SHAFER ZAHNER ZAHNER

OFFICE OF ARCHITECTURE

August 22, 2019
GS# 411-121, Generator Upgrades–Nursing Home Division
East Mississippi State Hospital

Addendum No. 1

This addendum forms part of the Contract Documents for the above referenced project. All other requirements of the original Contract Documents shall remain in effect except as specifically modified in this addendum. Bidder is to acknowledge receipt of this addendum with their bid proposal. Failure to do so may subject the Bidder to disqualification.

1. Find attached the Pre-Bid Meeting outline, Sign-In sheet, and items discussed from the Instructions to Bidder's specification section to be included as part of this Addendum.
2. The Contractor is responsible for protecting all materials, surfaces, etc. in and adjacent to the work. Proper protection shall be placed over equipment, surfaces, etc. as necessary to protect such items from damage from construction activities. Replacement of any damaged items will be the Contractor's responsibility.
3. It is expected that the contractor will make every effort to avoid damaging the asphalt surfaces. However, all damaged asphalt (ruts, potholes, etc.) are to be infilled by the contractor with crush-run limestone. The limestone is to be compacted and graded smooth. EMSH will make final asphalt repairs at the completion of the project.
4. All damage (ruts, etc.) to grassed areas is to be infilled, graded smooth with topsoil to allow for drainage (in a manner that does not hold water and allows for mowing). All damaged areas are to be reseeded.
5. Weekend work is allowed. There are no restrictions on the time of day work can take place.
6. All construction debris must be disposed of on a daily basis.
7. Pay attention to all of the Special Conditions and the Bureau of Building bidding requirements.
8. Replace specification Section 16231 Packaged Engine Generator with the attached revised Section 16231 Packaged Engine Generator. This section has been revised as follows:

    - Added 2.1(A)4 - Added Detroit Diesel as an acceptable manufacturer
    - Added Part 4.0 Fuel Filtering System to specs. This item will be priced as ALTERNATE #1
    - 16231-2.10(A) Shall read as follows: The generator manufacturer shall submit a selection of their STANDARD colors for selection by the Architect.
    - 16231-2.10(B) DELETE THIS ITEM.

9. Section 00300 Proposal Form has been revised to reflect the addition of Alternate #1. Use the attached revised Section 00300 Proposal Form with your bid.

Approval of a Manufacturer or product as an "equal" does not in any way alter the Contract Documents. Any approved manufacturer must accommodate construction details, required finishes, owner's specific requirements, adjacent materials, etc. Any additional materials or components required by the "approved equal" for proper installation for the given conditions are the responsibility of the Contractor. Approval of a Manufacturer also shall not cause an up-charge for the desired finish or limit the choices of finishes, colors, materials, etc.

Contents: This addendum consists of **24** (8 ½" x 11") sheet(s) - (including this page)

End of Addendum No. 1 for: GS# 411-121, Generator Upgrades–Nursing Home Division

SHAFER ZAHNER ZAHNER
OFFICE OF ARCHITECTURE

GS# 411-121
Generator Upgrades-Nursing Home Division
East Mississippi State Hospital
Pre-Bid Meeting August 20, 2019 @ 10:00 AM

Project Contacts: Mr. Shomari Rawls, Ms. Adrian Massey – BOB
Rick Entrekin – EMSH, Director of Business Services
Shannon Griffin – EMSH, Director of Resource Management
Ted Spencer – EMSH, Director of Public Safety Division
Gary Shafer, Project Architect – Shafer-Zahner-Zahner
Scott Comish, Project Manager – Shafer-Zahner-Zahner

Bid Date: Tuesday, August 27, 2019 @ 2:00:00 pm @ the Bureau of Buildings office, Jackson, MS (see ***Advertisement For Bids*** for official information). Official Time is by the BOB

Current Bidders List: 4 General Contractors (currently)

If you are a sub-contractor looking for GC's contact our office for a current list

Construction days: **225** days for project (see *Proposal Form*) – must hit intermediate shutdown window.

Notice to Proceed by BOB. Must hold price per specs

Contract Administration: Architects/Engineers will typically be on site regularly. Other construction administrators will visit regularly.

Construction Progress Meetings held monthly by Contractor

Commissioning- **none on this project.**

Construction Access: Discuss: weekends, Sunday work, holidays, etc.
Daily work will be allowed at what times? **Work will be allowed 7 days a week**
Weekend work? Restrictions? **Weekend work is allowed, no restrictions on time**

Restricted "no work" days due to events: **None**

Staging Areas/Fencing/Access – Discuss: Parking permits? **Parking permits are not required.**

Protection of interior: **There is limited interior work. The contractor is responsible for protecting all equipment and construction (that is not in the scope of work) that is adjacent to the work.**

Scope of work: Scope was discussed. There was a focus on the timing and sequencing of the work.

Bidding rules: Pay attention to *Instructions To Bidders*
Pay particular attention to Special Conditions

Common mistakes: -Certificate of Responsibility number on envelope.
-Any changes to bid on outside of envelope. Initial and date.
-Acknowledge addenda.

SIGN IN SHEET AND AGENDA

Bureau of Building, Grounds and Real Property Management

DATE: 08-20-19

MEETING FOR: GS# 411-121 PHASE: Pre Bid I/A and Project Name: EMSH & Generator Upgrades - NHD

Requested by: X BoB ____ Professional ____ Using Agency ____

AGENDA OUTLINE:

1	
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10	
____	OR SEE ATTACHED

NAME (PLEASE PRINT)	COMPANY OR ORGANIZATION	PHONE NO.	FAX NO.	CELL NO.	E-MAIL ADDRESS
Shamari Rawls	BOB	601. 359. 3621			Shamari.rawls@dfa.ms.gov
Ken. L Walker	EMSH				
Kick Entrekin	EMSH	6015817969			
Shannon Griffin	EMSH	601-581-7666			SGriffin@emsh.ms.gov
Chad Davidson	Webster Electric	601-513-0033			Chadd@webster-electric.com
Brad Woodall	Woodall Electric	601-482-6123			brad@woodallelectric.com
Jason Centola	Stewart & Stevenson	504-559-5311		~~504-55~~	j.centola@ssss.com
Ted Spencer	EMSH	601-934-0478			TSpencer@emsh.ms.gov
Mark Lanier	EMSH	601-479-6689			MLanier@emsh.ms.gov
Richie Talbert	EMSH	601-934-6959			r talbert@EMSH.MS.GOV
Joe Legge	CLA	662-401-1848			JLegge@CarterLegge.com
					g:\sign in sheet\...w/agenda...

INSTRUCTIONS TO BIDDERS
SECTION 00100

PART 1 - GENERAL

1.01 **QUESTIONS:** Questions should be directed to the Professional. Should a Bidder find discrepancies in, or omissions from, the Drawings or Project Manual, ~~or be in doubt as to their meaning,~~ the Bidder should immediately notify the Professional. The Professional will send written instruction(s) or interpretation(s) to all known holders of the documents. Neither the Owner, nor the Professional, will be responsible for any oral instruction or interpretation.

