SCOPE OF WORK

FINANCIAL PROJECT No.: 448210-1-52-01

COUNTY: DESOTO

CONTRACT NO.: F1A02

PROJECT DESCRIPTION: HEARTLAND OPERATIONS CENTER – ARCADIA, GENERATOR INSTALLATION AT 1190 W OAK ST, ARCADIA, FL 34266

EXHIBIT "A"
Heartland Operations - Arcadia Generator Installation
DESOTO COUNTY
Financial Project Number: 448210-1-52-01
Contract: F1A02

I. OBJECTIVE:

The Florida Department of Transportation (FDOT) District One hereafter referred to as the "Department" seeks to secure competitive bids from qualified vendors who are able to provide one (1) stand-by generator system with an optional five (5) year maintenance plan at Heartland Operations Center - Arcadia, 1190 W Oak ST., Arcadia, FL 34266.

II. SERVICES TO BE PROVIDED

A. PROJECT DESCRIPTION:

The work described herein includes the installation of one (1) new Blue Star Power System Generator; Model: NG200-01 or the equivalent and connecting the generator to two (2) existing transfer switches and one (1) new ASCO Series 300SE Power Transfer Switch.

GENERATOR:

Generator:	200 KW, 200 AMP CB 1PH (qty:1), 200 AMP CB 3PH (qty:2)
Voltage:	240v
Engine:	11.1LTCAC
Fuel Type:	Natural Gas
Enclosure:	Level 2 Enclosure
Control Panel:	DCP7310 Control Panel
Vibration Isolation:	Vibration Pads Isolator
Muffler:	Critical Grade Muffler

Concrete Foundation for the Generator (must meet the requirements of the manufacture of the installed generator)

TRANSFER SWITCH:

ASCO Service Entrance Power Transfer Switch – ASCO Series 300SE

A. Transfer switch must transfer from alternate source back to normal power without interruption in power supply to loads.
B. Transfer switch must be the following model: J-03AUS-A-3-0400-F-G-N

Installation must also include the following:

A. Surge Protection
B. Panel ID Labeling To/From
C. SHUNTRIP/ESTOP
D. Mimic panel for generator, to be located in the front office of the Administration Building.
E. This equipment shall be delivered and off-loaded at the facility. Site tests, site start-up, site inspection after wiring has been installed, and 4-hour load back test is required at the site. The successful bidder shall furnish only the products specified. If software is necessary for the programming or reprogramming of alarm inputs ad outputs or diagnostics, it shall be provided with the generator.
F. The contractor will also be responsible for removing the existing generators that are located in the Mechanics Shop and outside of the Crew Building.
    a. This includes all operating equipment, fuel tanks and any other material that is no longer needed to operate the new systems.
G. The contractor will be responsible for installing all infrastructure to support the new systems.
    a. This includes, concrete pads, electrical materials, sod, asphalt, paint, bollards, and etc.
    b. See attachment A-1 for a diagram of the electrical specifications
    c. Concrete pad needs to be 7 inches above grade and have a 3-foot apron.
H. The contractor will be responsible for working with the Department and the Natural Gas Company to ensure that all connections are in the right locations and that connection sizes are correctly selected.
I. This is a turnkey product. The generator is to be installed by the contractor and all areas necessary for the project's completion are to be handled by the contractor.

a. Contractor is responsible for the connection of the gas line from the meter to the equipment.

J. The Administration Building Transfer Switch and Crew Building Transfer Switch are already in place and the contractor will be responsible for connecting the new generator to the existing switches.

K. The contractor will be responsible for removing the current Transfer Switch at the Mechanic Shop and replacing with the Transfer Switch specified above. Contractor will provide the new switch and all material for installation. **(See attachment A-2 for a diagram of the ATS installation specifications)**

- Note, all exposed PVC shall be schedule 80 and all conductors shall be coper. Conductors may need upsized due to the voltage drop.

B. SUBMITTALS:

Specification sheets showing all standard and optional equipment to be supplied should be submitted with the bid. Schematic wiring diagrams, dimension drawings, fuels tank shop drawings, weather resistant enclosure drawings and interconnection diagrams identifying, by terminal number, each required interconnection between the generator set, the transfer switch, and other remote device, shall be supplied after the bid has been awarded. The bidder should supply, with the bid, any and all information on standard and optional equipment to be supplied, which should be highlighted, underlined, or circled to indicate exactly what the supplier intends to deliver.

