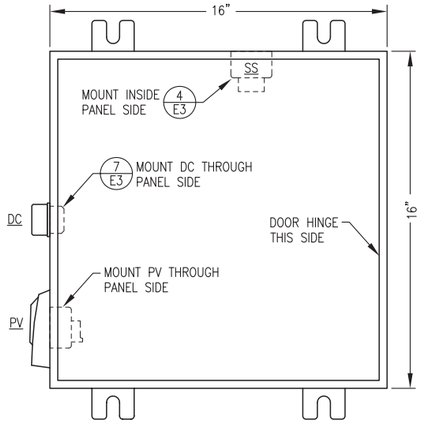
ALASKA ENERGY AUTHORITY

PROJECT:
CHIGNIK LAGOON POWER PLANT DERA UPGRADE

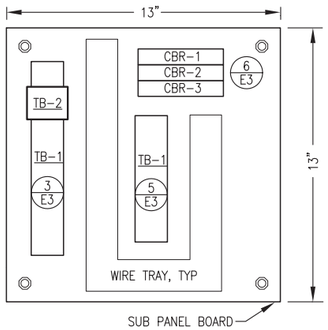
TITLE:
GEN #3
ENGINE GENERATOR ASSEMBLY DETAILS

Gray Stassel Engineering, Inc.
P.O. 111405, Anchorage, AK 99511 (907)349-0100

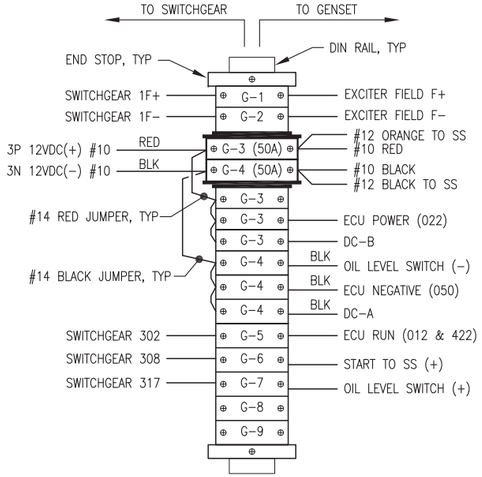
DRAWN BY: JTD	SCALE: NO SCALE
DESIGNED BY: BCG	DATE:
FILE NAME: CLAGDERA M1-7	SHEET: M6 OF 7
PROJECT NUMBER:	



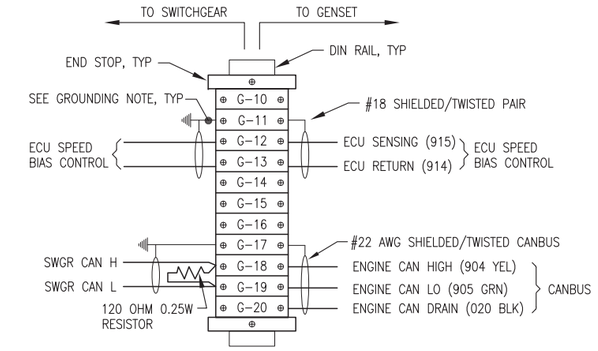
1 E3 JUNCTION BOX FRONT PANEL LAYOUT
NO SCALE



2 E3 JUNCTION BOX SUB PANEL LAYOUT
NO SCALE



3 E3 TERMINAL STRIP CONNECTIONS
NO SCALE



5 E3 TERMINAL STRIP CONNECTIONS
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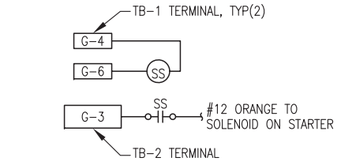
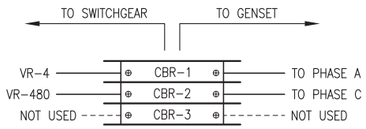
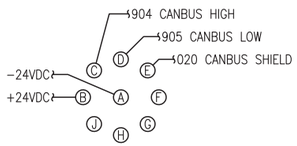


4 E3 STARTER AUX SOLENOID SS WIRING
NO SCALE



NOTE: PROVIDE SPARE THIRD BREAKER FOR POSSIBLE FUTURE USE WITH DIFFERENT VOLTAGE REGULATOR.