1.02 **BIDDER'S QUALIFICATIONS:**

A. **Certificate of Responsibility:** The Mississippi State Board of Contractors is responsible for issuing Certificates of Responsibility to Contractors. To be awarded a Contract for public work, Sections 31-3-15 and 31-3-21 of the **Mississippi Code 1972, Annotated** requires a Contractor to have a current Certificate of Responsibility at bid time and during the entire length of the job. The Certificate of Responsibility number issued becomes a significant item in all public bidding.

B. **Bid Under $50,000:** If a Bidder submits a bid not exceeding $50,000, no Certificate of Responsibility number is required; however, a notation stating the *bid does not exceed $50,000* must appear on the face of the envelope, or a Certificate of Responsibility number.

C. **Bid Over $50,000:** Each Bidder submitting a bid in excess of $50,000 must show its Certificate of Responsibility number on the bid and on the face of the envelope containing the bid.

D. **Joint Venture Bid:** When multiple Contractors submit a joint venture bid in excess of $50,000, a *joint venture* Certificate of Responsibility number must be shown on the bid and on the face of the envelope containing the bid. If the Multiple-Contractor joint venture has no *joint venture* Certificate of Responsibility number, each of the Contractors participating in the bid must indicate their individual Certificate of Responsibility numbers on the bid and on the face of the envelope.

1.03 **NON-RESIDENT BIDDER:** When a non-resident Bidder (a Contractor whose principal place of business is outside the State of Mississippi) submits a bid for a Mississippi public works project, one of the following is required and shall be submitted with the Proposal Form: (Code 31-3-21(3))

A. **Copy of Law:** If the non-resident Bidder's state has a resident Bidder preference law, a copy of that CURRENT law shall be submitted with the Proposal Form. (modified to "current" August 2016)

B. **Statement:** If the state has no such law then a statement indicating *the State of (Name of State) has no resident Contractor preference law* shall be submitted with the Proposal Form.

1.04 **DISQUALIFICATION OF BIDDER:** A Bidder may be disqualified for any of the following reasons: (see 600.53) (modified Nov 2016)

A. Failure to comply with the bid requirements.

B. Bidder is in arrears on existing Contracts with the Bureau or another state agency, university, community college, or junior college.

C. Bidder is involved in an ongoing dispute related to the Bidder's execution, workmanship, or timely performance of a previous Contract with the Bureau or another state agency, university, community college, or junior college.

D. Bidder has defaulted on a previous Contract with the Bureau of another state agency, university, community college, or junior college.

1.05 **CONDITIONS OF WORK:** Each Bidder must fully inform himself of all conditions relating to the construction of the Project and employment of labor thereon. Failure to do so will not relieve a successful Bidder of obligations to furnish all material and labor necessary to carry out the provisions of the Contract. Insofar as possible, the Bidder must employ methods, or means, which will not cause interruption of, or interference with, the work of any other Bidder, or Contractor.

1.06 **EXAMINATION OF SITE:** All Bidders, including the general Contractor and Subcontractors, shall visit the building site, compare the Drawings and Project Manual with any work in place and be informed of all conditions. Failure to visit the site will in no way relieve the successful Bidder from furnishing any materials or performing any work required to complete work in accordance with Drawings and Project Manual without additional cost to the Owner.

1.07 **LAWS AND REGULATIONS:** The Bidder's attention is directed to the fact that all applicable Mississippi state laws, rules and regulations of all authorities having jurisdiction over construction of the Project apply to the Contract.

1.08 **OBLIGATION OF BIDDER:** At the bid opening, each Bidder will be presumed to have inspected the site, read and become thoroughly familiar with the Drawings and the Project Manual, including all addenda.

1.09 **BID DOCUMENT DEPOSIT AND RETURN:** The deposit amount, if any, shall be established as the estimated actual cost of copying and reproduction plus shipping via USPS standard Ground Transportation, ~~is~~ shall be indicated in the Advertisement for Bids. Bidders may request shipping via express carrier or expedited delivery at their own additional cost. Upon returning the documents to the Professional within ten (10) working days of the bid date and in good condition, all document holders will be refunded the full deposit amount. Further, any document holder who is awarded the contract, related subcontracts and/or vendor agreements may elect to retain their documents and request refund of the full deposit amount upon execution of the construction contract and approval of general contractor, however; such documents shall be counted toward the total number of copies furnished free of charge to the general contractor. No partial sets of documents will be issued. Selected trade organizations, plan rooms and web-based distribution networks will be issued one (1) set of documents without charge. (modified August 2016) (see 600.50)

PART 2 - PROPOSAL FORM

2.01 **METHOD OF BIDDING:** Lump sum, single bids received on a general contract will include general, mechanical and electrical construction and all work shown on Drawings or specified in the Project Manual.

2.02 **PROPOSAL FORMS:** The Bidder shall make all proposals on forms provided and shall fill all applicable blank spaces without interlineations or alteration and must not contain recapitulation of the work to be done. No oral or telegraphic proposals will be considered.

2.03 **TIME OF COMPLETION:** The Bidder shall agree to commence work on, or before, a date specified in a written *Notice to Proceed* and fully complete the Project within the calendar days indicated on the Proposal Form.

2.04 **BASE BID AND ALTERNATES:**

A. On the Proposal Form, the Bidder shall write out the Base Bid amount in words and include the numerical amount. The written word shall govern.

B. The Proposal Form shall contain a brief description of each alternate modifying the scope. The Bidder shall write out the amount in words and include the numerical amount for each alternate. The written word shall govern. Refer to Section 01030 entitled *Alternates* for additional information.

2.05 **SUBSTITUTIONS:** No substitutions, qualifications or redefining of the Specification requirements are allowed to be marked on the Proposal Form, unless specifically required by the Bid Documents. Refer to Section 01630 entitled *Substitutions and Product Options* which covers procedures after the award of Contract (see 600.25.) (2.05 unchanged but modified 01630 August 2016)

2.06 **ADDENDA:** Any addenda to the Drawings or Project Manual issued before or during the time of bidding shall be included in the proposal and become a part of the Contract. The Proposal Form will have ample space to indicate the receipt of addenda. When completing the Proposal Form, the Bidder shall list the Addendum number in spaces provided. (see proposal form) (modified August 2016)

2.07 **BIDDER IDENTIFICATION:**

A. **Signature:** The Proposal Form shall be signed by any individual authorized to enter into a binding agreement for the Business making the bid proposal.

B. **Name of Business:** The name appearing on the Proposal Form should be the complete spelling of bidder's name - exact as recorded at the Secretary of State [http://www.sos.state.ms.us/busserv/corp/soskb/csearch.asp] which should be the same as you applied for at the Mississippi State Board of Contractors [http://www.msboc.us/Search2.CFM] (see 2.07, 3.01, 5.01, proposal form)

C. **Legal Address:** The address appearing on the Proposal Form should be the same address exact as recorded at the Secretary of State [http://www.sos.state.ms.us/busserv/corp/soskb/csearch.asp] which should be the same as you applied for at the Mississippi State Board of Contractors [http://www.msboc.us/Search2.CFM]

D. **Certificate of Responsibility Number(s):** The Certificate of Responsibility Number(s) appearing on the Proposal Form should be the same number appearing in the current Mississippi State Board of Contractors Roster.