C. TESTING:

To ensure that the equipment has been designed and built to the highest reliability and quality standards, the manufacturer shall be responsible for design prototype tests as described herein. Components of the emergency system, such as the engine/generator set, and accessories shall not be subjected to prototype tests since the tests are potentially damaging. Rather, similar design prototypes, which will not be sold, shall be used for these tests. Prototype test programs shall include the requirements of NFPA-110 and the following:

A. Maximum power;
B. Maximum motor starting kva;
C. Alternator temperature rise by embedded thermocouple and by resistance method per NEMA MG1-22.40 and 16.40;
D. Governor speed regulation under steady state and transient conditions;

E. Voltage regulation and generator transient response;
F. Fuel consumption at ¼, ½, ¾ and full load;
G. Harmonic analysis voltage waveform deviation, and phone influence factor;
H. Three-phase, line-to-line, short circuit test;
I. Alternator cooling air flow;
J. Torsion analysis testing to verify that the generator set is free of harmful torsion stresses; and
K. Endurance testing.

D. PRODUCT:

The standby generator set shall be rated continuous standby (defined as continuous for the duration of any power outage). Vibration isolators shall be provided between the engine-generator and heavy-duty steel base or between the base and the floor.
Final Production Tests: The generator set shall be tested under varying loads with guards and exhaust system in place. Tests shall include:

1. Single-step load pickup;
2. Transient and steady governing;
3. Safety shutdown device testing;
4. Voltage regulation;
5. Rated Power; and
6. Maximum Power.

Upon request, arrangements to witness this test will be made or a certified test record will be sent prior to shipment.

The engine shall be four (4) cycle vee and shall be equipped with the following:
A. Fuel Type Natural Gas
B. 1800RPM’s

E. Execution

Site Tests: An installation check, start-up and four (4) hour load bank test shall be performed by the manufacturers’ local representative as arranged by the successful

bidder. The site test shall be coordinated with Local Contract Coordinator and shall include:

1. Fuel, lubricating oil, and antifreeze shall be checked for conformity to the manufacturers' recommendations under the environmental conditions present and expected;
2. All externally connected equipment and the Automatic Transfer Switch shall be checked for proper connection;
3. Accessories that normally function while the set is standing by shall be checked prior to cranking the engine. This shall include engine heaters, battery charger, generator strip heaters, etc;
4. Start-up under test mode to check for exhaust leaks, path of exhaust gases outside the enclosure, cooling air flow, movement during starting and stopping, vibration during running, normal and emergency line-to-line voltage and phase rotation; and
5. Automatic start-up by means of simulated power outage to test remote automatic starting, transfer of the load, and automatic shutdown. Prior to this test, all transfer switch timers shall be adjusted for proper systems coordination. Engine temperature, oil pressure and battery charge level along with generator voltage, amperes, and frequency shall be monitored throughout the test.
6. Operational training for the maintenance staff shall be conducted at time of start-up by the successful bidder.

F. DELIVERIES:

Deliveries must be made between 8:00 am to 5:00 pm, Monday thru Friday, excluding state holidays, unless otherwise stated herein. Coordination for weekend deliveries must be coordinated through the Department's Project Manager. Two (2) copies of the Operation & Maintenance Manuals and installation instructions for the Gen-set shall be provided to the owner at the time of delivery. These manuals shall contain specification sheets showing all standard and optional accessories supplied, schematic wiring diagrams, dimension drawings, and interconnection diagrams identifying by terminal number each required interconnection between the generator set, the transfer switch, and other remote devices supplied. The manuals shall also include any other information necessary for the installation, operation, routine servicing and maintenance

of the generator and accessories.

G. DAMAGED GOODS:

The vendor shall be responsible for filing, processing and collecting all damage claims. The Department will not be responsible for any of the following:

1. Record any evidence of visible damage on all copies of the delivery carrier's Bill of Lading.
2. Report damage (visible or concealed) to the carrier and contract supplier, confirming such reports, in writing, within fifteen (15) days of delivery, requesting that the carrier inspect the damaged merchandise.
3. Retain the item and its shipping container, including inner packing material, until inspection is performed by the carrier and disposition given by the contract supplier.
4. Provide the vendor with a copy of the carrier's Bill of Lading and Damage Inspection Report.

H. TRADE NAMES:

Any manufacturer's names, trade names, brand names, or catalog numbers used in specifications contained in this bid are for the purposes of the describing and establishing general quality levels. Such references are not intended to be restrictive. Bids will be considered for any brand that meets or exceeds the quality level of item(s) listed unless otherwise indicated. An alternate product sample may be required by the Department for review prior to acceptance.

