

2.04 FLUORESCENT FIXTURES

- A. Fixtures: Conform to UL 1570.
- B. Ballasts: Conform to UL 935.
 - 1. Certification: By Electrical Testing Laboratory (ETL).
 - 2. Labeling: By Certified Ballast Manufacturers Association (CBM).
 - 3. Type: Class P, high-power-factor type except as indicated otherwise.
 - 4. Sound Rating: "A" rating, except as indicated otherwise.
 - 5. Voltage: Match connected circuits.
- C. Low Temperature Ballast Minimum Starting Temperature: -20°C .
- D. Energy-Saving Ballasts: Full-light-output type, compatible with energy-saving lamps. Following are required average input wattage when tested according to ANSI C82.2.
 - 1. 110 or less when operating three F32T8 lamps.
 - 2. 70 or less when operating two F32T8 lamps.
 - 3. 40 or less when operating one F32T8 lamp.

2.05 HIGH INTENSITY DISCHARGE (HID) FIXTURES

- A. Fixtures: Conform to UL 1572.
- B. Ballasts: Conform to UL 1029 and ANSI C82.4. Provide ballasts with following features, except as otherwise indicated.
 - 1. Constant wattage autotransformer (CWA) or regulator, high-power-factor type.
 - 2. Voltage rating matches system voltage.
 - 3. Single-Lamp Ballasts: Minimum starting temperature of -30°C .
 - 4. Normal ambient operating temperature is 40°C .
 - 5. Open circuit operation will not reduce average life.
 - 6. High pressure sodium (HPS) ballasts incorporate solid-state ignitor/starter with an average life in pulsing mode of 10,000 hrs at an ignitor/starter case temperature of 90°C .

2.06 INCANDESCENT FIXTURES

- A. Conform to UL 1571.

2.07 FIXTURES FOR HAZARDOUS LOCATIONS

- A. Conform to UL 844 or provide units that have Factory Mutual Engineering and Research Corporation (FM) certification for indicated class and division of hazard.

2.08 EXIT SIGNS

- A. Conform to UL 924.
 - 1. Sign Colors: Conform to local code.
- B. Self-Powered Exit Signs (Battery Type): Integral automatic high/low trickle charger in self-contained power pack.

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1. Battery: Sealed, maintenance-free.

2.09 LAMPS

A. Conform to ANSI C78 series applicable to each type of lamp.

2.10 FINISH

A. Steel Parts: Manufacturer's standard finish applied over corrosion-resistant primer, free of streaks, runs, holidays, stains, blisters, and defects. Remove fixtures showing evidence of corrosion during project warranty period and replace with new fixtures.

B. Other Parts: Manufacturer's standard finish.

PART 3 EXECUTION

3.01 INSTALLATION

A. Setting and Securing: Set units plumb, square, and level with ceiling and walls, and secure according to manufacturer's printed instructions and approved submittals.

B. Support For Recessed and Semirecessed Fixtures: Units may be supported from suspended ceiling support system. Install ceiling system support rods or wires at minimum of four rods or wires per fixture located not more than 6 in. from fixture corners.

1. Fixtures Smaller Than Ceiling Grid: Install minimum of four rods or wires for each fixture and locate at corner of ceiling grid where fixture is located. Do not support fixtures by ceiling acoustical panels.
2. Fixtures of Sizes Less Than Ceiling Grid: Center in acoustical panel. Support fixtures independently with at least two 3/4-in. metal channels spanning and secured to ceiling tees.
3. Install support clips for recessed fixtures, securely fastened to ceiling grid members, at or near each fixture corners.

C. Support for Suspended Fixtures: Brace pendants and rods that are 4 ft long or longer to limit swinging. Support stem mounted single-unit suspended fluorescent fixtures with twin-stem hangers. For continuous rows, use tubing or stem for wiring at one point and tubing or rod for suspension for each unit length of chassis, including one at each end.

D. Lamping: Lamp units according to manufacturer's instructions.

3.02 FIELD QUALITY CONTROL

A. Inspect each installed fixture for damage. Replace damaged fixtures and components.

B. Give 7-day notice of dates and times for field tests.

C. Verify normal operation of each fixture after fixtures have been installed and circuits have been energized with normal power source.

D. Interrupt electrical energy to demonstrate proper operation of emergency lighting installation.

1. Duration of supply.
2. Low battery voltage shut-down.
3. Normal transfer to battery source and retransfer to normal.

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4. Low supply voltage transfer.

E. Replace or repair malfunctioning fixtures and components, then retest. Repeat procedure until units operate properly.

3.03 ADJUSTING AND CLEANING

A. Clean fixtures upon completion of installation. Use methods and materials recommended by manufacturer.

B. Adjust aimable fixtures to provide required light intensities.

*** END OF SECTION ***

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SECTION 16602
GAS DETECTION SYSTEM

PART 1 GENERAL

1.01 DESCRIPTION OF WORK

- A. This section describes methane detection system furnished and installed by CONTRACTOR for monitoring presence of methane gas in landfill gas recovery power production facility.
- B. CONTRACTOR shall furnish system components for suitable operation of methane detection system as described in this section and indicated on Drawings.
- C. Description of Operation:
 - 1. Methane detection system monitors areas and points for methane gas concentrations with sensors located as follows:
 - Area 1 - Engine/Generator Room - one point per engine.
 - Area 2 - Compressor Room - one point per compressor skid.
 - Area 3 - Control Room - one point.
 - 2. Alarm/Control Action:
 - a. Failure of methane system components initiates alarm light on methane detection system Control Unit.
 - b. High level of methane gas concentration (10% LEL) (LEL = lower explosive limit of methane) increases speed of HVAC system fans, initiates alarm signal at "auto dialer" and initiates alarm light on methane Control Unit.
 - c. High-high level of methane gas concentration (25% LEL) initiates alarm light on methane Control Unit and at station alarm panel and shuts down engine/generators and gas compressor.

1.02 QUALITY ASSURANCE

- A. System components designed in accordance with applicable NEMA standards.
- B. Components UL or FM approved.
- C. Components suitable for use in environments as described herein.

1.03 ENVIRONMENT

- A. Methane sensors located in non-hazardous and hazardous areas which are classified as Class I - Group D (methane) in accordance with National Electrical Code.
- B. Control Unit located in "general purpose" (NEMA 1A) area.

1.04 SUBMITTALS

- A. CONTRACTOR shall furnish ENGINEER with approved advertising literature, specification sheets, and instruction manuals to describe system being furnished.

PART 2 PRODUCTS

2.01 GENERAL PRODUCT REQUIREMENTS

A. Methane Detection System:

1. Methane Sensor.
2. Control Unit.
3. Accessories.

2.02 METHANE SENSOR

A. Type:

1. Gas diffusion.

B. Range:

1. 0 to 100% LEL methane.

C. Response Time:

1. 5 sec with input of 50% LEL methane.

D. Operating Temperature:

1. -40°F to 200°F.

E. Zero Drift:

1. $\pm 1/2\%$ full scale per week.

F. Enclosure:

1. Stainless steel construction for sensor. Sensor mounted in cast conduit fitting.

G. Wiring:

1. Sensor provided with terminals or integral leads for connection to field wiring. Sensors operate satisfactorily for distance of up to 500 ft away from Control Unit.

2.03 CONTROL UNIT

A. Function:

1. Control Unit receives signal from methane sensor and provides indication of methane level, alarm lights, and alarm signals for control action external to unit.

B. Type:

1. Single or multiple channel. Multiple channel units grouped minimum one per monitoring area if relay control functions are common to each channel on unit.

C. Indicator:

1. 0 to 100% LEL scale. For multiple channel units, channel indication, switch selectable with indicator reading highest value of multiple channels unless manually selected otherwise.
2. For multiple channel units, indicating lights provided to display channel being monitored.

D. Alarms:

1. Three alarms for each channel. "Alarm" functions consist of indicating light and control relay contacts for CONTRACTOR'S connection.
2. Alarm Functions:
 - a. "System failure" alarm indicating component problem or wiring problem. For multiple channel units, common light and relay for channels.
 - b. "Warning" alarm indicating high gas concentrations. For multiple channel units, individual indicating lights for each channel; control relay may be common to channels.
 - c. "Shutdown" alarm indicating high-high gas concentration levels. For multiple channel units, individual indicating lights for each channel; control relay common to channels.
3. Alarm functions independently field adjustable for each channel.
4. Alarm relays suitable for operating energized or de-energized, and latched or unlatched. Alarm contacts SPDT (Form C) rated 5 amps, 115 VAC.

E. Temperature Range:

1. 0°F to 130°F.
2. Temperature variation at sensor from 32°F to 122°F shall not effect indicator reading by more than 5% for normal Control Unit ambient temperature (77°F).

F. Calibration Adjustments:

1. Zero and span adjustments provided. Accessible from front of Control Unit.

G. Power Requirements:

1. Control Unit operable on 120 v, 60 Hz, 1-ph power for normal operation.
2. Control Unit operable from 24 v DC source of supply upon loss of AC power.
3. Control Unit capable of automatically switching from one source of power to another.

H. Enclosure:

1. Steel enclosure suitable for wall mounting and rated NEMA 1A (gasketed).
2. Enclosure with window to view Control Unit without opening enclosure door.
3. "Reset" button mounted on face of enclosure to "reset" any of previously mentioned alarms.
4. Enclosure to house more than one Control Unit if applicable.

2.04 ACCESSORIES

A. Calibration Check Kit Consisting of:

1. Calibration check gas cylinder containing (25% LEL) concentration of methane in air. Cylinder suitable for hand carrying.
2. Gauge for measuring test gas cylinder pressure.

3. Regulating valve.
 4. Hoses and adapters as required for CONTRACTOR connection of test gas cylinder to methane sensor.
- B. Test Extender Card:
1. Card used for CONTRACTOR testing Control Unit.
- C. Sensor Shield (Option):
1. Shield used for mechanical protection of methane sensor, to shield sensor from inaccuracies due to high velocity air flow, and for ease of calibrations.
- D. Mounting Brackets:
1. Mounting brackets provided by CONTRACTOR as required for surface mounting components.

PART 3 EXECUTION

3.01 INSTALLATION

- A. Methane Detection System:
1. Methane detection system installed by CONTRACTOR.
 2. Provide conduit and wiring as shown on Drawings in accordance with manufacturer's installation literature.
 3. Test and calibrate in accordance with manufacturers literature.

*** END OF SECTION ***

SECTION 16721
FIRE ALARM SYSTEMS

PART 1 GENERAL

1.01 SUMMARY

A. Section Includes:

1. Fire alarm systems, including manual stations, detectors, signal equipment, controls, and devices.

1.02 REFERENCES

A. Underwriter's Laboratory (UL)

1. UL 268-89 - UL Standard for Safety Smoke Detectors for Fire Protective Signaling Systems.
2. UL 864-91 - UL Standard for Safety Control Units for Fire Protective Signaling Systems.