2.08 **BID SECURITY:** The Bid Security shall be in the form of a Bid Bond, or a Certified Check: (modified Dec 2013 SoS) (see also 4.07 herein, 600.42, 600.57.9, 00600, 00650)

A. **Bid Bond:** The Bidder may submit a Bid Bond by a Surety licensed in Mississippi in the amount of five percent (5%) of the base bid. The Bid Bond shall be duly executed by the Bidder, a Mississippi Licensed Agent for said Surety approved by the Mississippi Insurance Department OR signed by the Surety AND countersigned by a Mississippi Licensed Agent for said Surety approved by the Mississippi Insurance Department. ~~http://www.mid.state.ms.us/licapp/search_main.aspx~~

https://www.mid.ms.gov (or most up-to-date link) (No standard form is required for the Bid Bond.)

B. **Certified Check:** The Bidder may submit a certified check made out to the *Bureau of Building, Grounds and Real Property Management* in the amount of five percent (5%) of the base bid. All checks received from Bidders will be returned upon request, unless a Bidder is one (1) of the three (3) apparent low Bidders. The three (3) apparent low Bidder's checks will be held for forty-five (45) days, unless a Contract is awarded and executed in less time.

2.09 **POWER OF ATTORNEY:** Each bid security must be accompanied by an appropriate Power of Attorney. No Power of Attorney is necessary with a certified check.

PART 3 - SUBMITTING THE PROPOSAL FORM

3.01 **SUBMITTAL:** A bid must be either submitted electronically via MAGIC or physically delivered to the address indicated on the Advertisement for Bids prior to the time and date stated. If physically submitted, only one original of Bid Proposal shall be submitted which should be sealed in an opaque envelope marked, mailed or hand-delivered as follows: (beginning 1/1/09. A duplicate copy will not disqualify your bid, but the second copy, without comparison, will be destroyed in the bid opening, not read aloud nor used thereafter, in order to prevent inadvertent differences in the duplicate forms): (also see 600.42) (modified for electronic submittal effective 1/1/18 31-7-13(c)(v))

(In upper left hand corner)
Name of Firm (complete spelling of bidder's name and address – exact as recorded at the Secretary of State which should be the same as you applied for at the Mississippi State Board of Contractors – see 2.07, 3.01, 5.01)

(Bid shall be addressed and delivered to)
Bureau of Building, Grounds and Real Property Management
501 North West Street, Suite 1401B [Woolfolk Building]
Jackson, Mississippi 39201

(In lower left hand corner)
Bid for Project # _____
Title _____
Using Agency _____
Certificate of Responsibility # _____(for over $50,000.00)
Under $50,000.00 (add statement)

If the Bid is mailed, the bid envelope shall be placed inside a second envelope to prevent inadvertent premature opening of the Proposal.

3.02 **MODIFICATION TO BID:** A bidder may modify the bid prior to the scheduled closing time indicated in the Advertisement for Bids in the following manner:

A. **Notification on Envelope:** A modification may be written on the outside of the sealed envelope containing the bid.
B. **Facsimile:** A facsimile (fax) will not be acceptable.

3.03 **WITHDRAWAL OF BID:** Any bid may be withdrawn prior to the scheduled time for opening of bids. However, bids may not be withdrawn until forty-five (45) days after bid opening.

PART 4 - BID OPENING AND AWARD OF CONTRACT

4.01 **OPENING OF BIDS:** Bids will be publicly opened shortly after the time stated in the Advertisement for Bids. Bidder representatives are invited; however, attendance is not mandatory.

Closure of agency preventing the opening of bids at the advertised date and time due to Force Majeure Event reasons will result in bids being publicly opened . . . on the next business day that the agency shall be open and at the previously advertised time . . . . See 600.47 of the BoB Procedure Manual for wording in detail. (added Jan 2015)

4.02 **IRREGULARITIES:** The omission of any information requested on the Proposal Form may be considered as an informality, or irregularity, by the awarding public body when in their opinion the omitted information does not alter the amounts contained in the submitted bid proposal, or place other Bidders at a disadvantage.

4.03 **PROTEST:** Any protest must be delivered in writing to the Owner within twenty-four (24) hours after the bid opening.

4.04 **ERRORS:** Any claim of error and request for release from bid must be delivered in writing to the Owner within twenty-four (24) hours after the bid opening. The Bidder shall provide sufficient documentation with the written request clearly proving an error was made.

4.05 **AWARD OF CONTRACT:** The Owner reserves the right to reject any, or all bids. A Contract will be awarded on the basis of the low base bid, or low combination of base bid and those alternates selected by the Owner in any order determined to be in the best interest of the Using Agency and which produces a total within available funds.

4.06 **FAILURE TO ENTER INTO A CONTRACT:** The Bidder shall forfeit the Bid Security to the Owner as liquidated damages for failure, or refusal, to execute and deliver the Contract, Bond and Certificate of Insurance within ten (10) working days after notice of the acceptance of the bid/receipt of Contracts from the Professional. *("working" days added 11/3/10) (modified Jan 2015)*

4.07 **SECURITY FOR FAITHFUL PERFORMANCE:** (modified Dec 2013 SoS; Jan 2015 SoS) (see also 2.08 herein, 600.42, 600.57.9, 00600, 00650)

Simultaneously, with delivery of the executed Contract, the Contractor will furnish a Surety Bond, or Bonds, as security for faithful performance, the payment of all persons performing labor on the project, and furnishing materials in connection with this Contract. The Surety on such Bond, or Bonds, will be a duly authorized surety company satisfactory to the Owner and meeting all of the following requirements:

A. Licensed at the time of award by the State of Mississippi's Commissioner of Insurance for the purpose of providing surety. . ~~http://www.mid.state.ms.us/licapp/search_main.aspx~~ https://www.mid.ms.gov (or most up-to-date link)
B. Listed at the time of award in the Department of the Treasury's **Federal Register** as a company holding certificates of authority as acceptable sureties on Federal Bonds, commonly referred to as the Treasury List.
C. All Bonds shall be executed on the form provided in the Project Manual under Section 00600 entitled *Contract Bond.*
D. The Contract Bond shall be duly executed by the Bidder, a Surety licensed in Mississippi signed by a Mississippi Licensed Agent for said Surety approved by the Mississippi Insurance Department OR signed by the Surety AND countersigned by a Mississippi Licensed Agent for said Surety approved by the Mississippi Insurance Department with the name and address typed, or lettered legibly. (with Surety Seal, preferably embossed seal). ~~http://www.mid.state.ms.us/licapp/search_main.aspx~~ https://www.mid.ms.gov (or most up-to-date link)
E. All Bonds must be accompanied by an appropriate Power of Attorney dated same as Contract Bond (with Seal, preferably embossed seal).

SECTION 16231
PACKAGED ENGINE GENERATOR

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions apply to this Section.

1.2 SUMMARY

A. This Section includes packaged engine-generator sets for **standby** power supply with the following features:

1. **Diesel** engine.
2. Unit-mounted cooling system.
3. Unit and Remote-mounting control and monitoring.
4. Outdoor enclosure.