I. Maintenance/Warranty/Repairs (OPTIONAL)

The winning bidder shall only utilize a manufacturer that has a franchised statewide and nationwide service organization with parts and service available twenty-four (24) hours per day, seven days a week. The successful bidder shall be able to respond to an emergency outage within **four (4) hours** and shall respond to a non-emergency call within **twenty-four (24) hours.** In the event that the successful bidder fails to meet either or both of these requirements or an emergency outage repair cannot be accomplished within eight hours after arrival at the institution, a temporary replacement unit will be provided at no cost to the Department until the necessary repairs are made. The successful bidder shall be responsible for all maintenance and repairs of this

equipment, including lightning damage, for a period of five (5) years from the date of initial start-up. The only exemption to this responsibility shall be damage due to fire, flood, wind, or vandalism. This maintenance agreement shall include the following.

J. Quarterly Maintenance and Inspections

The Contractor shall provide quarterly inspections and preventive maintenance services of all equipment. On a quarterly basis, the Contractor shall perform the following services on all equipment, systems or components: Test the generator for at least one (1) hour under full-connected load for quarterly inspections;

Lubricating System

1. Check lube oil level and add oil as necessary;
2. Inspect for oil leaks and check and re-torque connections to manufacturer's specifications;
3. Check governor oil level and add oil as necessary (where applicable);
4. Check condition of lube oil hoses and connections;
5. Check oil base heater and adjust if necessary;
6. Check injection pump oil level and add oil if necessary (where applicable);
7. Check engine breather and clean and remove any oil residue, dust,dirt, or other restriction;
8. Start engine, check oil pressure and adjust if necessary to manufacturer's specifications;
9. Check engine oil stick for water or residue;
10. Check turbo-charger for oil leaks (where applicable);
11. Check front and rear crank shaft seals for oil leaks;
12. Check equipment hour meter for hours of operation. Refer to manufacturer's operation and service manual. If hours of operation are near or exceed manufacturer's stipulated time for oil service, change oil and filter with manufacturer's approved oil and filter. Start engine and check for oil leaks at the filter. Check oil stick for proper oil level;
13. Obtain lube oil sample for analysis; and
14. Have analysis run by a certified laboratory and submit a written report to the Project Manager.

Fuel System

a. Inspect fuel lines, hoses, connections, clamps, injectors/carburetors, injector pumps, and priming pump, etc. for leaks. Correct as needed;
b. Check operation of day tank (where applicable);
c. Drain water from fuel traps (where applicable);
d. Drain water from day strainer (where applicable);
e. Clean sediment bowl (where applicable);
f. Check for water in fuel;
g. Inspect fuel filter. Change filter as necessary; and
h. Check fuel pressure. Insure compliance with manufacturer's specifications.

Cooling System

a. Check for leaks;
b. Check coolant level. Add, if necessary;
c. Check coolant PH and add long-life anti-freeze, as necessary;
d. Check all belts for cracks or wear. Replace as necessary
e. Check all belts for proper tension. Adjust as necessary;
f. Check condition of water hoses and clamps;
g. Check for leakage and make repair, as necessary;
h. Check water, filter, and replace water filter elements annually or as needed, whichever is sooner;
i. Pressure test radiator and cap;
j. Check water pump for leaks and bearing noise;
k. Verify the temperature gauge is reading the correct temperature using infrared device;
l. Check operation of engine heater and switch;
m. Check fan & radiator for physical damage, obstruction and leaks; and
n. Drain and replace anti-freeze, when required.

Air Systems

a. Check air cleaner (dry type);
b. Check turbocharger clearance (where applicable);
c. Check and service oil bath air cleaner as needed (where applicable); and
d. Check air hoses and connections (where applicable).

Electrical System
a. Check battery fluid. Correct if necessary;
b. Check battery specific gravity. Correct if necessary;
c. Check battery trickle charger. Record rate;
d. Check battery connections. Clean & tighten if necessary;
e. Lubricate generator, starter/cranking;
f. Check air compressor, if not electric start; and
g. Check for loose load line connections and emergency supply line connections.

Exhaust System
a. Inspect the entire exhaust system;
b. Check rain cap for leaks; and
c. Inspect the manifold connection for leaks. Re-torque as necessary.

Engine Safety Controls
a. Check operations of all safety controls and emergency stops.

Engine Test - No Load
a. Start engine and check operation. Adjust RPM if necessary; and
b. Observe oil pressure and record.