6 E3 VOLTAGE SENSING CIRCUIT BREAKERS
NO SCALE



7 E3 DIAGNOSTIC CONNECTOR WIRING
NO SCALE

BILL OF MATERIALS			
TAG	MANUFACTURER	MODEL	DESCRIPTION
ENCLOSURE	HOFFMAN	A16H16ALP	16x16x6" NEMA 12
	HOFFMAN	A16P16	BACK PANEL
CBR	ALLEN-BRADLEY	1489-A1-C010	RAIL MOUNT CIRCUIT BREAKER, 1-POLE, 1A
DC	DEUTSCH	HD10-9-96P-B009	DIAGNOSTIC CONNECTOR, 9-PIN, CAN-BUS
	DEUTSCH	HD18-009	CONNECTOR STRAIN RELIEF
	DEUTSCH	HDC16-9	CONNECTOR PROTECTIVE DUST CAP
	DEUTSCH	HD10-9-GKT	CONNECTOR GASKET
	DEUTSCH	JDL062397	CONNECTOR LANYARD
PV	MURPHY	PV101-C-MSTD	POWER VIEW W/HARNESS
R1	ALLEN-BRADLEY	700HAB2Z24	DPDT RELAY, 24VDC COIL
	ALLEN-BRADLEY	700HN101	8 PIN SOCKET BASE
SS	CATERPILLAR	9X-8112	STARTER AUXILIARY SOLENOID, 12V
TB-1	IDEC	BNH15LW	15A DIN RAIL-MOUNT TERMINAL BLOCK
TB-2	IDEC	BNH50W	50A DIN RAIL-MOUNT TERMINAL BLOCK

NOTE: SPECIFIC PARTS MANUFACTURER AND MODEL SELECTED NOT ONLY TO MEET PERFORMANCE FUNCTION BUT ALSO TO COORDINATE AND INTERFACE WITH OTHER DEVICES AND SYSTEMS. APPROVED EQUAL SUBSTITUTIONS WILL BE ALLOWED ONLY BY ENGINEER'S APPROVAL. TO OBTAIN APPROVAL, SUBMITTALS MUST CLEARLY DEMONSTRATE HOW SUBSTITUTE ITEM MEETS OR EXCEEDS SPECIFIED ITEM QUALITY AND PERFORMANCE CHARACTERISTICS AND ALSO COMPLIES WITH MECHANICAL AND/OR ELECTRICAL CONNECTIONS AND PHYSICAL LAYOUT REQUIREMENTS.

SHOP FABRICATION NOTES:

1) PROVIDE ASSEMBLY WITH ALL DEVICES AND WIRING INDICATED.
2) INSTALL IN A NEMA 12 ENCLOSURE WITH MOUNTING FLANGES AT BACK, A MIN 14 GAUGE INTERIOR BACK PANEL, AND HINGED LOCKABLE DOOR.
3) PROVIDE DIN RAIL, TERMINAL END PLATES, TERMINAL END STOPS, TERMINAL DUST COVERS AND OTHER MISCELLANEOUS HARDWARE AS REQUIRED TO MATCH TERMINALS. LABEL ALL TERMINALS EXACTLY AS INDICATED ON THE DETAILS.
4) ALL WIRE #14AWG EXCEPT WHERE SPECIFICALLY INDICATED OTHERWISE. TAG EACH END OF ALL JUMPERS WITH DEVICE OR TERMINATION DESIGNATOR OF LANDING OF OPPOSITE END OF JUMPER (REVERSE ADDRESS).
5) PROVIDE MECHANICAL GROUND LUGS FASTENED TO BACK PANEL AND GROUNDED TO ENGINE-GENERATOR. GROUND ALL SHIELD DRAIN WIRES TO LUGS AT ONE END ONLY.
6) PROVIDE WIRING HARNESSES FOR CONNECTION TO GENERATOR AND TO ENGINE. INSTALL WIRES IN FLEXIBLE PLASTIC WIRE LOOM AND PROVIDE SERVICE LOOPS IN ACCORDANCE WITH SPECIFICATIONS.
7) SHOP TEST EACH ENGINE-GENERATOR WITH ASSOCIATED JUNCTION BOX PERMANENTLY CONNECTED. UPON COMPLETION OF TESTING, COIL WIRING HARNESSES AND SECURE JUNCTION BOX TO GENERATOR FOR SHIPPING.