1.03 DEFINITIONS

- A. Alarm-Initiating Device: Manual station, smoke detector, heat detector, flame detector, or sprinkler water-flow switch.
- B. Alarm Signal: Signifies state of emergency requiring immediate action. Pertains to signals such as operation of manual station and operation of sprinkler system flow switch.
- C. Class A Wiring: Circuits arranged and electrically supervised so single break or single ground fault condition will be indicated by trouble signal at fire alarm control panel (FACP) and circuit will continue to be capable of operation for its intended service in faulted condition no matter where break or ground fault condition occurs.
- D. Class B Wiring: Circuits electrically supervised such that single break or single ground fault condition will be indicated by trouble signal at FACP no matter where break or ground fault condition occurs.
- E. Hard-Wired System: Alarm, supervisory, and initiating devices directly connected, through individual dedicated conductors, to central control panel without use of multiplexing circuits or devices.
- F. Multiplex System: One using signaling method characterized by simultaneous or sequential transmission, or both, and reception of multiple signals in communication channel, including means for positively identifying each signal.
- G. Supervisory Signal: Indicates abnormal status or need for action regarding fire suppression or other protective system.
- H. Trouble Signal: Indicates that fault, such as an open circuit or ground, has occurred in system.
- I. Zone: Initiating device or combination of devices connected to single alarm-initiating device circuit.

1.04 SYSTEM DESCRIPTION

- A. General: Complete, zoned, noncoded fire detection and alarm system with manual and automatic alarm initiation.

- B. **Signal Transmission:** Class B, hard-wired, using separate individual circuits for each zone of alarm initiation and alarm device operation.
- C. **Audible Alarm Indication:** By sounding of horns and bells.
- D. **Functional Description:** Following are required system functions and operating features.
1. **Priority of Signals:** Accomplish automatic response functions by first zone initiated. Alarm functions resulting from initiation by first zone are not altered by subsequent alarms. Highest priority is an alarm signal. Supervisory and trouble signals have second- and third-level priority. Signals of higher-level priority take precedence over signals of lower priority even though lower-priority condition occurred first. Annunciate alarm signals regardless of priority or order received.
 2. **Noninterfering:** Zone, power, wire, and supervise system so signal on one zone does not prevent receipt of signals from any other zone. Zones are manually resettable from FACP after initiating device or devices are restored to normal. Systems that require use of batteries or battery backup for programming function are not acceptable.
 3. **Signal Initiation:** Manual or automatic operation of an alarm-initiating or supervisory-operating device causes FACP to transmit appropriate signal includes following.
 - a. General alarm.
 - b. Heat detector alarm.
 - c. Smoke detector alarm.
 - d. System trouble.
 - e. Fan startup.
 4. **Transmission to Remote Annunciator:** Automatically route alarm, supervisory, and trouble signals to remote switchgear annunciator.
 5. **Silencing at FACP:** Switches provide capability for acknowledgment of alarm; supervisory, trouble, and other specified signals at FACP; and capability to silence local audible signal and light light-emitting diode (LED). Subsequent zone alarms cause audible signal to sound again until silenced in turn by switch operation. Restoration to normal of alarm, supervisory, and trouble conditions extinguish associated LED and cause audible signal to sound again until restoration acknowledged by switch operation.
 6. **Loss of primary power at FACP** sounds trouble signal at FACP and indicates at FACP when system is operating on an alternate power supply.
 7. **Annunciation:** Manual and automatic operation of alarm- and supervisory-initiating devices is annunciated on FACP.
 8. **General Alarm:** System general alarm includes following.
 - a. Indicating general alarm condition at FACP.
 - b. Identifying zone that is source of alarm at FACP.
 - c. Initiating audible and visible alarm signals throughout building.
 - d. Starting supply and return fans serving engine room zone when respective alarm initiated.
 - e. Initiating transmission of alarm signal to remote switchgear annunciator.
 9. **Manual station alarm operation** initiates general alarm.
 10. **Smoke or thermal detection** initiates general alarm.
 11. **Permissible Signal Time Elapse:** Maximum permissible elapsed time between actuation of any fire alarm or fire-detection system alarm-initiating device and its indication at FACP is 2 sec.
 12. **Circuit Supervision:** Indicate circuit faults by means of zone and trouble signal at FACP. Provide distinctive indicating audible tone and (LED) indicating light. Maximum elapsed time between occurrence of trouble condition and its indication at FACP is 200 sec.

1.05 ENVIRONMENT

- A. Rate thermal detectors located in compressor room for Class I, Division 2, Group D hazardous area. Remaining areas are not rated.

1.06 SUBMITTALS

A. Product Data:

1. Include dimensioned plans and elevations for each system component showing minimum clearances and installed features and devices.
2. Include list of materials and NRTL-listing data.
3. Operating instructions for mounting at FACP.

B. Shop Drawings:

1. System operation description covering this specific Project including method of operation and supervision of each type of circuit and sequence of operations for manually and automatically initiated system inputs and outputs. Manufacturer's standard descriptions for generic systems not acceptable.
2. Wiring diagrams from manufacturer differentiating between factory- and field-installed wiring. Include diagrams for equipment and for system with terminals and interconnections identified. Indicate components for field and factory wiring.
3. Product certification signed by manufacturer of fire alarm system components certifying products comply with indicated requirements.

C. Submission to Authority Having Jurisdiction:

1. In addition to routine submission of above material, make identical submission to authority having jurisdiction. Include copies of annotated Drawings as required to depict component locations to facilitate review.
2. Upon receipt of comments from authority, submit them to ENGINEER for review. Make resubmissions if required to make clarifications or revisions to obtain approval.

D. Test Results:

1. Record of field tests of system.

E. Operation and Maintenance Data (O&M):

1. Include data for each type product, including features and operating sequences, both automatic and manual.
2. Include recommendations for spare parts to be stocked at site.
3. Provide names, addresses, and telephone numbers of service organizations that carry stock of repair parts for system to be furnished.

F. Submit in accordance with Section 01340.

1.07 QUALITY ASSURANCE

- A. Installer Qualifications: Factory-authorized installer shall perform Work of this section.

- B. Compliance With Local Requirements: Comply with applicable building code, local ordinances, and regulations, and requirements of authority having jurisdiction.

- C. NFPA Compliance: Provide fire alarm and detection systems conforming to NFPA 72.
 - D. Items provided under this section shall be listed and labeled by UL or other Nationally Recognized Testing Laboratory (NRTL).
 - 1. Term "NRTL" shall be as defined in OSHA Regulation 1910.7.
 - 2. Terms "listed" and "labeled" shall be as defined in National Electrical Code, Article 100.
 - E. Regulatory Requirements:
 - 1. National Electrical Code (NEC): Components and installation shall comply with National Fire Protection Association (NFPA) 70.
 - F. FM Compliance: Provide fire alarm systems and components that are FM-approved.
 - G. Single-Source Responsibility: Obtain fire alarm components from single source who assumes responsibility for compatibility for system components.
- 1.08 EXTRA MATERIALS
- A. Maintenance:
 - 1. General: Furnish extra materials, matching products installed (as described below), packaging with protective covering for storage, and identifying with labels clearly describing contents.
 - 2. Glass Rods for Manual Stations: Furnish minimum of 6 rods.
 - 3. Lamps for Remote Indicating Lamp Units: Furnish quantity equal to 10% of number of units installed, but not less than 1.
 - 4. Lamps for Strobe Units: Furnish 1.
 - 5. Smoke Detectors and Thermal Detectors: Furnish 1 of each type.
 - 6. Detector Bases: Furnish 1 of each type.

PART 2 PRODUCTS

2.01 MANUFACTURERS

- A. Autocall, Inc.
- B. Cerberus Pyrotronics.
- C. Edwards Company.
- D. Fenwal, Inc.
- E. Fire Alarm and Systems Technology, Inc.
- F. Fire Lite Alarms, Inc.
- G. Honeywell, Inc.
- H. Notifier.

- I. **Simplex Time Recorder Company.**
- 2.02 **MANUAL PULL STATIONS**
- A. **Description:** Double-action type, fabricated of metal or plastic, and finished in red with molded, raised-letter operating instructions of contrasting color. Stations requiring breaking of glass panel are not acceptable. Stations requiring breaking of concealed glass rod may be provided.
 - B. **Station Reset:** Key- or wrench-operated, double-pole, double-throw, switch-rated for voltage and current at which it operates. Stations have screw terminals for connections.
- 2.03 **SMOKE DETECTORS**
- A. **General:** Comply with UL 268, "Smoke Detectors for Fire Protective Signaling Systems." Include following features.
 1. **Factory Nameplate:** Serial number and type identification.
 2. **Operating Voltage:** 24 vdc, nominal.
 3. **Self-Restoring:** Detectors do not require resetting or re-adjustment after actuation to restore to normal operation.
 4. **Plug-In Arrangement:** Detector and associated encapsulated electronic components are mounted in module that connects to fixed base with twist-locking plug connection. Plug connection requires no springs for secure mounting and contact maintenance. Terminals in fixed base accept building wiring.
 - B. **Ionization Type Smoke Detector:** Multiple-chamber type operating on ionization principle and actuated by presence of invisible products of combustion.
- 2.04 **OTHER DETECTORS**
- A. **Thermal Detector:** Combination fixed-temperature and rate-of-rise unit with mounting plate arranged for outlet box mounting; 200°F fixed-temperature setting in engine generator room; explosion-proof 200°F fixed-temperature setting in compressor room; and 135°F in other areas except as indicated. Rate-of-rise component shall operate when rate of temperature rise exceeds 15°F per minute.
- 2.05 **ALARM-INDICATING DEVICES**
- A. **General:** Equip alarm-indicating devices for mounting as indicated. Provide terminal blocks for system connections.
 - B. **Fire Alarm Horns:** Electric-vibrating polarized type, operating on 24 vdc, with provision for housing operating mechanism behind grille. Horns produce sound pressure level of 90 dB, measured 10 ft from source.
 - C. **Visual Alarm Devices:** Dual-voltage (120 or 24 vdc) strobe lights with clear polycarbonate lens and xenon flash tube. Mount lenses on an aluminum face plate. Engrave word "FIRE" in minimum 1 in. high letters on lens.
 1. Lamps have minimum light output of 115 candella. Strobe leads are factory-connected to screw terminals.
 2. Combination devices consist of factory-combined, audible and visual alarm units in single mounting assembly.

- D. Hazardous Location: Alarm-indicating devices as indicated for mounting in the compressor room shall be designed for Class 1 Division 2 hazardous classified areas.

2.06 FAN AND EQUIPMENT CONTROL RELAYS

- A. Form "C" contacts to run exhaust fans EF-1, 2, 3, 4, 5 and 6 and supply fans SF-1, 2, 3, 4 and 5 when alarm is indicated in engine or compressor room separately.
- B. Form "C" contacts to shutdown engines and fuel gas compressor and when alarm is indicated in either engine or compressor room.
- C. Form "C" contacts to shutdown roof top unit and switchgear and when alarm is indicated in control room.
- D. Four spare relays for future.