B. Related Sections include the following:

1. Section on "Transfer Switches" for transfer switches including sensors and relays to initiate automatic-starting and -stopping signals for engine-generator sets.

1.3 PROJECT SHUT-DOWN AND PHASING

A. Interruption of Existing Electrical Service: **See Phasing Notes on sheet E000 and E100** - Do not interrupt electrical service to facilities occupied by Owner or others unless permitted under the following conditions.

1. Notify Owner and engineer no fewer than 2 weeks in advance of proposed interruption of electrical service.
2. Do not proceed with interruption of electrical service without Owner and engineer's written permission.
3. The contractor shall perform all the needed pre-shutdown work and run as much conduit as possible prior to the shut-down.

1.4 DEFINITIONS

A. Operational Bandwidth: The total variation from the lowest to highest value of a parameter over the range of conditions indicated, expressed as a percentage of the nominal value of the parameter.

1.5 SUBMITTALS

A. Product Data: For each type of packaged engine generator indicated. Include rated capacities, operating characteristics, and furnished specialties and accessories. In addition, include the following:

1. Thermal damage curve for generator.
2. Time-current characteristic curves for generator protective device.

B. Shop Drawings: Detail equipment assemblies and indicate dimensions, weights, loads, required clearances, method of field assembly, components, and location and size of each field connection.

1. Dimensioned outline plan and elevation drawings of engine-generator set and other components specified.
2. Vibration Isolation Base Details: Provide mounting detail from manufacturer outlining fabrication, including anchorages and attachments to structure and to supported equipment. Include base weights.
3. Wiring Diagrams: Power, signal, and control wiring.

C. Manufacturer Seismic Qualification Certification: Submit certification that engine-generator set, batteries, battery racks, accessories, and components will withstand seismic forces defined in Section on "Electrical Supports and Seismic Restraints." Include the following:

1. Basis for Certification: Indicate whether withstand certification is based on actual test of assembled components or on calculation.

    a. The term "withstand" means "the unit will remain in place without separation of any parts from the device when subjected to the seismic forces specified."

2. Dimensioned Outline Drawings of Equipment Unit: Identify center of gravity and locate and describe mounting and anchorage provisions.
3. Detailed description of equipment anchorage devices on which the certification is based and their installation requirements.

D. Source quality-control test reports.

1. Report of factory test on units to be shipped for this Project, showing evidence of compliance with specified requirements.
2. Report of sound generation.
3. Report of exhaust emissions showing compliance with applicable regulations.

E. Operation and Maintenance Data: For packaged engine generators to include in emergency, operation, and maintenance manuals. In addition to items specified in Section on "Operation and Maintenance Data," include the following:

1. List of tools and replacement items recommended to be stored at Project for ready access. Include part and drawing numbers, current unit prices, and source of supply.

F. Warranty:

Special Warranty: The manufacturer agrees to repair or replace components of packaged engine generators and associated auxiliary components that fail in materials or workmanship within specified warranty period.

1. Specified Warranty Period: 2 years from date of Substantial Completion or 2500 hours of operation (whichever comes first).

1.6 MAINTENANCE SERVICE

A. Initial Maintenance Service: Beginning at Substantial Completion, provide 12 months' full maintenance by skilled employees of manufacturer's designated service organization. Include quarterly exercising to check for proper starting, load transfer, and running under load. Include routine preventive maintenance as recommended by manufacturer and adjusting as required for proper operation. Provide parts and supplies same as those used in the manufacture and installation of original equipment.

1.7 QUALITY ASSURANCE

A. Installer Qualifications: Manufacturer's authorized representative who is trained and approved for installation of units required for this Project.

1. Maintenance Proximity: Not more than two hours normal travel time from Installer's place of business to Project site.
2. Engineering Responsibility: Preparation of data for vibration isolators and seismic restraints of engine skid mounts, including Shop Drawings, based on testing and engineering analysis of manufacturer's standard units in assemblies similar to those indicated for this Project.

B. Electrical Components, Devices, and Accessories: Listed and labeled as defined in NFPA 70, Article 100, by a testing agency acceptable to authorities having jurisdiction, and marked for intended use.

C. Comply with ASME B15.1.

D. Comply with NFPA 37.

E. Comply with NFPA 70.

F. Comply with NFPA 99.

G. Comply with NFPA 110 requirements for Level **1** emergency power supply system.

H. Comply with UL 2200.

I. Engine Exhaust Emissions: Comply with applicable state and local government requirements.

J. Noise Emission: Comply with all applicable state and local government requirements and shall have a maximum dBA level of 75 at 23 feet. Noise levels are due to sound emitted by generator set including engine, engine exhaust, engine cooling-air intake and discharge, and other components of installation.

1.8 PROJECT CONDITIONS

A. Interruption of Existing Electrical Service: Do not interrupt electrical service to facilities occupied by Owner or others unless permitted under the following conditions and then only after arranging to provide temporary electrical service according to requirements indicated:

1. Notify engineer and Owner no fewer than 14 days in advance of proposed interruption of electrical service.
2. Do not proceed with interruption of electrical service without Owner's written permission.

B. Environmental Conditions: Engine-generator system shall withstand the following environmental conditions without mechanical or electrical damage or degradation of performance capability:

1. Ambient Temperature: Minus 15 to plus 100 deg F.
2. Relative Humidity: 0 to 95 percent.
3. Altitude: Sea level to 1000 feet

1.9 COORDINATION

A. Coordinate size and location of concrete bases for package engine generators. Cast anchor-bolt inserts into bases. Concrete, reinforcement, and formwork requirements are specified in Division 3.

1.10 MAINTENANCE SERVICE

A. Initial Maintenance Service: Beginning at Substantial Completion, provide 12 months' full maintenance by skilled employees of manufacturer's designated service organization. Include quarterly exercising to check for proper starting, load transfer, and running under load. Include routine preventive maintenance as recommended by manufacturer and adjusting as required for proper operation. Provide parts and supplies same as those used in the manufacture and installation of original equipment.

1.11 EXTRA MATERIALS

A. Furnish extra materials described below that match products installed and that are packaged with protective covering for storage and identified with labels describing contents.

1. Fuses: One for every 10 of each type and rating, but no fewer than one of each.
2. Filters: One set each of lubricating oil, fuel, and combustion-air filters.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

A. Manufacturers: Subject to compliance with requirements, provide products by one of the following:

1. Caterpillar; Engine Div.
2. Kohler Co.; Generator Division.
3. Onan/Cummins Power Generation; Industrial Business Group.

2.2 ENGINE-GENERATOR SET

A. Factory-assembled and -tested, engine-generator set.

B. Mounting Frame: Maintain alignment of mounted components without depending on concrete foundation; and have lifting attachments.

1. Rigging Diagram: Inscribed on metal plate permanently attached to mounting frame to indicate location and lifting capacity of each lifting attachment and generator-set center of gravity.

C. Capacities and Characteristics:

1. Power Output Ratings: Nominal ratings as indicated on riser.
2. Output Connections: Three-phase, **four** wire.
3. Nameplates: For each major system component to identify manufacturer's name and address, and model and serial number of component.