FIELD INSTALLATION NOTES:

1) PERFORM ALL FIELD WIRING IN ACCORDANCE WITH SPECIFICATIONS. LABEL BOTH ENDS OF ALL FIELD WIRING WITH THE NUMBER OF THE ASSOCIATED HOME RUN LANDING ON TERMINAL IN THE CONTROL PANEL.
2) ON SHIELDED CONDUCTORS FROM SWITCHGEAR GROUND ALL SHIELD DRAIN WIRES TO LUGS AT GENERATOR END ONLY.

ALASKA ENERGY AUTHORITY

PROJECT: CHIGNIK LAGOON POWER PLANT DERA UPGRADE

TITLE: GEN #3 ENGINE CONTROL WIRING JUNCTION BOX

Gray Stassel Engineering, Inc.
P.O. 111405, Anchorage, AK 99511 (907)349-0100

DRAWN BY: JTD	SCALE: NO SCALE
DESIGNED BY: CWV/BCG	DATE:
FILE NAME: CLAGDERA E1-#	SHEET: E3 OF
PROJECT NUMBER:	

INSTRUCTIONS TO BIDDERS
TERMS AND CONDITIONS

1. REQUEST FOR QUOTATION (RFQ) REVIEW: Offerors shall carefully review this RFQ for defects and questionable or objectionable material. Offerors' comments concerning defects and questionable or objectionable material in the RFQ must be made in writing and received by the purchasing authority before the date and time set for receipt of quotes. This will allow time for an amendment to be issued if one is required. It will also help prevent the opening of a defective quote, upon which award cannot be made, and the resultant exposure of offerors' prices. Offerors' original comments should be sent to the purchasing authority listed on the front of this RFQ.

2. QUOTATION FORMS: Offerors shall use this and attached forms in submitting quotes. A photocopied quote may be submitted.

3. SUBMISSION: Quotations shall be signed where applicable and received at the designated Purchasing Office no later than as indicated.

4. QUOTE REJECTION: The State reserves the right to reject any or all quotes, combinations of items, or lot(s), and to waive defects or minor informalities.

5. EXTENSION OF PRICES: In case of error in the extension of prices in the quote, the unit prices will govern; in a lot bid, the lot prices will govern. Negligence by the vendor in preparing the quotation confers no right for the withdrawal of the quotation after it has been opened.

6. ALASKA PROCUREMENT CODE: The Procurement Code (AS.36.30) and its Regulations (2 AAC Ch. 12), are made a part of this document as if fully set forth herein. Note: AS.36.30 and 2 AAC Ch. 12 are available at most public libraries and legislative information offices; and both are available for review at Alaska State Purchasing Offices.

7. PRICES: The offeror shall state prices in the units of issue on this RFQ. Prices quoted for commodities must be in U.S. funds and include applicable federal duty, brokerage fees, packaging, and transportation cost to the FOB point so that upon transfer of title the commodity can be utilized without further cost. Prices quoted for services must be quoted in U.S. funds and include applicable federal duty, brokerage fee, packaging, and transportation cost so that the services can be provided without further cost. Prices quoted must be exclusive of federal, state, and local taxes. If the offeror believes that certain taxes are payable by the State, the offeror may list such taxes separately, directly below the bid price for the affected item. The State is exempt from Federal Excise Tax except the following:

- Coal - Internal Revenue Code of 1986 (IRC), Section 4121 - on the purchase of coal;
- “Gas Guzzler” - IRC, Section 4064 - on the purchase of low m.p.g. automobiles, except that police and other emergency type vehicles are not subject to the tax;
- Air Cargo - IRC, Section 4271 - on the purchase of property transportation services by air;
- Air Passenger - IRC, Section 4261 - on the purchase of passenger transportation services by air carriers;
- Leaking Underground Storage Tank Trust Fund Tax (LUST) - IRC, Section 4081 - on the purchase of Aviation gasoline, Diesel Fuel, Gasoline, and Kerosene.

8. PAYMENT FOR STATE PURCHASES: Payment for agreements under $500,000 for the undisputed purchase of goods or services provided to a State agency, will be made within 30 days of the receipt of a proper billing or the delivery of the goods or services to the location(s) specified in the agreement, whichever is later. A late payment is subject to 1.5% interest per month on the unpaid balance. Interest will not be paid if there is a dispute or if there is an agreement which establishes a lower interest rate or precludes the charging of interest.