Engine Test – With Load
a. Test run the generator with the connected load energized for at least one (1) hour;
b. Observe and record volts, amps, cycles, engine water temperature, lube oil temperature, engine lube oil pressure, and battery charge rate; and
c. Shut down engine and return to normal automatic condition unless otherwise noted.

Ignition System
a. Inspect all wires;
b. Check ammeter for discharging while cranking; and
c. Check ammeter for full charge at start-up.

Generator Set
a. Check slip rings;
b. Check commutator;
c. Check brushes to assure they are free;
d. Inspect generator wiring for fraying;

e. Check and record each phase volts, amps, and frequency. Check operation of transfer switch;
f. Check automatic start-up;
g. Check generator grounding;
h. Adjust voltage regulator;
i. Check generator windings and armature for cleanliness;
j. Check excitor belts for fraying or cracking;
k. Check excitor and regulator for cleanliness;
l. Check generator-mounting bolts for tightness. Re-torque as required;
m. Lubricate generator bearings, drive and joints;
n. Inspect for potential hazards resulting from vibration and/or pressure;
o. Check for alternator vibration;
p. Inspect and torque (if necessary) all main supply, emergency supply and load line connections; and
q. Verify phase relay drop out and pickup points and adjust, if necessary.

Engine

a. Test run engine under actual connected load for at least one (1) hour;
b. Check for engine noises;
c. Check carburetor/injectors for proper adjustments. Correct as necessary;
d. Check choke adjustment (where applicable);
e. Check engine for excessive smoke;
f. Check for air in the induction system;
g. Check cylinder head and head gasket;
h. Check for excessive blow by;
i. Check turbocharger for noise;
j. Check pre-lube pump for proper operation;
k. Check engine high idle speed and correct if necessary;
l. Check engine low idle speed and correct if necessary;
m. Check emergency shutoff for proper operation;
n. Check engine for proper operation at rated speed;
o. Inspect engine-mounting bolts. If bolts are loose, tighten. If bolts are broken, replace.
p. Check engine-wiring harness for breaks or wear. If wiring harness is broken, repair. If wiring harness is worn, repair and reroute to prevent wear.

Transfer Switch

a. Check all wiring;
b. Inspect to assure all supply and load lines are tight;
c. Check for proper mechanical operation of the transfer mechanism;
d. Note settings on timers and assure they are proper for the application;
e. Verify phase relays drop out and pick up points, traditionally D.O. @ 70% and pick up @ 90% of rated voltage. Adjust if necessary. Attach calibration tag with date and calibration of relays noted; and advise the Project Manager as to any options he might want to add or change.

Testing

a. While the engine is running under actual connected load, adjust voltage and frequency;
b. Adjust clock exerciser as necessary;
c. Test delay start;
d. Test delay pick-up;
e. Test delay retransfer;
f. Test delay cool down;
g. Test delay transition;
h. Test delay preheat;
i. Calibrate under-voltage sensors;
j. Calibrate over-voltage sensor;
k. Calibrate generator sensors;
l. Record load per leg;
m. Record voltage per leg;
n. Record frequency;
o. Record oil pressure;
p. Record water temperature;
q. Check battery charging system; and
r. Clean up work area.

K. Annual Maintenance and Inspections

The Contractor shall provide the following services annually, during the last quarterly maintenance and inspection. This annual inspection shall include all of the requirements of the quarterly inspections along with the following additional services.

Lubricating System

a. Change engine oil;
b. Change governor oil (where applicable);
c. Change injection pump oil (where applicable);
d. Change oil filter and gaskets;
e. Change oil in crankcase breather (where applicable); and
f. Take oil sample and send to laboratory for analysis. Provide a copy of the report to the Project Manager.

Fuel System
a. Lubricate the day tank float switch and manual pump (where applicable);
b. Replace fuel filters;
c. Lubricate carburetor and linkage (where applicable); and
d. Lubricate governor linkage and service air filters.

Cooling System
a. Replace water filters (where applicable).

Battery
a. Check specific gravity and load test.

Exhaust System
a. Drain condensation where possible; and
b. Check and lubricate heat riser plate.

Ignition System
a. Replace plugs (where applicable);
b. Replace points (where applicable);
c. Replace condenser (where applicable);
d. Replace rotor (where applicable);
e. Inspect cap, replace as necessary (where applicable);
f. Lube point cam (where applicable);
g. Lube advance wick (where applicable);
h. Lube upper and lower bearing;
i. Set timing;
j. Inspect and lube mechanical advance (where applicable); and
k. Inspect wires.