D. Generator-Set Performance:

1. Steady-State Voltage Operational Bandwidth: 3 percent of rated output voltage from no load to full load.
2. Transient Voltage Performance: Not more than 20 percent variation for 50 percent step-load increase or decrease. Voltage shall recover and remain within the steady-state operating band within three seconds.
3. Steady-State Frequency Operational Bandwidth: 0.5 percent of rated frequency from no load to full load.
4. Steady-State Frequency Stability: When system is operating at any constant load within the rated load, there shall be no random speed variations outside the steady-state operational band and no hunting or surging of speed.
5. Transient Frequency Performance: Less than 5 percent variation for 50 percent step-load increase or decrease. Frequency shall recover and remain within the steady-state operating band within five seconds.
6. Output Waveform: At no load, harmonic content measured line to line or line to neutral shall not exceed 5 percent total and 3 percent for single harmonics. Telephone influence factor, determined according to NEMA MG 1, shall not exceed 50 percent.
7. Sustained Short-Circuit Current: For a 3-phase, bolted short circuit at system output terminals, system shall supply a minimum of 250 percent of rated full-load current for not less than 10 seconds and then clear the fault automatically, without damage to generator system components. Provide permanent magnet type excitation.
8. Start Time: Comply with NFPA 110, Type 10, system requirements.

2.3 ENGINE

A. Fuel: **Fuel oil, Grade DF-2**.

B. Rated Engine Speed: 1800 rpm.

C. Lubrication System: The following items are mounted on engine or skid:

1. Filter and Strainer: Rated to remove 90 percent of particles 5 micrometers and smaller while passing full flow.
2. Thermostatic Control Valve: Control flow in system to maintain optimum oil temperature. Unit shall be capable of full flow and is designed to be fail-safe.

3. Crankcase Drain: Arranged for complete gravity drainage to an easily removable container with no disassembly and without use of pumps, siphons, special tools, or appliances.

D. Engine Fuel System:

1. Main Fuel Pump: Mounted on engine. Pump ensures adequate primary fuel flow under starting and load conditions.
2. Relief-Bypass Valve: Automatically regulates pressure in fuel line and returns excess fuel to source.
3. Provide water separator and secondary fuel filters. Fuel filters shall have isolation valve for changing of filters during engine operation.

E. Coolant Jacket Heater: Electric-immersion type, factory installed in coolant jacket system. Comply with NFPA 110 requirements for Level 1 equipment for heater capacity.

F. Governor: Adjustable isochronous, with speed sensing.

G. Cooling System: Closed loop, liquid cooled, with radiator factory mounted on engine-generator-set mounting frame and integral engine-driven coolant pump.

1. Coolant: Solution of 50 percent ethylene-glycol-based antifreeze and 50 percent water, with anticorrosion additives as recommended by engine manufacturer.
2. Size of Radiator: Adequate to contain expansion of total system coolant from cold start to 110 percent load condition.
3. Expansion Tank: Constructed of welded steel plate and rated to withstand maximum closed-loop coolant system pressure for engine used. Equip with gage glass and petcock.
4. Temperature Control: Self-contained, thermostatic-control valve modulates coolant flow automatically to maintain optimum constant coolant temperature as recommended by engine manufacturer.
5. Coolant Hose: Flexible assembly with inside surface of nonporous rubber and outer covering of aging-, ultraviolet-, and abrasion-resistant fabric.

a. Rating: 50-psig (345-kPa) maximum working pressure with coolant at 180 deg F (82 deg C), and noncollapsible under vacuum.
b. End Fittings: Flanges or steel pipe nipples with clamps to suit piping and equipment connections.

H. Muffler/Silencer: Critical type, sized as recommended by engine manufacturer and selected with exhaust piping system to not exceed engine manufacturer's engine backpressure requirements.

1. Sound level measured at a distance of 23 feet from exhaust discharge after installation is complete shall be **75** dBA or less.

I. Air-Intake Filter: Heavy-duty, engine-mounted air cleaner with replaceable dry-filter element and "blocked filter" indicator.

J. Starting System: 24-V electric, with negative ground.

1. Components: Sized so they will not be damaged during a full engine-cranking cycle with ambient temperature at maximum specified in Part 1 "Project Conditions" Article.
2. Cranking Motor: Dual, Heavy-duty unit that automatically engages and releases from engine flywheel without binding.
3. Cranking Cycle: [As required by NFPA 110 for system level specified: Level 1.

4. Battery: Adequate capacity within ambient temperature range specified in Part 1 "Project Conditions" Article to provide specified cranking cycle at least three times without recharging.
5. Battery Cable: Size as recommended by engine manufacturer for cable length indicated. Include required interconnecting conductors and connection accessories.
6. Battery Compartment: Factory fabricated of metal with acid-resistant finish and thermal insulation. Thermostatically controlled heater shall be arranged to maintain battery above 10 deg C regardless of external ambient temperature within range specified in Part 1 "Project Conditions" Article. Include accessories required to support and fasten batteries in place.
7. Battery-Charging Alternator: Factory mounted on engine with solid-state voltage regulation and 35-A minimum continuous rating.
8. Battery Charger: Current-limiting, automatic-equalizing and float-charging type. Unit shall comply with UL 1236 and include the following features:

    a. Operation: Equalizing-charging rate of 10 A shall be initiated automatically after battery has lost charge until an adjustable equalizing voltage is achieved at battery terminals. Unit shall then be automatically switched to a lower float-charging mode and shall continue to operate in that mode until battery is discharged again.
    b. Automatic Temperature Compensation: Adjust float and equalize voltages for variations in ambient temperature from minus 40 deg C to plus 60 deg C to prevent overcharging at high temperatures and undercharging at low temperatures.
    c. Automatic Voltage Regulation: Maintain constant output voltage regardless of input voltage variations up to plus or minus 10 percent.
    d. Ammeter and Voltmeter: Flush mounted in door. Meters shall indicate charging rates.
    e. Safety Functions: Sense abnormally low battery voltage and close contacts providing low battery voltage indication on control and monitoring panel. Sense high battery voltage and loss of ac input or dc output of battery charger. Either condition shall close contacts that provide a battery-charger malfunction indication at system control and monitoring panel.
    f. Enclosure and Mounting: NEMA 250, Type 1, wall-mounted cabinet.

2.4 FUEL OIL STORAGE

A. Base-Mounted Fuel Oil Tank: Factory installed and piped, complying with UL 142 fuel oil tank. Features include the following:

1. Tank level indicator.
2. Capacity: Fuel for 72 hours' continuous operation at 100 percent rated power output.
3. Vandal-resistant fill cap.
4. Containment Provisions: Comply with requirements of authorities having jurisdiction.

2.5 CONTROL AND MONITORING

A. Automatic Starting System Sequence of Operation: When mode-selector switch on the control and monitoring panel is in the automatic position, remote-control contacts in one or more separate automatic transfer switches initiate starting and stopping of generator set. When mode-selector switch is switched to the on position, generator set starts. The off position of same switch initiates generator-set shutdown. When generator set is running, specified system or equipment failures or derangements automatically shut down generator set and initiate alarms. Operation of a remote emergency-stop switch also shuts down generator set.