9. PAYMENT DISCOUNT: Discounts for prompt payment will not be considered in evaluating the price you quote. However, the State shall be entitled to take advantage of any payment discount(s) offered by the vendor provided payment is made within the discount period. Payment discount periods will be computed from the date of receipt of the commodities or services and/or a correct invoice, whichever is later. Unless freight and other charges are itemized, any discount provided will be taken on full amount of invoice.

10. VENDOR TAX ID NUMBER: If goods or services procured through this RFQ are of a type that is required to be included on a Miscellaneous Tax Statement, as described in the Internal Revenue Code, a valid tax identification number must be provided to the State of Alaska before payment will be made.

11. INDEMNIFICATION: The Contractor and Buyer shall indemnify and hold each other harmless, from and against any claim of, or liability for error, omission or negligent act under this agreement.

12. SEVERABILITY: If any provision of this contract is declared by a court to be illegal or in conflict with any law, the validity of the remaining terms and provisions shall not be affected; and the rights and obligations of the parties shall be construed and enforced as if the contract did not contain the particular provision held to be invalid.

13. TITLE: Title passes to the State for each item at FOB destination.

14. FILING A PROTEST: An offeror shall attempt to informally resolve a dispute with the procurement officer regarding a small procurement. If the attempt is unsuccessful, the vendor may protest the solicitation or the award of a small procurement contract under AS 36.30.320. The protest must be filed in writing with the commissioner of the purchasing agency or the commissioner’s designee and include the following information: (1) the name, address, and telephone number of the protester; (2) the signature of the protester or the protester's representative; (3) identification of the contracting agency and the solicitation or contract at issue; (4) a detailed statement of the legal and factual grounds of the protest, including copies of relevant documents; and (5) the form of relief requested. The protester must file a copy of the protest with the procurement officer for the purchasing agency. Protests will be treated in accordance with AS 36.30.550 and 2 AAC 12.695.

15. COMPLIANCE: In the performance of a contract that results from this RFQ, the contractor must comply with all applicable federal, state, and borough regulations, codes, and laws; and be liable for all required insurance, licenses, permits and bonds; and pay all applicable federal, state, and borough taxes.

16. SUITABLE MATERIALS, ETC.: Unless otherwise specified, all materials, supplies or equipment offered by a offeror shall be new, unused, and of the latest edition, version, model or crop and of recent manufacture.

17. SPECIFICATIONS: Unless otherwise specified in the RFQ, product brand names or model numbers are examples of the type and quality of product required, and are not statements of preference. If the specifications describing an item conflict with a brand name or model number describing the item, the specifications govern. Reference to brand name or number does not preclude an offer of a comparable or better product, if full specifications and descriptive literature are provided for the product. Failure to provide such specifications and descriptive literature may be cause for rejection of the offer.

18. FIRM OFFER: For the purpose of award, offers made in accordance with this RFQ must be good and firm for a period of ninety (90) days from the date of quote opening.

19. QUOTE PREPARATION COSTS: The State is not liable for any costs incurred by the offeror in quote preparation.

20. CONSOLIDATION OF AWARDS: Due to high administrative costs associated with processing of purchase orders, a single low quote of $50 or less may, at the discretion of the State, be awarded to the next low offeror receiving other awards for consolidation purposes. This paragraph is not subject to the protest terms enumerated in “FILING A PROTEST” above.

21. CONTRACT FUNDING: Offerors are advised that funds are available for the initial purchase and/or the first term of the contract. Payment and performance obligations for succeeding purchases and/or additional terms of the contract are subject to the availability and appropriation of funds.

22. CONFLICT OF INTEREST: An officer or employee of the State of Alaska may not seek to acquire, be a party to, or possess a financial interest in, this contract if (1) the officer or employee is an employee of the administrative unit that supervises the award of this contract; or (2) the officer or employee has the power to take or withhold official action so as to affect the award or execution of the contract.

23. ASSIGNMENT(S): Assignment of rights, duties, or payments under a contract resulting from this RFQ is not permitted unless authorized in writing by the procurement officer of the contracting agency. Quotes that are conditioned upon the State’s approval of an assignment will be rejected as nonresponsive.