2.07 FIRE ALARM CONTROL PANEL (FACP)

- A. General: Comply with UL 864, "Control Units for Fire-Protective Signaling Systems."
- B. Cabinet: Lockable steel enclosure. Arrange panel so operations required for testing or for normal care and maintenance of system are performed from front of enclosure. If more than single unit is required to form complete control panel, provide exactly matching modular unit enclosures. Accommodate components and allow ample gutter space for interconnection of panels as well as field wiring. Identify each enclosure by an engraved, red-laminated, phenolic resin nameplate. Lettering on enclosure nameplate shall not be less than 1-in. high. Identify individual components and modules within cabinets with permanent labels.
- C. Systems: Alarm and supervisory systems separate and independent in FACP. Alarm-initiating zone boards in FACP consist of plug-in cards. Construction requiring removal of field wiring for module replacement not acceptable.
- D. Control Modules: Types and capacities required to perform functions of fire alarm systems. Local, visible, and audible signals notify of alarm, supervisory, and trouble conditions. Each type of audible alarm has distinctly different sound.
- E. Zones: Provide for alarm and supervisory zones indicated.
- F. Indicating Lights: Provide individual LED devices for each zone. LED test switch for each FACP section illuminates LED devices on that section of control panel. Manual toggle test switches or push test-buttons do not require key to operate. Alarm and supervisory signals light red LED of associated zone. Trouble signals light amber LED for associated zone.
- G. Resetting: Provide necessary controls to prevent resetting of alarm, supervisory or trouble signal while alarm or trouble condition still exists.
- H. Instructions: Printed or typewritten instruction card mounted behind lexan plastic or glass cover in stainless steel or aluminum frame. Install frame in location observable from FACP. Include interpretation and appropriate response for displays and signals, and briefly describe functional operation of system under normal, alarm, and trouble conditions.

2.08 EMERGENCY POWER SUPPLY

- A. General: Components include nickel cadmium-type battery, charger, and an automatic transfer switch. Battery nominal life expectancy is 20 yrs, minimum.

- B. Battery capacity is adequate to operate complete alarm system in normal or supervisory (nonalarm) mode for period of 24 hrs. At end of this period, battery has sufficient capacity to operate system, including alarm-indicating devices in alarm or supervisory mode for period of 15 min.
- C. Battery Charger: Solid-state, fully automatic, variable-charging-rate type. Provide capacity for 150% of connected system load while maintaining batteries at full charge. In event batteries are fully discharged, charger recharges them fully within 4 hrs. Charger output supervised as part of system power supply supervision.
- D. Automatic transfer switch transfers load to battery without loss of signals or status indications when normal power fails.

2.09 WIRE

- A. Line-Voltage and Low-Voltage Circuits: Solid copper conductors with 600 v rated insulation.

2.10 TAGS

- A. Tags For Identifying Tested Components: Comply with NFPA 72.

PART 3 EXECUTION

3.01 GENERAL

- A. Install system according to NFPA 72.
- B. Fire Alarm Power Supply Disconnect: Paint red and label "FIRE ALARM." Provide with lockable handle or cover.

3.02 EQUIPMENT INSTALLATION

- A. Manual Pull Stations: Mount semi-flush in recessed back boxes with operating handles 48 in. above finished floor or as indicated.
- B. Smoke Detectors: Install ceiling-mounted detectors not less than 4 in. from side wall to near edge. Install detectors located on wall at least 4 in. but not more than 12 in. below ceiling. For exposed solid joist construction, mount detectors on bottoms of joists. On smooth ceilings, install detectors not over 30 ft apart in any direction. Install detectors no closer than 5 ft from air registers.
- C. Audible Alarm-Indicating Devices: Install not less than 90 in. above finished floor nor less than 6 in. below ceiling. Install bells and horns on flush-mounted back boxes with device-operating mechanism concealed behind grille or as indicated. Combine audible and visual alarms at same location into single unit.
- D. Visual Alarm-Indicating Devices: Install adjacent to each alarm bell or alarm horn and not less than 80 in. above finished floor and at least 6 in. below ceiling.
- E. Fire Alarm Control Panel (FACP): Surface mount with tops of cabinets not more than 6 ft above finished floor.

3.03 WIRING INSTALLATION

- A. **Wiring Method:** Install wiring in metal raceway. Conceal raceway except in unfinished areas as indicated.
- B. **Wiring Within Enclosures:** Install conductors parallel with or at right angles to sides and back of enclosure. Bundle, lace, and train conductors to terminal points with no excess. Connect conductors that are terminated, spliced, or interrupted in any enclosure associated with fire alarm system to terminal blocks. Mark each terminal according to wiring diagrams of system. Make connections with approved crimp-on terminal spade lugs, pressure type terminal blocks, or plug connectors.
- C. **Cable Taps:** Use numbered terminal strips in junction, pull or outlet boxes, cabinets, or equipment enclosures where circuit tap is made.
- D. **System Wiring:** For low-voltage portion of fire alarm system, install No. 16 AWG conductors and 75°C insulation in wet, damp, or dry locations. For line-voltage wiring, install No. 12 AWG size with insulation rated 75°C minimum.
- E. **Color Coding:** Color-code fire alarm conductors differently from normal building power wiring. Use one color code for alarm circuits wiring and different color code for supervisory circuits. Color-code audible alarm-indicating circuits differently from alarm-initiating circuits. Use different colors for visual alarm-indicating devices. Paint fire alarm system junction boxes and covers red.

3.04 FIELD QUALITY CONTROL

- A. **Manufacturer's Field Services:** Provide services of factory-authorized service representative to supervise field assembly and connection of components and pretesting, testing, and adjustment of system.
- B. **Pretesting:** Upon completing installation of system, align, adjust, and balance system and perform complete pretesting. Determine, through pretesting, conformance of system to requirements of Drawings and Specifications. Correct deficiencies observed in pretesting. Replace malfunctioning or damaged items with new and retest until satisfactory performance and conditions achieved. Prepare forms for systematic recording of acceptance test results.
- C. **Report of Pretesting:** After pretesting complete, provide letter certifying installation complete and fully operable, including names and titles of witnesses to preliminary tests.
- D. **Final Test Notice:** Provide 10-day minimum notice in writing when system ready for final acceptance testing.
- E. **Minimum System Tests:** Test system according to procedures outlined in NFPA 72. Minimum required tests are as follows.
 - 1. Verify absence of unwanted voltages between circuit conductors and ground.
 - 2. Megger test conductors other than those intentionally and permanently grounded with electronic components disconnected. Test for resistance to ground. Report readings less than 1-megohm for evaluation.
 - 3. Test conductors for short circuits utilizing insulation-testing device.
 - 4. With each circuit pair, short circuit at far end of circuit and measure circuit resistance with an ohmmeter. Record circuit resistance of each circuit on record drawings.
 - 5. Verify control unit is in normal condition as detailed in manufacturer's O&M manual.
 - 6. Test initiating and indicating circuits for proper signal transmission under open circuit conditions. Observe proper signal transmission according to class of wiring used.
 - 7. Test each initiating and indicating device for alarm operation and proper response at control unit. Test smoke detectors with actual products of combustion.

8. Test system for specified functions according to manufacturer's O&M manual. Systematically initiate specified functional performance items at each station including making possible alarm and monitoring initiations and using communications options. For each item, observe related performance at devices required to be affected by item under system sequences. Observe indicating lights, displays, signal tones, and annunciator indications.
 9. Test primary and secondary power. Verify, by test, secondary power system capable of operating system for period and in manner specified.
- F. Retesting: Correct deficiencies indicated by tests and completely retest Work affected by such deficiencies. Verify by system test that total system meets Specifications and complies with applicable standards.
- G. Report of Tests and Inspections: Provide written record of inspections, tests, and detailed test results in form of test log. Submit log upon satisfactory completion of tests.
- H. Tag equipment, stations, and other components at which tests have been satisfactorily completed.
- 3.05 CLEANING AND ADJUSTING
- A. Cleaning: Remove paint splatters and other spots, dirt, and debris. Touch up scratches and mars of finish to match original finish. Clean unit internally using methods and materials recommended by manufacturer.
- 3.06 DEMONSTRATION
- A. Provide services of factory-authorized service representative to demonstrate system and train OWNER'S maintenance personnel as specified below.
1. Train OWNER'S maintenance personnel in procedures and schedules involved in operating, troubleshooting, servicing, and preventive maintaining of system. Provide minimum of 1 hr training.
 2. Schedule training with OWNER at least 7 days in advance.

*** END OF SECTION ***

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SECTION 16857
ELECTRIC PIPE TRACING

PART 1 GENERAL

1.01 SUMMARY

A. Section Includes:

1. Self-regulating heat tapes and control equipment.
2. Provide electrical heat trace system as part of piping and insulation system furnished under other sections.

1.02 SYSTEM DESCRIPTION

A. Design Requirements:

1. Provide pipe tracing cable system capable of maintaining pipe contents at temperature of 40°F when outside ambient temperature is -20°F with 20 mph wind.

1.03 QUALITY ASSURANCE

A. Items provided under this section shall be listed or labeled by UL or other Nationally Recognized Testing Laboratory (NRTL).

1. Term "NRTL" shall be as defined in OSHA Regulation 1910.7.
2. Terms "listed" and "labeled" shall be as defined in National Electrical Code, Article 100.

B. Regulatory Requirements:

1. National Electrical Code (NEC): Components and installation shall comply with National Fire Protection Association (NFPA) 70.

PART 2 PRODUCTS

2.01 MANUFACTURERS

- A. Chemelex, Division of Raychem Corporation.
- B. Nelson Electric, Division of General Signal.
- C. Or equal.

2.02 CABLE DESIGN

- A. Voltage: 120 v, 60 Hz, 1-ph as shown on Drawings for electrical connection.
- B. Parallel design, current flow across cable.
- C. Heat output/ft constant, independent of length.

- D. Capable of overlapping installation without creation of hot spots.
- E. Cut to any length in field.
- F. Self-regulating heat output.
- G. Braided metallic shield.
- H. Outer plastic jacket.

2.03 CONTROLS

- A. Thermostatic ambient sensing control on each tape set at 40°F.
 - 1. Provide non-adjustable thermostats, calibrated and tested at factory to operate pipe heating system when temperature of pipe drops to 40°F.
 - 2. Provide non-adjustable thermostats, calibrated and tested at factory to close alarm contacts when temperature of pipe drops to 35°F at coldest location.
 - 3. Thermostats to have repeatability and maximum temperature differential of 2°F.
 - 4. Provide thermostats with NEMA 4 enclosures or NEMA 7/9 as required to suit environment.
- B. Provide proper fittings and appurtenances for field connection of system to conduit and wiring without need for procurement of special fittings or wiring devices.

PART 3 EXECUTION

3.01 EXAMINATION

- A. Examine areas and conditions under which pipe tracing cables to be installed and notify ENGINEER, in writing, of conditions detrimental to proper and timely completion of Work.

3.02 INSTALLATION

- A. Install in accordance with manufacturer's written instructions.
- B. Coordinate circuit connection points and voltages with Drawings.
- C. Apply "electrical traced" signs to outside of thermal insulation.

3.03 FIELD QUALITY CONTROL

- A. Examine material for defects prior to installation.
- B. Examine final installation for damage and defects in workmanship prior to startup and installation of insulation.
- C. Prior to installation of insulation, start pipe tracing system and check for temperature increase over full length of each tracing cable.