B. Manual Starting System Sequence of Operation: Switching on-off switch on the generator control panel to the on position starts generator set. The off position of same switch initiates generator-set shutdown. When generator set is running, specified system or equipment failures or derangements automatically shut down generator set and initiate alarms. Operation of a remote emergency-stop switch also shuts down generator set.

C. Configuration: Operating and safety indications, protective devices, basic system controls, and engine gages shall be grouped in a common control and monitoring panel mounted on the generator set. Mounting method shall isolate the control panel from generator-set vibration.

D. Indicating and Protective Devices and Controls: As required by NFPA 110 for Level [**1**] system, and the following:

1. AC voltmeter.
2. AC ammeter.
3. AC frequency meter.
4. DC voltmeter (alternator battery charging).
5. Engine-coolant temperature gage.
6. Engine lubricating-oil pressure gage.
7. Running-time meter.
8. Ammeter-voltmeter, phase-selector switch(es).
9. Generator-voltage adjusting rheostat.
10. Fuel tank derangement alarm.
11. Fuel tank high-level shutdown of fuel supply alarm.
12. Generator overload.

E. Supporting Items: Include sensors, transducers, terminals, relays, and other devices and include wiring required to support specified items. Locate sensors and other supporting items on engine or generator, unless otherwise indicated.

F. Connection to Data Link: A separate terminal block, factory wired to Form C dry contacts, for each alarm and status indication is reserved for connections for data-link transmission of indications to remote data terminals.

G. Common Remote Audible Alarm: Signal the occurrence of any events listed below without differentiating between event types. Connect so that after an alarm is silenced, clearing of initiating condition will reactivate alarm until silencing switch is reset.

1. Engine high-temperature shutdown.
2. Lube-oil, low-pressure shutdown.
3. Overspeed shutdown.
4. Remote emergency-stop shutdown.
5. Engine high-temperature prealarm.
6. Lube-oil, low-pressure prealarm.
7. Fuel tank, low-fuel level.
8. Low coolant level.

H. Remote Alarm Annunciator: Comply with NFPA 99. The annunciator shall provide remote annunciation of all points stated above and shall incorporate ring-back capability so that after silencing the initial alarm, any subsequent alarms will sound the horn. Ability to be located up to 4000 ft from the generator set without the use of a data repeater.

I. Remote Emergency-Stop Switch: Flush; wall mounted, unless otherwise indicated; and labeled. Push button shall be protected from accidental operation. Coordinate exact location of REMOTE emergency stop switch with engineer.

2.6 GENERATOR OVERCURRENT AND FAULT PROTECTION

A. Generator Circuit Breaker: Insulated-case, electronic-trip type; 100 percent rated; complying with UL 489.

1. Tripping Characteristics: Adjustable long-time, long-time delay, short-time, short-time delay and instantaneous. Provide GF sensing ONLY (no tripping).
2. Trip Settings: Selected to coordinate with generator thermal damage curve.
3. Shunt Trip: Connected to trip breaker when generator set is shut down by other protective devices.
4. The vendor shall provide selective coordination circuit breaker setting (also set breakers) between the Generator Main Breaker and the 2,000A main breaker for the facility.
5. Mounting: Circuit breaker shall be mounted and integrated with the generator set.

B. Ground-Fault Indication: Comply with NFPA 70, "Emergency System" signals for ground-fault. Integrate ground-fault alarm indication with other generator-set alarm indications.

C. Selective Coordination Breaker Settings: The vendor shall provide selective coordination circuit breaker setting (also set breakers) between the Generator Main Breaker and the existing 2,000A main breaker for the facility.

2.7 GENERATOR, EXCITER, AND VOLTAGE REGULATOR

A. Comply with NEMA MG 1.

B. Stator-Winding Leads: Brought out to terminal box to permit future reconnection for other voltages if required.

C. Construction shall prevent mechanical, electrical, and thermal damage due to vibration, overspeed up to 125 percent of rating, and heat during operation at 110 percent of rated capacity.

D. Enclosure: Dripproof.

E. Voltage Regulator: Solid-state type, separate from exciter, providing performance as specified.

F. Strip Heater: Thermostatically controlled unit arranged to maintain stator windings above dew point.

2.8 OUTDOOR GENERATOR-SET ENCLOSURE

A. Description: Vandal-resistant, weatherproof steel or aluminum housing, wind resistant up to 100 mph (160 km/h). Multiple panels shall be lockable and provide adequate access to components requiring maintenance. Panels shall be removable by one person without tools. Instruments and control shall be mounted within enclosure.

B. Description: Prefabricated or preengineered enclosure with the following features:

1. Construction: Galvanized-steel, metal-clad, integral structural-steel-framed building erected on concrete foundation.
2. Structural Design and Anchorage: Comply with ASCE 7 for wind loads.
3. Louvers: Motorized intake and gravity discharge.
4. Hinged Doors: With padlocking provisions.

5. Thermal Insulation: Manufacturer's standard materials and thickness selected in coordination with space heater to maintain winter interior temperature within operating limits required by engine-generator-set components.
6. Muffler Location: Within the enclosure.
7. Radiator exhaust shall be scooped.

C. Engine Cooling Airflow through Enclosure: Maintain temperature rise of system components within required limits when unit operates at 110 percent of rated load for 2 hours with ambient temperature at top of range specified in system service conditions.

1. Louvers: Motorized, cooling-air inlet and Gravity discharge. Storm-proof and drainable louvers prevent entry of rain and snow.

D. Interior Lights (LED Type) with Switch (4 total): Factory-wired, vaporproof-type fixtures within housing; arranged to illuminate controls and accessible interior. Arrange for external electrical connection.

1. AC lighting system and connection point for operation when remote source is available.

E. Convenience Outlets: Factory wired, GFCI receptacle. Arrange for external electrical connection.

2.9 VIBRATION ISOLATION DEVICES

A. Restrained Spring Isolators: Freestanding, steel, open-spring isolators with seismic restraint.

1. Housing: Steel with resilient vertical-limit stops to prevent spring extension due to wind loads or if weight is removed; per manufacturer’s recommendation.

2.10 FINISHES

A. Indoor and Outdoor Enclosures and Components: Manufacturer shall provide cost in their bid for the following finishes that will be selected by the ARCHITECT. Provide a color chart with your submittals so he can select. Finish shall be applied over corrosion-resistant pretreatment and compatible primer. Coordinate exact finish with Architect.

B. FINISHES THAT MUST BE AVAILABLE:
1. Yellow
2. Green
3. Beige
4. Grey
5. White
6. **DO NOT BID THIS PROJECT IF YOU CAN’T PROVIDE THESE COLORS AS PART OF YOUR BID. NO CHANGE ORDER WILL BE ISSUED FOR THESE COLORS.**

2.11 SOURCE QUALITY CONTROL

A. Prototype Testing: Factory test engine-generator set using same engine model, constructed of identical or equivalent components and equipped with identical or equivalent accessories.

1. Tests: Comply with NFPA 110, Level 1 Energy Converters and with IEEE 115.

B. Project-Specific Equipment Tests: Before shipment, factory test engine-generator set and other system components and accessories manufactured specifically for this Project. Perform tests at rated load and power factor. Include the following tests:

1. Full load run.
2. Maximum power.
3. Voltage regulation.
4. Transient and steady-state governing.
5. Single-step load pickup.
6. Safety shutdown.
7. Report factory test results within 10 days of completion of test.