24. SUBCONTRACTOR(S): Within five (5) working days of notice from the state, the apparent low bidder must submit a list of the subcontractors that will be used in the performance of the contract. The list must include the name of each subcontractor and the location of the place of business for each subcontractor and evidence of each subcontractor’s valid Alaska business license.

25. FORCE MAJEURE: (Impossibility to perform) The contractor is not liable for the consequences of any failure to perform, or default in performing, any of its obligations under this Agreement, if that failure or default is caused by any unforeseeable Force Majeure, beyond the control of, and without the fault or negligence of, the contractor. For the purposes of this Agreement, Force Majeure will mean war (whether declared or not); revolution; invasion; insurrection; riot; civil commotion; sabotage; military or usurped power; lightning; explosion; fire; storm; drought; flood; earthquake; epidemic; quarantine; strikes; acts or restraints of governmental authorities affecting the project or directly or indirectly prohibiting or restricting the furnishing or use of materials or labor required; inability to secure materials, machinery, equipment or labor because of priority, allocation or other regulations of any governmental authorities.

26. LATE QUOTES: Late quotes are quotes received after the time and date set for receipt of the quotes. Late quotes will not be accepted.

27. CONTRACT EXTENSION: Unless otherwise provided in this RFQ, the State and the successful offeror/contractor agree: (1) that any holding over of the contract excluding any exercised renewal options, will be considered as a month-to-month extension, and all other terms and conditions shall remain in full force and effect and (2) to provide written notice to the other party of the intent to cancel such month-to-month extension at least thirty (30) days before the desired date of cancellation.

28. DEFAULT: In case of default by the contractor, for any reason whatsoever, the State of Alaska may procure the goods or services from another source and hold the contractor responsible for any resulting excess cost and may seek other remedies under law or equity.

29. DISPUTES: Any dispute arising out of this agreement shall be resolved under the laws of Alaska. Any appeal of an administrative order or any original action to enforce any provision of this agreement or to obtain any relief from or remedy in connection with this agreement may be brought only in the superior court for the State of Alaska.

30. **CONSUMER ELECTRICAL PRODUCT:** AS 45.45.910 requires that "...a person may not sell, offer to sell, or otherwise transfer in the course of the person's business a consumer electrical product that is manufactured after August 14, 1990, unless the product is clearly marked as being listed by an approved third party certification program." Electrical consumer products manufactured before August 14, 1990, must either be clearly marked as being third party certified or be marked with a warning label that complies with AS 45.45.910(e). Even exempted electrical products must be marked with the warning label. By signature on this quote the offeror certifies that the product offered is in compliance with the law. A list of approved third party certifiers, warning labels and additional information is available from: Department of Labor, Labor Standards & Safety Division, Mechanical Inspection Section, P.O. Box 107020, Anchorage, Alaska 99510-7020, (907)269-4925.

31. CONTINUING OBLIGATION OF CONTRACTOR: Notwithstanding the expiration date of a contract resulting from this RFQ, the contractor is obligated to fulfill its responsibilities until warranty, guarantee, maintenance and parts availability requirements have completely expired.

32. ORDER DOCUMENTS: Except as specifically allowed under this RFQ, an ordering agency will not sign any vendor contract. The State is not bound by a vendor contract signed by a person who is not specifically authorized to sign for the State under this RFQ. The State of Alaska Purchase Order, Contract Award and Delivery Order are the only order documents that may be used to place orders against the contract(s) resulting from this RFQ.

33. BILLING INSTRUCTIONS: Invoices must be billed to the ordering agency's address shown on the individual Purchase Order, Contract Award or Delivery Order. The ordering agency will make payment after it receives the merchandise or service and the invoice. Questions concerning payment must be addressed to the ordering agency.

34. OFFERORS WITH DISABILITIES: The State of Alaska complies with Title II of the Americans with Disabilities Act of 1990. Individuals with disabilities who may need auxiliary aids, services, and/or special modifications to participate in this procurement should contact the procurement officer named on the cover page of this RFQ as soon as possible, but no later than the date and time quotations are due to make any necessary arrangements.