*** END OF SECTION ***

SECTION 16990
ELECTRICAL ACCEPTANCE TESTS AND INSPECTIONS

PART 1 GENERAL

1.01 SUMMARY

A. Section Includes Testing of:

1. Switchgear and Switchboard Assemblies.
2. Transformers.
3. Cables - Low and Medium Voltage.
4. Air Switches - Medium Voltage.
5. Circuit Breakers - Medium Voltage.
6. Protective Relays and Instrument Transformers.
7. Metering and Instrumentation.
8. Motor Control Centers.
9. Rotating Machinery.
10. Lightning and Surge Arresters.
11. Grounding Systems.
12. Lighting Systems.
13. Utility Interconnect Equipment.

B. CONTRACTOR shall engage services of independent testing firm for purpose of performing inspections and tests as specified.

C. If additional electrical equipment is used in installation other than those items described above, CONTRACTOR shall be responsible for their inspection and testing as outlined in this section.

1.02 REFERENCES

A. Perform inspections and tests in accordance with following codes and standards except as provided otherwise herein:

1. National Electrical Manufacturer's Association - NEMA.
2. American Society for Testing and Materials - ASTM.
3. Institute of Electrical and Electronic Engineers - IEEE.
4. InterNational Electrical Testing Association - NETA Acceptance Testing Specifications - ATS-1991.
5. American National Standards Institute - ANSI C2: National Electrical Safety Code.
6. State and local codes and ordinances.
7. Insulated Cable Engineers Association - ICEA.
8. Association of Edison Illuminating Companies - AEIC.
9. National Fire Protection Association - NFPA.

- a. ANSI/NFPA 70: National Electrical Code.
- b. ANSI/NFPA 70B: Electrical Equipment Maintenance.
- c. NFPA 70E: Electrical Safety Requirements for Employee Workplaces.
- d. ANSI/NFPA 78: Lightning Protection Code.
- e. ANSI/NFPA 101: Life Safety Code.

1.03 DEFINITIONS

- A. Low voltage equipment: Rated 600 volts and below.
- B. Medium voltage equipment: Rated above 600 volts to 35 kv.
- C. High voltage equipment: Rated above 35 kv.

1.04 SUBMITTALS

A. Test Reports:

- 1. Summary of project.
- 2. Description of equipment tested.
- 3. Description of test.
- 4. Test results.
- 5. Conclusions and recommendations.
- 6. Appendix, including appropriate test forms and factory test results.
- 7. List of test equipment used and calibration date.

B. Motor Overload Sheets.

- 1. Complete sheets similar to inspection and test report sheets described above in field showing:
 - a. Motor nameplate data, including full load and locked rotor amperes, voltage, service factor, and temperature rise or maximum ambient.
 - b. Controller type (indoor, outdoor, grouped, individual).
 - c. Heater type.
 - d. Manufacturer's heater code number recommended for motor protection.
 - e. Overload relay setting, where applicable (85 percent, 100 percent, and 115 percent).
 - f. Range and recommended settings for adjustable trip breaker.
- 2. ENGINEER will review above data. CONTRACTOR shall make necessary settings and give signed copy to ENGINEER indicating work has been performed in accordance with test report.

C. Submit in accordance with Section 01340.

1.05 QUALITY ASSURANCE

A. Certified testing agency shall be used to perform required testing other than System Function Tests described below.

B. Qualifications of testing firm.

- 1. Corporately and financially independent testing organization which can function as an unbiased testing authority, professionally independent of manufacturers, suppliers, and installers of equipment or systems evaluated by testing firm.
- 2. Regularly engaged in testing of electrical equipment devices, installation, and systems.
- 3. Meet OSHA criteria for accreditation of testing laboratories, Title 29, Part 1907, or be a Full Member company of InterNational Electrical Testing Association.
- 4. Lead, on-site, technical person shall be currently certified by InterNational electrical Testing Association (NETA) or National Institute for Certification in Engineering Technologies (NICET) in electrical power distribution system testing.
- 5. Utilize engineers and technicians who are regularly employed by firm for testing services.

6. Have calibration program which assures that applicable test instruments are maintained within rate accuracy.

C. Instruments used to evaluate electrical performance shall meet NETA's Specifications for Test Instruments.

D. Verify that test voltages are within equipment manufacturers recommended limits for field acceptance tests before proceeding with tests.

1.06 DIVISION OF RESPONSIBILITY

A. CONTRACTOR shall perform routine insulation resistance, continuity, and rotation tests for distribution and utilization equipment prior to and in addition to tests performed by testing firm specified herein.

B. CONTRACTOR shall notify testing firm when equipment becomes available for acceptance tests. Work shall be coordinated to expedite project scheduling.

C. ENGINEER will provide short-circuit analysis and coordination study and protective device setting sheet to CONTRACTOR.

D. CONTRACTOR shall supply short circuit analyses and coordination study, protective device setting sheet, complete set of electrical plans, specifications, and any pertinent change orders to testing firm prior to commencement of testing.

E. Testing firm shall notify ENGINEER prior to commencement of testing with 2 week notice.

F. System, material, or workmanship found defective on basis of acceptance tests shall be reported to ENGINEER.

G. Testing firm shall maintain written record of tests and, upon completion of Project, shall assemble and certify final test report.

H. Testing firm shall have designated safety representative on Project to supervise testing operations with respect to safety.

PART 2 PRODUCTS

2.01 TEST EQUIPMENT

A. Suitability of Test Equipment.

1. Test equipment shall be in good mechanical and electrical condition.
2. Selection of metering equipment should be based on a knowledge of waveform of variable being measured. Digital multimeters may be average or RMS sensing and may include or exclude dc component. When variable contains harmonics or dc offset and, in general, any deviation from a pure sine wave, average sensing, average measuring RMS scaled meters may be misleading, use of RMS measuring meters is recommended.
3. Field test metering used to check power system meter calibration shall have an accuracy higher than that of instrument being checked.
4. Accuracy of metering in test equipment shall be appropriate for test being performed.
5. Waveshape and frequency of test equipment output waveforms shall be appropriate for test and tested equipment.

B. Test Instrument Standards.

1. Equipment used for testing and calibration procedures shall exhibit following characteristics:
 - a. Maintained in good visual and mechanical condition.
 - b. Maintained in safe operating condition.
2. Test equipment shall have operating accuracy to comply with NETA specification ATS-1991.

C. Test instrument calibration.

1. Accuracy directly traceable to National Institute of Standards and Technology.
2. Instruments calibrated in accordance with following frequency schedule:
 - a. Field instruments: 6 months maximum.
 - b. Laboratory instruments: 12 months.
 - c. Leased specialty equipment: 12 months (Where accuracy is guaranteed by lessor).
3. Dated calibration labels visible on test equipment.
4. Records, which show date and results of instruments calibrated or tested shall be kept up-to-date.
5. Up-to-date instrument calibration instructions and procedures maintained for each test instrument.
6. Calibrating standard of high accuracy than that of instrument tested.

PART 3 EXECUTION**3.01 COORDINATION**

- A. Schedule testing by CONTRACTOR, approved by and performed in presence of ENGINEER and manufacturer's service engineer, where applicable.

3.02 GENERAL

- A. Inspect electrical equipment, after being set in place, for damage to insulators and other components, for tightness of joints and connections for contact adjustment and for proper mechanism operation.
- B. Tests shall assure CONTRACTOR and OWNER supplied tested electrical equipment is operational and within industry and manufacturer's tolerances and is installed in accordance with design and specifications.
- C. Tests and inspections shall determine suitability for energization.

3.03 SYSTEM FUNCTION TESTS

- A. Electrical control equipment, interlock and sequential control systems, and instrument circuiting pre-wired by manufacturer or assembled and wired in field.
 1. Checked for correct and tight connections.
 2. Complete functional test, checking intended modes and sequences of operation of control circuits and interlocking.
 3. Operation of switches, relays, contactors, circuit breakers, indicating lights, meters, solenoid valves, and other related devices.

- B. If operational testing of certain parts of a control system would results in shutdown of process facility or curtail production, an alternate testing procedure using continuity checks rather than live power operation shall be used.
- C. Coordinate tests with equipment vendors as required and inform ENGINEER with 2 week notice.
- D. Inspections and tests shall utilize following references:
 1. Project Specifications.
 2. Project Drawings.
 3. Project short-circuit and coordination study.
 4. Protective device setting sheet.
 5. Manufacturer's instruction manuals applicable to each particular apparatus.

3.04 INSULATION RESISTANCE TESTS

- A. Performed insulation resistance tests in accordance with following table:

Voltage Rating	Test Voltage
150 - 600V	1000v dc
601 - 5000V	2500v dc
5001 - +	5000v dc

- B. Values of insulation resistance less than manufacturer's minimum of rated KV+1 in megohms should be investigated. Overpotential tests should not proceed until insulation resistance levels are raised to said minimum.
- C. Correct insulation resistance values for temperature using following conversion factors for conversion of test temperature to 20°C:

Temperature		Transformer	
°C	°F	Oil	Dry
0	32	.25	.40
5	41	.36	.45
10	50	.50	.50
15	59	.75	.75
20	68	1.00	1.00
25	77	1.40	1.30
30	86	1.98	1.60
35	95	2.80	2.05
40	104	3.95	2.50
45	113	5.60	3.25
50	122	7.85	4.00
55	131	11.20	5.20
60	140	15.85	6.40
65	149	22.40	8.70
70	158	31.75	10.00
75	167	44.70	13.00
80	176	63.50	16.00

3.05 OVERPOTENTIAL TESTS - EQUIPMENT OTHER THAN TRANSFORMERS

A. Apply overpotential test voltages in accordance with following:

Rated kv	Test Voltage kv	
	ac	dc
5	14.3	20.2
15	27.0	37.5
25	45.0	Consult Manufacturer
35	60.0	Consult Manufacturer

B. Test results evaluate on go no-go basis by slowly raising test voltage to required value and applying final test voltage for 1 minute.

3.06 OVERPOTENTIAL TESTS - OIL FILLED TRANSFORMERS

A. Overpotential Test Voltage for Oil Filled Transformers

Nominal System Voltage* (kv)	Insulation Class	ac Factory Test (kv) Oil-immersed
1.2	1.2	10
2.4	2.5	15
4.8	5.0	19
8.32	8.7	26
14.4	15.0	34
18.0	18.0	40
25.0	25.0	50
34.5	34.5	70
46.0	46.0	95
69.0	69.0	140

* Intermediate voltage ratings are placed in next higher insulation class.