2.12 PLATFORM FOR GENERATOR

A. The platform shall be aluminum frame, structural members, toe plates, railing posts, rails and floor assemblies.
B. Platform shall be used to walk on each side (outside of all generator set service doors). A "standard stair" shall be used to access the platform on both sides. Design of platform shall permit inspection of all serviceable components.
C. The walkways, stairs or ladder, and platform) shall meet standards of OSHA 3124 - (Stairways and Ladders), this specification and applicable drawings.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine areas, equipment bases, and conditions, with Installer present, for compliance with requirements for installation and other conditions affecting packaged engine-generator performance.

B. Examine roughing-in of piping systems and electrical connections. Verify actual locations of connections before packaged engine-generator installation.

C. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 INSTALLATION

A. Comply with packaged engine-generator manufacturers' written installation and alignment instructions and with NFPA 110.

B. Install packaged engine generator to provide access, without removing connections or accessories, for periodic maintenance.

C. Install packaged engine generator with Seismic restrained spring isolators per manufacturer’s recommendation. Secure sets to anchor bolts installed in concrete bases. Concrete base construction is specified in Division 26 Section "Electrical Supports and Seismic Restraints."

D. Electrical Wiring: Install electrical devices furnished by equipment manufacturers but not specified to be factory mounted.

3.3 CONNECTIONS

A. Connect fuel, cooling-system, and exhaust-system piping adjacent to packaged engine generator to allow service and maintenance.

B. Connect fuel piping to engines with a gate valve and union and flexible connector.

1. Diesel storage tanks, tank accessories, control and monitor wiring, piping, valves, and specialties shall be supplied by the generator manufacturer.

C. Ground equipment according to Division 26 Section "Grounding and Bonding."

D. Connect wiring according to Division 26 Section "Conductors and Cables."

3.4 IDENTIFICATION

A. Identify system components according to Division 15 Section "Mechanical Identification" and Division 26 Section "Electrical Identification."

3.5 FIELD QUALITY CONTROL

A. Manufacturer's Field Service: Engage a factory-authorized service representative to inspect, test, and adjust components, assemblies, and equipment installations, including connections. Report results in writing.

B. Perform tests and inspections and prepare test reports.

1. Manufacturer's Field Service: Engage a factory-authorized service representative to inspect components, assemblies, and equipment installations, including connections, and to assist in testing.

C. Tests and Inspections:

1. See Phasing Notes on sheet

2. Perform tests recommended by manufacturer.
3. **Provide a 4 four hour LOAD BANK test. Report all temperatures, loads and other applicable rating every 15 minutes. Step load at 25% steps intervals up to 100%, then run at 100% for two hours. The contractor shall pay for all fuel during testing.**
4. The contractor shall leave generator with a FULL TANK of fuel when he turns the system over to owner. If there are issues and the test has to run longer that 4 hours or if more than 4 hours of fuel is required, the contractor will be required to provide ALL FUEL required for testing.
5. NFPA 110 Acceptance Tests: Perform tests required by NFPA 110 that are additional to those specified here including.
6. Battery Tests: Equalize charging of battery cells according to manufacturer's written instructions. Record individual cell voltages.

a. Measure charging voltage and voltages between available battery terminals for full-charging and float-charging conditions. Check electrolyte level and specific gravity under both conditions.

b. Test for contact integrity of all connectors. Perform an integrity load test and a capacity load test for the battery.
c. Verify acceptance of charge for each element of the battery after discharge.
d. Verify that measurements are within manufacturer's specifications.

7. Battery-Charger Tests: Verify specified rates of charge for both equalizing and float-charging conditions.
8. System Integrity Tests: Methodically verify proper installation, connection, and integrity of each element of engine-generator system before and during system operation. Check for air, exhaust, and fluid leaks.
9. Exhaust Emissions Test: Comply with applicable government test criteria.

D. Coordinate tests with tests for SER automatic transfer switch and run them concurrently.

E. Test instruments shall have been calibrated within the last 12 months, traceable to standards of NIST, and adequate for making positive observation of test results. Make calibration records available for examination on request.

F. Leak Test: After installation, charge system and test for leaks. Repair leaks and retest until no leaks exist.

G. Operational Test: After electrical circuitry has been energized, start units to confirm proper motor rotation and unit operation.

H. Test and adjust controls and safeties. Replace damaged and malfunctioning controls and equipment.

I. Remove and replace malfunctioning units and retest as specified above.

J. Retest: Correct deficiencies identified by tests and observations and retest until specified requirements are met.

K. Report results of tests and inspections in writing. Record adjustable relay settings and measured insulation resistances, time delays, and other values and observations. Attach a label or tag to each tested component indicating satisfactory completion of tests.

L. Infrared Scanning: After Substantial Completion, but not more than 60 days after Final Acceptance, the contractor shall perform an infrared scan of each power wiring termination and each bus connection. Remove all access panels so terminations and connections are accessible to portable scanner.

1. Follow-up Infrared Scanning: Perform an additional follow-up infrared scan 11 months after date of Substantial Completion.
2. Instrument: Use an infrared scanning device designed to measure temperature or to detect significant deviations from normal values. Provide calibration record for device.
3. Record of Infrared Scanning: Prepare a certified report that identifies terminations and connections checked and that describes scanning results. Include notation of deficiencies detected, remedial action taken, and observations after remedial action.

3.6 DEMONSTRATION

A. Engage a factory-authorized service representative to train Owner's maintenance personnel to adjust, operate, and maintain packaged engine generators. Refer to Division 1 Section "Demonstration and Training."

4.0 Fuel Filtering System **(ADDENDUM #1 – 08-21-19)**

A. **THIS ITEM TO BE PRICED AS PART OF ALTERNATE #1**

B. Manufacturers: Subject to compliance with requirements, provide product by the following:

1. AXI International - Enclosed Automated Fuel Filtration System AXI International Model: STS 7010

C. Description: Stand alone, factory complete, automated programmable, fuel filtration and maintenance system shall be provided for the diesel fuel skid storage tank to optimize and maintain the condition of fuel stored in the tank. The system shall be capable of eliminating microbial contamination and removing water, sediment, and particulate to comply with ASTM D975 (Standard Specification for Diesel Fuel Oils).

1. Enclosure: All system components shall be contained within a powder coated, weatherproof, outdoor UL 50 listed enclosure with appropriate ventilation. Hinged front door shall be equipped with quarter turn key lockable handle. Containment basin with leak detection sensor shall be installed. Literature pocket and brackets for wall or rack mounting to be included.

2. Plumbing: System shall be furnished with stainless steel shutoff ball valves on the inlet and outlet for easy filter/water separator maintenance. A flow indicator shall be installed to observe fuel flow and flow rate. Above mentioned components shall be located within the enclosure. Internal plumbing primarily stainless steel.