35. COMPLIANCE WITH ADA: By signature of their quote the offeror certifies that they comply with the Americans with Disabilities Act of 1990 and the regulations issued thereunder by the federal government. Services or activities furnished to the general public on behalf of the State must be fully accessible. This is intended to ensure that agencies are in accordance with 28 CFR Part 35 Section 35.130 and that services, programs or activities furnished to the public through a contract do not subject qualified individuals with a disability to discrimination based on the disability.

36. FEDERAL ASSURANCES: This contract is being funded with federal funds, therefore by signature on the contract the Vendor agrees and certifies that the Vendor:

a. Has the institutional, managerial and financial capability to ensure proper planning, management and completion of the project.

b. Will give the awarding agency, the Comptroller General of the United States and, if appropriate, the State, through any authorized representative, access to and the right to examine all records, books, papers, or documents related to the project; and will establish a proper accounting system in accordance with generally accepted accounting standards or agency directives.

c. Will establish safeguards to prohibit employees from using their positions for a purpose that constitutes or presents the appearance of personal or organizational conflict of interest, or personal gain.

d. Will initiate and complete the work within the applicable time frame after receipt of award and notice to proceed.

e. Will comply with all Federal statutes relating to non-discrimination. These include but are not limited to: (a) Title VI of the Civil Rights Act of 1964 (P.L. 88-352) which prohibits discrimination on the basis of race, color or national origin; (b) Title IX of the Education Amendments of 1972, as amended (20 U.S.C. §§1681-1683, and 1685-1686), which prohibits discrimination on the basis of sex; (c) Section 504 of the Rehabilitation Act of 1973, as amended (29 U.S.C. §794), which prohibits discrimination on the basis of handicaps; (d) the Age Discrimination Act of 1975, as amended (42 U.S.C. §§6101-6107), which prohibits discrimination on the basis of age; (e) the Drug Abuse Office and Treatment Act of 1972 (P.L. 92-255), as amended, relating to nondiscrimination on the basis of drug abuse; (f) the Comprehensive Alcohol Abuse and Alcoholism Prevention, Treatment and Rehabilitation Act of 1970 (P.L. 91-616), as amended, relating to nondiscrimination on the basis of alcohol abuse or alcoholism; (g) §§523 and 527 of the Public Health Service Act of 1912 (42 U.S.C. §§290 dd-3 and 290 ee-3), as amended, relating to confidentiality of alcohol and drug abuse patient records; (h) Title VIII of the Civil Rights Act of 1968 (42 U.S.C. §§3601 et seq.), as amended, relating to nondiscrimination in the sale, rental or financing of housing; (i) any other nondiscrimination provisions in the specific statute(s) under which Federal assistance is being made; and, (j) the requirements of any other nondiscrimination statute(s) which may apply to the project.

f. Will comply with the provisions of the Hatch Act (5 U.S.C. §§1501-1508 and 7324-7328) which limit the political activities of employees whose principal employment activities are funded in whole or in part with Federal funds.

g. Compliance with Executive Order 11246 of September 24, 1965, entitled ``Equal Employment Opportunity,'' as amended by Executive Order 11375 of October 13, 1967, and as supplemented in Department of Labor regulations (41CFR chapter 60).

h. Compliance with the Copeland ``Anti-Kickback'' Act (18 U.S.C. 874) as supplemented in Department of Labor regulations (29 CFR Part 3).

i. Compliance with Sections 103 and 107 of the Contract Work Hours and Safety Standards Act (40 U.S.C. 327-330) as supplemented by Department of Labor regulations (29 CFR Part 5).

j. Compliance with all applicable standards, orders, or requirements issued under section 306 of the Clean Air Act (42 U.S.C. 1857(h)), section 508 of the Clean Water Act (33 U.S.C. 1368), Executive Order 11738, and Environmental Protection Agency regulations (40 CFR part 15).

k. Will cause to be performed the required financial and compliance audits in accordance with the Single Audit Act Amendments of 1996 and OMB Circular No. A-133, "Audits of States, Local Governments, and Non-Profit Organizations."

l. Mandatory standards and policies relating to energy efficiency which are contained in the state energy conservation plan issued in compliance with the Energy Policy and Conservation Act (Pub. L. 94-163, 89 Stat. 871) [53 FR 8048, 8087, Mar. 11, 1988, as amended at 60 FR 19639, 19642, Apr. 19, 1995].