3.07 OVERPOTENTIAL TESTS - DRY TYPE TRANSFORMERS

A. Overpotential test voltage for dry type transformers.

Nameplate Winding Voltage Rating, Volts	ac Factory Test Potential, kv
0 - 250	2.5
251 - 1200	4
1201 - 2500	10
2501 - 5000	12
5001 - 8660	19
8661 - 15000	31

3.08 SWITCHGEAR AND SWITCHBOARD ASSEMBLIES

A. Visual and Mechanical Inspection.

1. Inspect for physical damage.
2. Compare equipment nameplate information with latest single line diagram.
3. Inspect for proper alignment, anchorage and grounding.
4. Physically test key interlock systems to insure proper function.
 - a. Perform closure attempt on locked open devices. Make opening attempt on locked closed devices.
 - b. Perform key exchange with devices operated in off-normal positions.
5. Conduct operational test of automatic transfer systems.
6. Inspect doors, panels and sections for paint, dents, scratches and fit.

B. Electrical Tests.

1. **Insulation Resistance Test.**
 - a. Measure insulation resistance of each bus section phase to phase and phase to ground for 1 minute.
2. **Overpotential Test.**
 - a. Perform overpotential test on each bus section phase to ground for 1 minute.
3. **Bus Phasing Test.**
 - a. Perform phase rotation tests on each bus tie section energized from separate sources. Phase rotation shall be A, B, C when counting from left to right, top to bottom, front to back and viewing bus from front of equipment.

3.09 TRANSFORMERS

A. Visual and Mechanical Inspection

1. Inspect for physical damage.
2. Compare equipment nameplate information with single line diagram.
3. Verify proper auxiliary device operation such as fans, pumps, sudden pressure device, indicators, tap changer, and gas pressurization system when applicable.
4. Check tightness of external bolted electrical joints.
5. Check liquid in tank and bushings for proper level (liquid filled transformers only).
6. Perform specific inspection and mechanical tests as recommended by manufacturer.

B. Electrical Tests

1. Check certified factory test reports to conform with ANSI.
2. Perform insulation resistance tests winding to winding and winding to ground. Utilize appropriate guard circuit over bushings.
3. Sample insulating oil and test in accordance with ASTM D-923. Laboratory test sample for (liquid filled transformers only):
 - a. Dielectric strength.
 - b. Acid neutralization number.
 - c. Interfacial tension.
 - d. Color.

4. Perform ac overpotential test on high and low voltage windings to ground. Use test voltage overpotential test tables for appropriate type transformer (liquid filled or dry); however, do not test exceed 75% of factory test value. Apply test voltage for 1 minute duration. Evaluate on a go/no-go basis (ANSI C57.12.90 for liquid filled and ANSI C57.12.91 for dry type).

3.10 CABLES - ABOVE 600 VOLTS

A. Visual and Mechanical Inspections.

1. Inspect exposed section for physical damage.
2. Verify cable is supplied and connected in accordance with single line diagram.
3. Inspect for shield grounding, cable support, and termination.
4. Check visible cable bends against ICEA or manufacturer's minimum allowable bending radius.
5. Inspect for proper fireproofing in common cable areas.

B. Electrical Tests.

1. Perform an insulation resistance test on each cable with respect to ground with other conductors and sheath grounded. Minimum acceptable value shall be 50 megohms.
2. Perform dc Overpotential Test.
 - a. Test potential to be applied in accordance with cable manufacturers recommendations.
 - b. Individually test each conductor with other conductors grounded. Shields shall be grounded.
 - c. Corona suppress terminations with guard ring, field reduction sphere, or other suitable methods.
 - d. Apply dc overpotential in at least 8 equal increments until maximum test voltage is reached. Record dc leakage current at each step after a constant stabilization time consistent with system charging current decay.
 - e. Make graphic plot of leakage current (X axis) versus voltage (Y axis) at each increment.
 - f. Raise test conductor to maximum test voltage and hold for 10 minutes. Record readings of leakage current (Y axis) versus time (X axis) and plot on 30 second intervals for first 2 minutes and every minute thereafter.
 - g. Reduce applied conductor test potential to zero and apply ground for period adequate to drain insulation stored potential. Advise Engineer if grounding cables are left in place.
3. Perform a shield continuity test by ohm meter method. Record ohmic value.

3.11 CABLE - 600 VOLTS AND BELOW

A. Visual and Mechanical Inspection.

1. Inspect cables for physical damage and proper connection.
2. Torque test cable connection to manufacturer's recommended values.

B. Electrical Tests.

1. Test before connecting to terminals at either end.
2. Check instrument cables for continuity and freedom of shield grounds by lifting shield ground at designated ground location before testing.
3. Perform continuity check on each conductor.
4. Perform insulation resistance test on each conductor with respect to ground and adjacent conductors. Perform insulation resistance tests at 1000 volts dc for one-half (1/2) minute for cables except for

instrument cables use 500 V dc. When insulation resistance must be determined with switchboards, panelboards, fuse holders, switches, and overcurrent devices in place, insulation resistance when tested at 500 volts dc shall be no less than:

No. 14 and 12 AWG	1,000,000 ohms
25 ampere circuits and above	250,000 ohms

3.12 AIR SWITCHES - MEDIUM VOLTAGE

A. Visual and Mechanical Inspection.

1. Inspect for physical damage and compare nameplate data with single line diagram.
2. Perform mechanical operator tests in accordance with manufacturer's instructions.
3. Check blade alignment and arc interrupter operation.
4. Check fuse linkage and element for proper holder and current rating.
5. Check key interlocks for safe operation and proper key distribution.

B. Electrical Tests.

1. Perform insulation resistance test on each phase to ground and from each phase to each other phase.
2. Perform ac or dc overpotential test on each pole to ground and pole to pole.
3. Perform contact resistance test across each switch blade.

3.13 CIRCUIT BREAKERS - MEDIUM VOLTAGE

A. Visual and Mechanical Inspection.

1. Inspect for physical damage and compare nameplate data with single line diagram.
2. Inspect anchorage, alignment, and grounding.
3. Perform mechanical operator contact alignment tests on both breaker and operating mechanism in accordance with manufacturer's instruction.
4. Check tightness of bolted bus joints by calibrated torque wrench method.
5. Check cell fit and element alignment.

B. Electrical Tests.

1. Measure contact resistance.
2. Perform minimum pickup voltage tests on trip and close coils.
3. Trip circuit breaker by operation of each protective device.
4. Perform an insulation resistance test pole to ground, pole to pole and across open pole.
5. Perform insulation resistance test at 1000 volts dc on control wiring. (Do not perform this test on wiring connected to solid state relays).
6. Perform overpotential tests with breaker in open and closed position.

3.14 PROTECTIVE RELAYS

A. Visual and Mechanical Inspection.

1. Inspect relays for physical damage and compliance with specifications.
2. Inspect cover gasket, cover glass, presence of foreign material, moisture, condition of spiral spring, disc clearance, rust, and contacts.

3. Check mechanically for freedom of movement, proper travel and alignment, and tightness of mounting hardware and tap screws.
4. Make settings in accordance with settings furnished by ENGINEER.

B. Electrical Tests.

1. Perform insulation resistance test on each circuit branch to frame. Do not perform this test on solid state relays.
2. Perform following tests on nominal specified settings.
 - a. Pickup parameters on each operating element.
 - b. Perform timing test at 3 points on time dial curve.
 - c. Pickup target and seal in units.
 - d. Special test as required to check operation of restraint, direction and other elements per manufacturer's instruction manual.
3. Perform phase angle and magnitude contribution tests on differential and directional type relays after energization to vectorially prove proper polarity and connection.

3.15 INSTRUMENT TRANSFORMERS

A. Visual and Mechanical Inspection.

1. Inspect for physical damage and compliance with single line diagram.
2. Check mechanical clearances and proper operations of disconnecting and grounding devices associated with potential transformers.
3. Verify proper operation of grounding or shorting devices.

B. Electrical Tests.

1. Confirm transformer polarity electrically.
2. Verify connection at secondary CT leads by driving a low current through leads and checking current at applicable devices.
3. Confirm transformer ratio.
4. Measure insulation resistance of transformer secondary and leads with 500 volt megohm meter.
5. Measure transformer primary insulation with applicable overpotential tests.
6. Verify connection of secondary PT leads by applying a low voltage to leads and checking voltage at applicable devices.
7. Check for PT secondary load with secondary voltage and current measurements. Verify load is less than va of PT.

3.16 METERING AND INSTRUMENTATION

A. Visual and Mechanical Inspection.

1. Examine device for broken parts, indication of shipping damage and wire connection tightness.
2. Verify meter connections in accordance with schematic meter and relay diagram.

B. Electrical Tests.

1. Calibrate all meters at mid-scale. Calibration instruments shall have precision no more than 50% of instrument being tested.
2. Calibrate watt-hour meters to 1/2%.

3. Verify instrument multipliers.

3.17 MOTOR CONTROL CENTERS

A. Visual and Mechanical Inspection.

1. Inspect for physical damage, proper anchorage, and grounding.
2. Compare equipment nameplate data with single line diagram or starter schedule.
3. Compare overload heaters with motor full load current for proper size.
4. Check tightness of bolted connections.

B. Electrical Tests.

1. Insulation tests.

- a. Measure insulation resistance of each bus section phase to phase and phase to ground for 1 minute.
 - b. Measure insulation resistance of each starter section phase to phase and phase to ground with starter contacts closed and protective device open.
 - c. Measure insulation resistance of each control circuit with respect to ground.
2. Perform operational tests by initiating control devices to affect proper operation.

3.18 ROTATING MACHINERY

A. Visual and Mechanical Inspection.

1. Inspect for physical damage.
2. Compare equipment nameplate information with single line diagram.
3. Inspect for proper anchorage, mounting, grounding, and connection.
4. Perform special tests as recommended by manufacturer, such as gap spacing and pedestal alignment, where applicable.

B. Electrical Tests.

1. Perform insulation resistance test.
2. Perform rotation test made to insure proper direction.
3. Observe proper operation and sequence of reduced voltage starters, where applicable.
4. Perform vibration amplitude test.
5. Perform overpotential test on winding to ground for motors above 600 volts according to manufacturer's recommendations.

3.19 LIGHTNING AND SURGE ARRESTERS

A. Visual and Mechanical Inspection.

1. Inspect for physical damage, such as chipped or fractured porcelain.
2. Verify location and nameplate rating with single line diagram.
3. Inspect ground and discharge connection for integrity.
4. Adjust external gas of surge arresters to Manufacturer's recommended settings.

B. Electrical Tests.

1. Perform ground continuity test to ground grid system. Ground grid connections shall not exceed 0.5 ohms maximum.

3.20 GROUNDING SYSTEMS

A. Visual and Mechanical Inspection.

1. Inspect ground system for compliance with Contract Documents.

B. Electrical Tests.

1. Perform ground resistance measurements by three-electrode method or alternately by fall-of-potential method.
2. Perform ground resistance measurements after compaction following installation of electrodes in order to allow soil around electrodes to stabilize.
3. Record measurements on test report sheets.

C. Test Values.

1. Main ground electrode system resistance to ground should be no greater than 5 ohms unless otherwise specified.

3.21 LIGHTING SYSTEM TESTS

A. Following installation of lighting system, test wiring for grounds, shorts, open circuits and other deficiencies.

B. Following required repairs, with permission, energize lighting system and test. Measure voltage drop readings at circuit end points in lighting system and recorded to demonstrate compliance with specification voltage drop requirements.