Generator

a. Clean rings and commutator;
b. Lubricate over speed switch;
c. Check diode heat sinks; and
d. Inspect rear bearing.

Engine Running
a. Test low oil pressure safety switch and record seconds to shutdown;
b. Test high engine temperature safety switch and record seconds to shutdown;
c. Test over speed safety switch and record seconds to shutdown;
d. Check pre-alarms (where applicable);
e. Check over crank system and record seconds to shutdown; and
f. Check cycle cranker time and record seconds of cranking and seconds of resting.

Accessories
a. Lubricate all hinges, door locks, and snap covers, etc.

Load-bank Test
a. A four (4) hour resistive/reactive load-bank test at full rated KVA of the unit;
b. A record of all operating systems of the alternator and the engine during the load bank test; and
c. Provide a complete written report of the load bank test to the Project Manager. The Contractor shall be responsible for removal of all oil and filters and shall comply with all Federal, State, and local regulations for disposal of hazardous materials.

A weekly inspection will be performed by Department personnel. This inspection will be to check oil, coolant, fuel, batteries, gauges, belts, oil pressure, engine temperature etc. Liquids will be topped off with Contractor provided supplies. All major problems will be promptly reported to the Contractor.

III. SERVICES/MATERIALS PROVIDED BY THE DEPARTMENT

The Department's Project Manager is identified below. She or her designee shall perform the following on behalf of the Department:

1. Review, verify, and approve receipt of services/deliverables from the vendor.
2. Submit requests for change orders/amendments/renewals, if applicable.

3. Review, verify, and approve invoices from the vendor; and, if applicable, the Certificates of Partial Payment requests, and the Certificate of Contract Completion form.
4. Maintain an official record of all correspondence between the Department and the vendor.
5. The Department will provide a staging area for the Vendor until completion of the work.

IV. VENDOR QUALIFICATION

The Vendor shall maintain and keep in force throughout the life of the contract, the requirements specified below. Failure of the Vendor to comply with these requirements will be sufficient grounds for Department to declare the contract in default and terminate the agreement in accordance with the terms of B-28 Termination for Cause and Mutual Agreement of the FCO Non-Technical Specifications.

1. The Vendor shall be currently licensed by the State of Florida and or the County.
2. The organized business enterprise (e.g. corporation, LLC or sole proprietorship) shall have experience in performing the type of work required for this contract for a minimum of three (3) years.
3. The Vendor shall have a current and valid Occupational License/Business Tax Receipt which states the name of the Vendor, street address of the business and the type of work that the Occupational License/Business Tax Receipt is issued for (which must be for the same type of services required in the contact).

V. GENERAL INFORMATION

1. If a permit is deemed to be required for the service above, the Vendor will be responsible for the procurement of the permit from the local agency having jurisdiction.
2. All work shall be done in accordance with the current National Electrical Code (NEC) and DeSoto County codes.
3. The Vendor shall be responsible for maintaining a safe and secure worksite for the duration of the work. The Vendor shall maintain all work and staging areas in a neat and presentable condition. Upon completion of assigned work, the Vendor shall daily collect and remove all debris and trash caused by the work and dispose of it properly. Cleanup shall be performed to the satisfaction of the Department.

The area around the worksite shall be kept clean and free from debris on a daily basis during the progress of work. The Vendor shall immediately notify the Department of any damages to the facilities as a result of the Vendor's operations.

4. The Vendor shall be solely responsible for furnishing all labor, materials, equipment, tools, transportation and supervision and for performing all work as required to complete the work of this project as described. The Vendor, sub-vendors or any of their employees shall not perform any work that is beyond their technical capabilities or for which they are not licensed or certified.
5. Power outages are to be scheduled as to not interfere with normal Department of Transportation (DOT) business.
6. Before any work is begun, wiring diagrams, equipment, materials lists and schedules shall be submitted to the Department for approval.
7. At the conclusion of the project, provide a written certification to the Department that all work has been provided in accordance with the Contract Documents and a written warranty against the occurrence of defective materials and workmanship. All standard manufactures and installation warranties apply.
8. Generator start up is to be supervised by a trained technician.
9. The Vendor shall provide the Department with contact information for all key personnel directly related to the project. The Department shall be notified immediately orally or written of any changes to the contract information.

VI. WORK AUTHORIZATION: No work will be done until a Notice to Proceed (NTP) is issued by the Project Manager.

VII. BASIS OF PAYMENT:

Partial payments may be made for percentages or stages of work completed upon approval of Project Manager. See Non-Technical Specifications and Exhibit "B" Method of Compensation for other terms of payment.