3. Installation: System shall provide male pipe connections protruding the enclosure for customer plumbing connection. System shall be located as close as possible to designated fuel tank. The fuel oil supply and return lines to the system shall be independent and separate from other fuel lines, with the supply line originating at the bottom of the tank in the deepest spot and the return line as far away as possible from the supply line within the tank. All interconnections shall be made and the system shall be fully operational. The responsibility of complete installation and warranty shall be that of the generator manufacturer.

4. Filtration/Water Separation: 4 stage filtration/water separation process:
   A. Stage 1: Centrifugal water and particulate separation
   B. Stage 2: Water collection (99.9% water removal) and 30 micron hydrophobic particulate filter element - with water detection sensor and "push and turn" safety drain valve
   C. Stage 3: LG-X Fuel Conditioner – to break down sediments and solids naturally forming in diesel fuel to submicron levels
   D. Stage 4: Dual parallel, inline, secondary 3 micron particulate and/or water adsorbing spin-on filters

5. Water Sensor: Watect Model 550 microcontroller-based water sensor alarm module.

6. Controls/Display Functions: System control features, indicator lights, and emergency stop button shall be located on a descriptive external control panel on the front door of the enclosure for easy operator access. Additional alarm and system status information shall be displayed inside the system on a full color, programmable touch-screen PLC controller. Alarm and system status may also be displayed on a dedicated webpage that monitors the system, as well as delivered through E-mail and SMS messages to designated individuals (optional modem required). System shall provide following control and display function:
    A. Programmable Digital Timer – Memory backup to retain program memory during power outages
    B. Pump operating hour counter
    C. Pump control switch (Auto/Off/Manual) - Weatherproof, key operated, external front panel access
    D. Alarm Reset - Weatherproof pushbutton, external front panel access
    E. Power available - Green LED indicator light, external front panel display
    F. Pump running - Amber LED indicator light, external front panel display
    G. High vacuum, high pressure, no flow, high water and leak detection alarms - red LED indicator lights, external front panel display
    H. Emergency Stop mushroom - top pushbutton - red, latching with turn to reset, external front panel access
    I. Full Modbus TCP/IP and LAN capability
7. Electrical Enclosure/Controller: All electrical control features shall be contained within a separate UL 508A listed industrial control panel located within the mechanical enclosure. The controller shall monitor the following system alarm points:
    A. Leak in enclosure (system shutdown)
    B. Primary filter high vacuum (system shutdown)
    C. Primary filter high water level (system shutdown)
    D. Secondary filter high pressure (system shutdown)
    E. Flow switch inadequate flow (system shutdown after priming delay)
    F. Motor overload (system shutdown)
    G. External system shut down input
8. Pump: Positive displacement, spur gear, direct coupled, rotary pump. Pump flow rate of 10 gallons per minute.
9. Motor: UL Listed, TEFC, Thermal overload protection, continuous duty

D. Performance/Design Criteria: Manufacturer must have a minimum of 10 years experience within industry. System shall be capable to turn complete tank volume over once a week with a required run time of no more than 48 hours for the total volume. Sufficient contaminant and water holding capacity should be ensured, which will vary with climate, tank layout, fuel delivery, refueling intervals, etc.

E. Operation: System shall provide dry contacts for summary alarm and leak detection to interface with building monitoring or alarm system. An external shut down feature shall be provided to disable or control pump operation from a remote point.

END OF SECTION 16231

PROPOSAL FORM
SECTION 00300

RE-ISSUED AS PART OF ADDENDUM NO. 1

To: Bureau of Building, Grounds and Real Property Management
501 North West Street, Suite 1401B [Woolfolk Building]
Jackson, Mississippi 39201

Re: Project # 411-121
Project Title Generator Upgrades-Nursing Home Division
Location East Mississippi State Hospital

I propose to complete all work in accordance with the Project Manual and Drawings within 225 consecutive calendar days for the sum of: (Professional must specify number of days)

BASE BID: **(**Write in the amount of the base bid in words and numbers. The written word shall govern.)

Words:_____ Dollars ($_____)

ALTERNATES: **(**Write in the amount of all of the alternates in words and numbers. The written word shall govern.)

Alternate #1 ☑ Adds ☐ Deducts
Words: _____ Dollars
($_____)
Description What would be the additional cost for the fuel filtering system as outlined in 16231-4.0 "Fuel Filtering System" which was issued as part of Addendum No. 1?

Alternate #2 ☐ Adds ☐ Deducts
Words: _____ Dollars
($_____)
Description N/A

Alternate #3 ☐ Adds ☐ Deducts
Words: _____ Dollars
($_____)
Description N/A

Alternate #4 ☐ Adds ☐ Deducts
Words: _____ Dollars
($_____)
Description N/A

Alternate #5 ☐ Adds ☐ Deducts
Words: _____ Dollars
($_____)
Description N/A

ADDENDA ACKNOWLEDGMENT: (modified dates August 2016)

No. _____ No. _____ No. _____

No. _____ No. _____ No. _____

ACCEPTANCE:

I certify that I am authorized to enter into a binding contract, if this Proposal is accepted.

Signature _____ Date _____
Name and Title _____
Name of Business _____

Complete spelling of bidder's name and address - exact as recorded at the Secretary of State [http://www.sos.state.ms.us/busserv/corp/soskb/csearch.asp] which should be the same as you applied for at the Mississippi State Board of Contractors [http://www.msboc.us/Search2.CFM] (see 2.07, 3.01, 5.01) **PLEASE LOOK IT UP at SoS. SoS rules when the 2 are different.**

Address _____(mailing)
Address _____(physical)
City/State/Zip Code _____ County _____
Phone _____ Fax _____ Email _____

■ **BIDDER'S CERTIFICATE OF RESPONSIBILITY NUMBER(S):** _____

■ **MINORITY BUSINESS ENTERPRISE? Yes** _____ **No** _____ (to assist with Code 57-1-57)

■ Attach copy of Non-Resident Bidder's Preference Law (5.04 of Bidder's Checklist)

■ **Mechanical / Plumbing / Electrical Contractors:** (modified Dec 2013 SoS per 10/17/12 Addendum 1 & Feb 2014; 021219 sub over $50,000.00)

Regarding said Divisions of the Specifications of the BoB Standard Form of Agreement Between The Owner and The Contractor: List any Mechanical/Plumbing and/or Electrical Sub-Contractors that will perform work of this contract. COR must be included where sub-contract exceeds $50,000.00. If no sub-contractor is listed, and such work is within scope of contract and over $50,000.00, bidder's own COR classification(s) must be sufficient to self-perform any such work. If no sub-contractor is listed, then use of sub-contractor to perform such scope will not be permitted. This is in accordance with 5.05 and 5.06 of the Bidder's Checklist revised below.

Mechanical Contractor: _____ Certificate of Responsibility No. _____
Plumbing Contractor: _____ Certificate of Responsibility No. _____
Electrical Contractor: _____ Certificate of Responsibility No. _____

■ Mississippi Department of Agriculture & Commerce (modified 9/20/18)
Bureau of Plant Industry - HWC - Horticultural Weed control Contractor:
_____ HWC License Number _____

Complete when current bid includes any herbicide application ↑ (whether general contractor, landscaping, or a project phase)

MS Code 69-19-5; 69-19-9; 69-19-15 or updated Codes and DAC Plant Industry Rules 3.11.401; 405.03