3.22 UTILITY INTERCONNECT EQUIPMENT

A. Assist ENGINEER, OWNER and Utility Company (NOLIN) representatives in performing inspections and test required for placing following equipment in service.

1. Main power transformer (T1).
2. Fault Interrupter (52U).
3. SCADA RTU.

B. Verify interlocks for and between fault interrupter (52U), utility SCADA and Direct Transfer trip signals, plant emergency trip signals, and main circuit breaker (52T) in plant switchgear.

C. Verify operation of alarms including annunciation system for main power transformer, Fault Interrupter (52U) and main circuit breaker (52T) in plant switchgear.

D. Test substation equipment in accordance with appropriate specification requirements.

3.23 ADDITIONAL TESTS

EKPC

Pendleton County Landfill
Gas-to-Electric Generation Plant

- A. Additional tests, not covered in this Section, may be required where special equipment is installed or where called for by manufacturer's installation instructions. Perform tests in accordance with equipment manufacturer's recommendations or recognized industry/user group recommendations.

* * * END OF SECTION * * *

Business Mathematics Book 1



**EQUIPMENT LIST
(Responsibility Matrix)**

**East Kentucky Power Cooperative
Landfill Gas-to-Electric Generation Plant
Pendleton County Landfill, Pendleton County, Kentucky**

GC = General Prime Contractor
MC = Mechanical Prime Contractor
EC = Electrical Prime Contractor

LF = Landfill, or designee
EKPC = East Kentucky Power Coop.
NE = Nolin Electric
X = Others

DD = Design Drawing(s)
CS = Construction Specification(s)
VD = Vendor Drawing(s)

Qty	Tag No(s)	Item Name or Description	Furnished By	Received/ Installed/ Connected	Where Specified	Notes
		Engine-Generator Sets:				
4	EG1- 4	Engine and Generator on Common Base Rails	EKPC	MC	VD	CAT G3516 SITA-LE Units
32		Vibration Isolator Pads	EKPC	MC	VD	Eight for each engine-generator.
16		12 V Batteries	EKPC	EC	VD	Four for each engine.
8		Cables for Series Connection of Battery Pairs	EC	EC	VD	One for each battery pair.
16		Battery Terminal Lugs	EC	EC	VD	For external cable connection, one per battery
16		Cables for Parallel Connection of Battery Pairs and Battery Connection to Starting Motor	EC	EC	DD	Four for each engine.
8		Floor-Mounted Battery Racks	EKPC	EC	VD	Two for each engine.
4		Make-Up Lube Oil Reservoir (Day Tank) 25 gals	EKPC	MC	DD	Support brackets for wall-mounting by Contractor.
4		Make-Up Lube Oil Line Flexible Connectors	MC	MC	DD	
4		Make-Up Lube Oil Level Regulators	EKPC	MC	DD	
8		Fuel Gas Solenoid Valves	EKPC	MC	VD	Two for each engine.
8		Fuel Gas Pressure Regulator	EKPC	MC	VD	Two for each engine.
8		Fuel Gas Line Flexible Connectors	EKPC	MC	VD	Two for each engine.
3		Exhaust Silencer	EKPC	MC	VD	Support system for vertical mounting by Contractor.
12		Exhaust Piping Companion Flanges	EKPC	MC	VD & DD	One each for engine outlet, silencer inlet and silencer outlet.
4		Exhaust Adaptor Fitting	EKPC	MC	VD	Connects engine to exhaust system.
4		Exhaust Pipe Rain Shield	MC	MC	DD	Fabricate & install on engine silencer exhaust pipe.
4		Exhaust Pipe Expansion Fitting	EKPC	MC	DD	Connects engine exhaust piping to engine and silencer.
4		Battery Charger	EKPC	EC	VD	
4	ECP1 - 4	Engine Control Panel, EMCP II+	EKPC	EC	VD	One for each engine. Mounted on Generator.
0		Air/Fuel Ratio Controller	n/a	n/a	n/a	Factory installed or added in field to engine.
Lot		Gas & Exhaust Piping	MC	MC	DD	

**EQUIPMENT LIST
(Responsibility Matrix)**

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Landfill Gas-to-Electric Generation Plant
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CS = Construction Specification(s)
VD = Vendor Drawing(s)

Qty	Tag No(s)	Item Name or Description	Furnished By	Received/ Installed/ Connected	Where Specified	Notes
		Engine Cooling Systems:				
4	RADI - 4	Horizontal Fan Cooler (External Radiator Unit)	EKPC	MC	VD	Each cooler includes one aftercooler/lube oil (AC/LO) core and one jacket water (JW) core.
16		Radiator Support Legs	EKPC	MC	VD	Four for each cooler.
4		AC/LO & JW Coolant Surge Tanks	EKPC	MC	VD	40 Gallon AC / 75 Gallon JW.
8		Surge Tank Level Switches	EKPC	EC	VD	
8		Surge Tank Gauge Glasses	EKPC	MC	VD	
8		JW Surge Tank Relief Valve	EKPC	MC	VD	
8		JW Surge Tank Vacuum Breaker	EKPC	MC	VD	
8		Radiator Fan Vibration Switch	EKPC	EC	VD	Mounted on fan drive structure
32		Cooler Line Flexible Connectors	EKPC	MC	VD	Four for each engine and each cooler.
4		Aftercooler Vent Line Flexible Connectors	MC	MC	DD	3/8" flex for each engine at aftercooler connection.
8		AC/LO Coolant Temperature Gauge with Thermowell	MC	MC	DD	Range = 0 - 250 deg F.
8		JW Coolant Temperature Gauge with Thermowell	MC	MC	DD	Range = 0 - 250 deg F.
4		JW Coolant Temperature Sensor RTD	EKPC	EC	VD	Rad. Fan VFD Control
4		JW Coolant Temperature Transducer	EKPC	EC	VD	Rad. Fan VFD Control
8		Thermowells for Temperature Probes	MC	MC	DD	
1		Glycol Recovery Tank, 500 gal.	MC	MC	DD	Accessories include level sight glass, vent cap, inlet/outlet nipples and shutoff valves.
1		Glycol Transfer Pump, pneumatic, and Discharge Flexible Connector	MC	MC	DD	Flexible connector includes swivel fitting on one end.
1		Air Supply Hose to Diaphragm Pump	MC	MC	DD	
1		Glycol Transfer Valve Station	MC	MC	DD	Station allows Glycol Transfer Pump to drain or fill engines from Glycol Recovery Tank.
Lot		Engine Cooling Water Piping	MC	MC	DD	

**EQUIPMENT LIST
(Responsibility Matrix)**

**East Kentucky Power Cooperative
Landfill Gas-to-Electric Generation Plant
Pendleton County Landfill, Pendleton County, Kentucky**

GC = General Prime Contractor
MC = Mechanical Prime Contractor
EC = Electrical Prime Contractor

LF = Landfill, or designee
EKPC = East Kentucky Power Coop.
NE = Nolin Electric
X = Others

DD = Design Drawing(s)
CS = Construction Specification(s)
VD = Vendor Drawing(s)

Qty	Tag No(s)	Item Name or Description	Furnished By	Received/ Installed/ Connected	Where Specified	Notes
		Fuel Gas Compressor System:				
1		Fuel Gas Blower Package	EKPC	MC	VD	Consists of blower, fan cooler, heat exchanger, vessels, interconnecting piping, control panel, control sensors, control drives, instrumentation and control wiring. Blower, cooler, and appurtenances mounted on skid. Connecting piping and power wiring to package by Contractor. Electric heat tracing and insulation of condensate drain piping by Contractor.
1	TI-131	Aerial Cooler Inlet Temperature Gauge with Thermowell	EKPC	MC	VD	Supplied with Fuel Gas Blower Package.
1	TI-141	Aerial Cooler Outlet Temperature Gauge with Thermowell	EKPC	MC	VD	Supplied with Fuel Gas Blower Package.
1	TS-151	Aerial Cooler Outlet Temperature Switch with Thermowell	EKPC	MC/EC	VD	Supplied with Fuel Gas Blower Package.
1		Aerial Gas Cooler	EKPC	MC/EC	DD/VD	Supplied with Fuel Gas Blower Package.
Lot		Aerial Cooler to Blower Skid Interconnecting Piping	EKPC	MC	DD/VD	Supplied with Fuel Gas Blower Package.
1	PI-111	Compressor Outlet Pressure Gauge with Isolation Valve	MC	MC	DD	Range = 0 - +10 PSIG.
1	PT-111	Compressor Outlet Pressure Transmitter with Isolation Valve	MC	MC/EC	DD	Range = 0 - +10 PSIG.
1	TI-121	Compressor Inlet Temperature Gauge with Thermowell	MC	MC	DD	Range = 0 - 200 deg F.
1	PI-121	Compressor Inlet Pressure Gauge with Isolation Valve	MC	MC	DD	Range = -100 - +100 "WC.
1	PT-121	Landfill Vacuum Transmitter with Isolation Valve	MC	MC/EC	DD	Range = -5 - +5 PSIG.

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Qty	Tag No(s)	Item Name or Description	Furnished By	Received/ Installed/ Connected	Where Specified	Notes
		Methane Detection System:				
1	MD	Detection Panel	EC	EC	VD	For wall mounting.
7		Field Sensor Assemblies	EC	EC	VD	Contractor to provide conduit and cable as shown on design drawings
		Gas Chromatograph and Flow Measurement System:				
1		Flow Measurement Orifice Plate and Mounting Flanges	EKPC	MC	VD & DD	
1		Pressure Transmitter	EKPC	EC	VD & DD	Contractor to provide mounting brackets.
1		Differential Pressure Transmitter	EKPC	EC	VD & DD	Contractor to provide mounting brackets.
1		5-Valve Manifold	MC	MC	CS & DD	
1		Temperature Transmitter with Sensing Element and Thermowell	EKPC	MC & EC	VD & DD	
1		Sample Line Pressure Gauge	MC	MC	DD	
1		Sample Line Filter	MC	MC	DD	Similar to Air Coalescing Filter
1		Gas Chromatograph with Sample Conditioning System	EKPC	EC	VD & DD	
1		Analyzer & Flow Computer	EKPC	EC	VD & DD	
Lot		Sample & Vent Tubing	MC	MC	DD & CS	
		Compressed Air System:				
1		Packaged Air Compressor and Accessories 30CFM @ 125 PSI, Aftercooler, 120 Gal. Receiver Tank, Discharge Coalescing Filter, and 10CFM Regenerative Desiccant Dryer, with Oil Removal Inlet Filter, Particulate Discharge Filter and 120VAC Drain Solenoid	MC	MC	CS & DD	Consists of air compressor, aftercooler, separator/trap, receiver, air dryer, interconnecting piping, compressor and dryer control panels, interconnecting wiring, all mounted on a common structural base.
4		Pressure Regulator	MC	MC	DD	
13		Coalescing Filters	MC	MC	DD	At hose stations & FGC.
14		Hose Connectors (Quick Disconnects)	MC	MC	DD	At hose stations.
5		Air Hose Reels	MC	MC	DD	Wall mounted.
7		½" X 50' Air Hoses	MC	MC	DD	
Lot		All Other Components	MC	MC	DD	

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Qty	Tag No(s)	Item Name or Description	Furnished By	Received/Installed/Connected	Where Specified	Notes
		Lube Oil System:				
1		Lube Oil Tank and Accessories 1200 Gal. (1000 Gal. Nominal)	MC	MC	CS & DD	Accessories include fill standpipe with dry disconnect fitting and dust cap, level sight glass, vent cap, outlet nipple and shutoff valve.
1		Diaphragm Pump and Discharge Flexible Connector	MC	MC	CS & DD	Flexible connector includes swivel fitting on one end.
1		Automatic Shutoff Flow Meter	MC	MC	CS & DD	Manually set fill volume.
1		Air Supply Hose to Pump	MC	MC	DD	From filter/regulator/lubricator
Lot		All Other Components	MC	MC	DD	
		Spent Oil System:				
1		Spent Oil Tank 1200 Gal. (1000 Gal. Nominal)	MC	MC	CS & DD	Accessories include level sight glass, vent cap, outlet nipple and shutoff valve.
1		Diaphragm Pump and Discharge Flexible Connector	MC	MC	CS & DD	
1		Air Supply Hose to Diaphragm Pump	MC	MC	DD	
Lot		All Other Components	MC	MC	DD	
		HVAC System:				
5	SF 1-5	Supply Air Fans	MC	MC	DD & CS	With T-Stat Control
7	EF 1-5, 6 & 7	Exhaust Air Fans	MC	MC	DD & CS	With T-Stat Control
1	TCP-1	Ventilation Control Panel	MC	MC	DD & CS	For wall mounting
1		Engine Crankcase Fumes Exhaust Fan/Oil Mist Eliminator	MC	MC	DD	
1		Crankcase Fumes Exhaust Fan Manual Starter	EC	EC	DD	Local device.
1		Crankcase Fumes Exhaust System Sight Glasses	MC	MC	DD	
1	RTU-1	Control Room Heating/Cooling Unit	MC	MC	DD & CS	
Lot		Crankcase Exhaust System Piping & Adjustment Valves	MC	MC	DD	

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Qty	Tag No(s)	Item Name or Description	Furnished By	Received/Installed/Connected	Where Specified	Notes
		In-Plant Electrical Distribution System:				
1	MCC	480V Motor Control Center	EKPC	EC	VD & DD	EC to set.
1	T-2	Step-Down Power Transformer, 500KVA	EKPC	EC	VD & DD	4160-480 volt. EC to set.
1	T-3	Power Distribution Transformer	EC	EC	DD & CS	480-120/240 volt
1	T-4	Power Distribution Transformer	EC	EC	DD & CS	480-120/208 volt
1	DP-1	Power Distribution Panel	EC	EC	DD & CS	
1	DP-2	Power Distribution Panel	EC	EC	DD & CS	
0	ATS	Automatic Transfer Switch	n/a	n/a	n/a	
Lot		All Other Components	EC	EC	DD & CS	
		Grounding System:				
Lot		All Work for grounding and lightning protection	EC	EC	DD & CS	
		Lighting System:				
Lot		All Work	EC	EC	DD & CS	
		Electric Heat Tracing:				
Lot		All Work	EC	EC	DD & CS	
		Alarm Equipment:				
1		Plant Annunciator	EKPC	X	VD & DD	Installed in switchgear. Contractor to provide external wiring.
1		Automatic Telephone Dialer (Auto-Dialer)	EKPC	X	DD	Installed in switchgear. Contractor to provide external wiring.
Lot		Engine-Generator Alarm Light and Toggle Switch	EC	EC	DD	
Lot		New/Used Lube Oil Tank Overfill Alarm Lights	EC	EC	DD	

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Landfill Gas-to-Electric Generation Plant
Pendleton County Landfill, Pendleton County, Kentucky**

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 MC = Mechanical Prime Contractor EKPC = East Kentucky Power Coop. CS = Construction Specification(s)
 EC = Electrical Prime Contractor NE = Nolin Electric VD = Vendor Drawing(s)
 X = Others

Qty	Tag No(s)	Item Name or Description	Furnished By	Received/ Installed/ Connected	Where Specified	Notes
		Telephone/Computer Data System:				
Lot		Wall Outlets – Telephone/Data	EC	EC	DD	Contractor to provide conduit to telephone board and stubs above ceiling.
2		Phone Units	EC	EC		Two line touch-tone units.
1		Telephone Terminal Board	EC	EC	DD	Fire resistant plywood.
1		Telephone Demarcation Box	X	X	DD	Coordinate installation with local telephone company.
Lot		All Other Components	EC	EC	DD	EC to install in plant cabling per local telephone company standards.

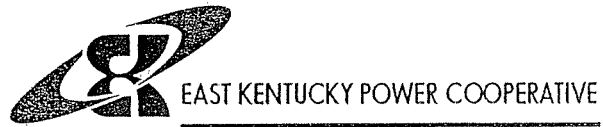
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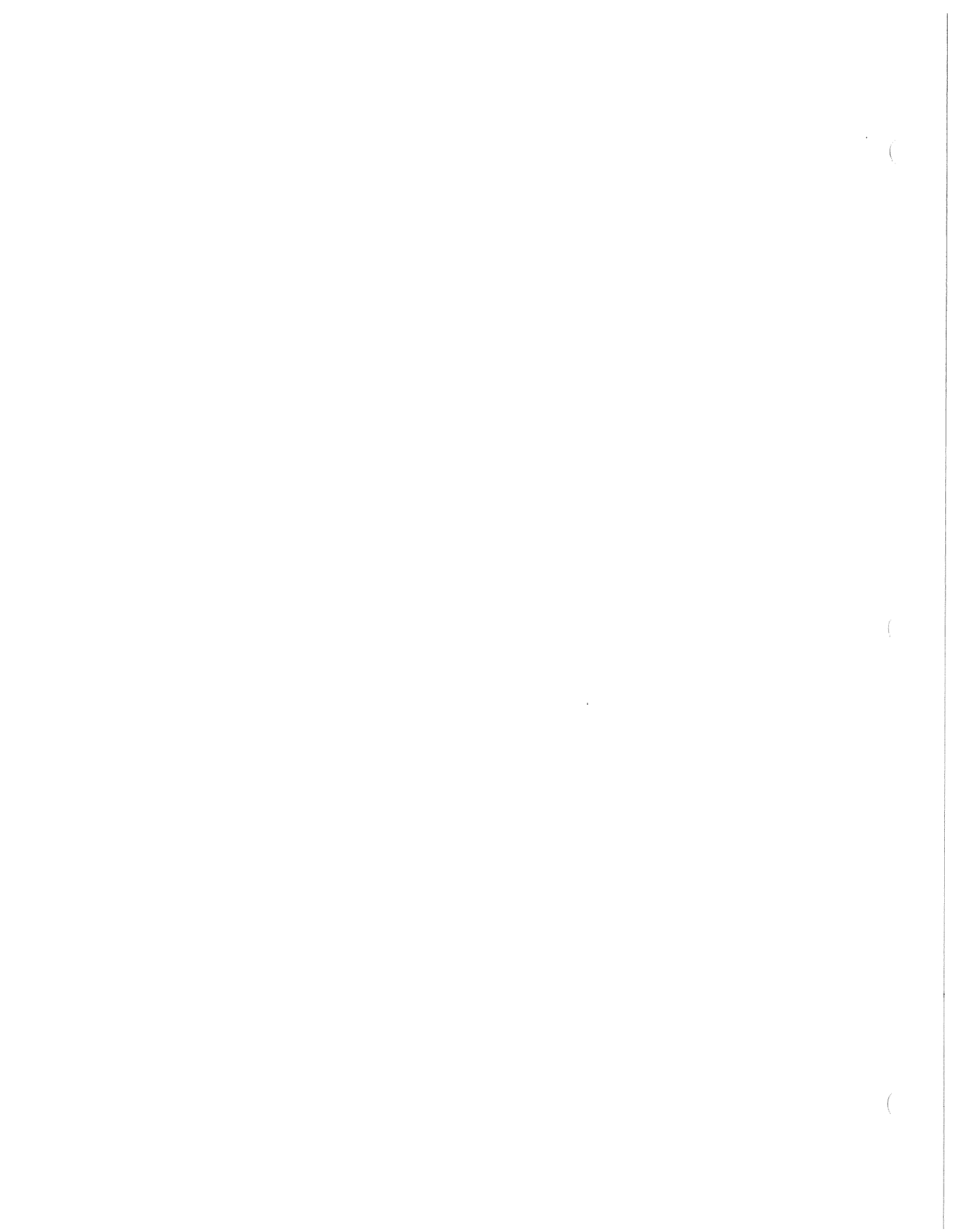
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Pendleton County Landfill Gas to Electric Generating Facility

480 Volt Motor Control Center Contract



U.S. Department of Agriculture
Rural Utilities Service

EQUIPMENT CONTRACT

NOTICE AND INSTRUCTIONS TO BIDDERS

1. Sealed proposals for the furnishing and delivering of 480 Volt Motor Control Center

of equipment for the rural electric project of East Kentucky Power Cooperative, Inc.,
RUS designation Ky 59 Fayette, (hereinafter called the "Owner") will be received by the Owner on or
before two o'clock P M., March 31, 20 06, at its office
at 4775 Lexington Road, Winchester Ky at which time and place the proposals will be
publicly opened and read.

privately opened. The Owner, subsequent to the bid opening, may elect to conduct clarifying discussions
with the bidder to resolve any questions related to the substance of the bidder's proposal and to arrive at a final
price for a responsive bid.

Any proposals received subsequent to the time specified will be promptly returned to the Bidder unopened.

2. **Obtaining Documents.** The Plans, Specifications, and Construction Drawings, together with all necessary
forms and other documents for bidders may be obtained from the Owner, or from the Engineer Meade Electric
Company, Inc. at the latter's office at 9550 W 55th Street, Suite A, McCook, IL
upon the payment of \$ N/A, which payment will not be subject to refund. The Plans,
Specifications, and Construction Drawings may be examined at the office of the Owner or at the office of the
Engineer.

3. **Manner of Submitting Proposals.** Proposals and all supporting instruments must be submitted on the forms
furnished by the Owner and must be delivered in a sealed envelope addressed to the Owner. The name and
address of the Bidder and the date and hour of the opening of bids must appear on the envelope in which the
Proposal is submitted. Proposals must be completed in ink or typewritten. No alterations or interlineations
will be permitted, unless made before submission, and initialed and dated. The successful Bidder will be
required to execute two additional counterparts of the Proposal.

4. **Due Diligence.** Prior to the submission of the Proposal, the Bidder shall make and shall be deemed to have
made a careful examination of the Plans, Specifications, Construction Drawings, and form of Proposal, and
shall review the location and nature of the proposed construction, the transportation facilities, the kind and
character of soil and terrain to be encountered, the kind of facilities required before and during the
construction of the project, general local conditions, environmental and historic preservation considerations,
and all other matters that may affect the cost and time of completion of the work. Bidder will be required to
comply with all federal, state, and local laws, rules, and regulations applicable to its performance, including
those pertaining to the licensing of contractors, and the Anti Kick-Back Act of 1986 (41 U.S.C. 51 et seq).

5. Proposals will be accepted only from those prequalified bidders invited by the Owner to submit a proposal.

6. **The Time for Delivery of the Equipment** is of the essence of the Contract and shall be as specified by the
Engineer in the Proposal.

7. **Evaluation Factors.** *In estimating the lowest cost to the Owner as one of the factors in deciding the award of the Contract, the Owner will consider, in addition to the price quoted in the Proposals, the following:*

In conformance with all specifications

8. **Debarment Certification.** *The Bidder must provide to the Owner a suspension and debarment certificate in the form attached hereto.*
9. **Contract Is Entire Agreement.** *The Contract to be effected by the acceptance of the Proposal shall be deemed to include the entire agreement between the parties thereto, and the Bidder shall not claim any modifications thereof resulting from any representation or promise made at any time by any officer, agent or employee of the Owner or by any other person.*
10. **Minor Irregularities.** *The Owner reserves the right to waive minor irregularities or minor errors in any Proposal, if it appears to the Owner that such irregularities or errors were made through inadvertence. Any such irregularities or errors so waived must be corrected on the Proposal in which they occur prior to the acceptance thereof by the Owner.*
11. **Bid Rejection.** *The Owner reserves the right to reject any or all Proposals.*
12. **Definition of Terms.** *The terms "Administrator" and "Engineer" as used throughout this Contract shall be as defined in Article VI, Section 1, of the Proposal*

East Kentucky Power Cooperative, Inc.

Owner

By Douglas W. P. Inching

President and Chief Executive Officer

Title

5/04/06 .2006

Date

PROPOSAL

TO:

East Kentucky Power Cooperative, Inc.

(hereinafter called the "Owner").

ARTICLE I—GENERAL

Section 1. Offer to Furnish and Deliver. *The undersigned (hereinafter called the "Bidder") hereby proposes to furnish and deliver the equipment (hereinafter called the "Equipment") described in the Plans, Specifications, and Construction Drawings for the following prices:*

Item: 480 Volt Motor Control Price: \$61,733.00

Item: Center Price: _____

The prices of Equipment set forth herein shall include the cost of delivery to:

Pendleton County Landfill, Butler, Kentucky

The prices set forth herein do not include any sums which are or may be payable by the Bidder on account of taxes imposed by any taxing authority upon the sale, purchase or use of the Equipment. If any such tax is applicable to the sale, purchase or use of the Equipment hereunder, the amount thereof shall be added to the purchase price and paid by the Owner.

Section 2. Materials and Equipment. *The Bidder agrees to furnish and use in the construction of the project under this Proposal, in the event the Proposal is accepted, only such "fully accepted," "conditionally accepted," and "technically accepted" materials and equipment which have been accepted by RUS as indicated in the current RUS Informational Publication 202-1, "List of Materials Acceptable for Use on Systems of RUS Electrification Borrowers," including revisions adopted prior to the Bid Opening. The use of "conditionally accepted" or "technically accepted" materials and equipment requires prior consent by the Owner or Engineer.*

The Bidder will purchase all materials and equipment outright and not subject to any conditional sales agreements, bailment, lease or other agreement reserving unto the seller any right, title or interest therein. All such materials and equipment shall be new.

Section 3. Description of Contract. *The Notice and Instructions to Bidders, Plans, Specifications, and Construction Drawings, which by this reference are incorporated herein, together with the Proposal and Acceptance constitute the Contract. The Plans, Specifications, and Construction Drawings, including maps, special drawings, and approved modifications in standard specifications are attached hereto and identified as follows:*

Revere Electric Supply's Proposal dated 3-31-06.

Section 4. Due Diligence. *The Bidder has made a careful examination of the Plans, Specifications, and Construction Drawings attached hereto, and has become informed as to the location and nature of the proposed construction, the transportation facilities, the kind and character of soil and terrain to be encountered, and the kind of facilities required before and during the construction of the project, and*

has become acquainted with the labor conditions, federal, state, and local laws, rules, and regulations applicable to its performance.

Section 5. Warranty of Good Faith. *The Bidder warrants that this Proposal is made in good faith and without collusion or connection with any person or persons bidding for the same work.*

ARTICLE II--DELIVERY AND WARRANTY

Section 1. Delivery. *The Bidder shall deliver the Equipment:*

_____ within _____ days after receipt of the written order or orders of the Owner.

X not later than August 31, 20 06.

The time for delivery shall be extended for the period of any reasonable delay due exclusively to causes beyond the control and without the fault of the Bidder, including, but not limited to, acts of God, fires, strikes, and floods.

Section 2. Defective Materials and Workmanship.

- a. *All Equipment furnished hereunder shall be subject to the inspection, tests, and approval of the Owner and the Engineer, and the Bidder shall furnish all information required concerning the nature or source of any Equipment and provide adequate facilities for testing and inspecting the Equipment at the plant of the Bidder.*
- b. *The Equipment furnished hereunder shall become the property of the Owner upon delivery, provided, however, that the Owner or the Engineer, within one year after initial operation of the Equipment, or within the period for which the Equipment is guaranteed, whichever is longer, may reject any Equipment which does not comply with the Specifications attached hereto and made a part hereof or with the guarantees, if any, of the Bidder and the manufacturer. Upon any such rejection, the Bidder shall repair or replace such defective Equipment within a reasonable time after notice in writing from the Owner. If any such defective materials, equipment, or workmanship so replaced or repaired is found to be defective within one year after the completion of the replacement or repair, the Bidder shall replace or remedy such defective materials, equipment, or workmanship. In the event of failure by the Bidder so to do, the Owner may make such replacement and the cost and expense thereof shall be paid by and recoverable from the Bidder.*
- c. *All manufacturers' guarantees of Equipment, if any, shall be transferred and assigned to the Owner upon delivery of any Equipment and before final payment is made for such Equipment. Such guarantees shall be in addition to those required of the Bidder by other provisions of this Contract.*

ARTICLE III--PAYMENT

Section 1. Payments to Bidder.

- a. *Upon the shipment of any Equipment hereunder, the Bidder shall submit to the Owner a detailed statement of the Equipment shipped. The Owner shall, upon receipt of the Equipment, pay the Bidder ninety percent (90%) of the contract price of the Equipment. When the Equipment has been installed, placed in satisfactory operation, tested and accepted by the Owner, the Owner shall make final payments therefor to the Bidder; provided, however, such final payment shall be made not later than 120 days after delivery of the Equipment, unless such acceptance by the Owner shall be withheld because of the fault of the Bidder.*

- b. *No payment shall be due while the Bidder is in default in respect of any of the provisions of this Contract and the Owner may withhold from the Bidder the amount of any claim by a third party against either the Bidder or the Owner based upon an alleged failure of the Bidder to perform the work hereunder in accordance with the provisions of this Contract*

ARTICLE IV--PARTICULAR UNDERTAKINGS OF THE BIDDER

The provisions of this Article IV apply to any work performed by the Bidder at the project site.

Section 1. Protection to Persons and Property. *The Bidder shall at all times take all reasonable precautions for the safety of employees on the project and of the public, and shall comply with all applicable provisions of federal, state, and local laws, rules, and regulations and building and construction codes, in addition to the safety rules and procedures of the Owner.*

The following provisions shall not limit the generality of the above requirements:

- a. *The Bidder shall at no time and under no circumstances cause or permit any employee of the Bidder to perform any work upon energized lines, or upon poles carrying energized lines, unless otherwise specified in the Notice and Instructions to Bidders.*
- b. *The Bidder shall transport and store all material in facilities and vehicles which are designed to protect the material from damage. The Bidder shall ensure that all vehicles, trailers, and other equipment used comply with all applicable licensing, traffic, and highway requirements.*
- c. *The Bidder shall conduct its operations to cause the least possible obstruction of public highways.*
- d. *The Bidder shall make good and fully repair all injuries and damages to the project or any portion thereof under the control of the Bidder by reason of any act of God or other casualty or cause whether or not the same shall have occurred by reason of the Bidder's negligence.*
- (i) *To the maximum extent permitted by law, Bidder shall defend, indemnify, and hold harmless Owner and Owner's directors, officers, and employees from all claims, causes of action, losses, liabilities, and expenses (including reasonable attorney's fees) for personal loss, injury, or death to persons (including but not limited to Bidder's employees) and loss, damage to or destruction of Owner's property or the property of any other person or entity (including but not limited to Bidder's property) in any manner arising out of or connected with the Contract, or the materials or equipment supplied or services performed by Bidder, its subcontractors and suppliers of any tier. But nothing herein shall be construed as making Bidder liable for any injury, death, loss, damage, or destruction caused by the sole negligence of Owner.*
- (ii) *To the maximum extent permitted by law, Bidder shall defend, indemnify, and hold harmless Owner and Owner's directors, officers, and employees from all liens and claims filed or asserted against Owner, its directors, officers, and employees, or Owner's property or facilities, for services performed or materials or equipment furnished by Bidder, its subcontractors and suppliers of any tier, and from all losses, demands, and causes of action arising out of any such lien or claim. Bidder shall promptly discharge or remove any such lien or claim by bonding, payment, or otherwise and shall notify Owner promptly when it has done so. If Bidder does not cause such lien or claim to be discharged or released by payment, bonding, or otherwise, Owner shall have the right (but shall not be obligated) to pay all sums necessary to obtain any such discharge or release and to deduct all amounts so paid from the amount due Bidder.*
- (iii) *Bidder shall provide to Owner's satisfaction evidence of Bidder's ability to comply with the indemnification provisions of subparagraphs i and ii above, which evidence may include but may not be limited to a bond or liability insurance policy obtained for this purpose through a licensed surety or insurance company.*

- e. Upon violation by the Bidder of any of the provisions of this section, after written notice of such violation given to the Bidder by the Engineer or the Owner, the Bidder shall immediately correct such violation. Upon failure of the Bidder so to do the Owner may correct such violation at the Bidder's expense. Provided, however, that the Owner may, if it deems it necessary or advisable, correct such violation at the Bidder's expense without such prior notice to the Bidder.

Section 2. Insurance. The Bidder shall take out and maintain throughout the period of its operations at the project site the following types and minimum amounts of insurance:

- a. Workers' compensation and employers' liability insurance, as required by law, covering all its employees who perform any of the obligations of the Bidder under the contract. If any employer or employee is not subject to the workers' compensation laws of the governing state, then insurance shall be obtained voluntarily to extend to the employer and employee coverage to the same extent as though the employer or employee were subject to the workers' compensation laws.
- b. Public liability insurance covering all operations under the contract shall have limits for bodily injury or death of not less than \$1 million each occurrence, limits for property damage of not less than \$1 million each occurrence, and \$1 million aggregate for accidents during the policy period. A single limit of \$1 million of bodily injury and property damage is acceptable. This required insurance may be in a policy or policies of insurance, primary and excess including the umbrella or catastrophe form.
- c. Automobile liability insurance on all motor vehicles used in connection with the contract, whether owned, nonowned, or hired, shall have limits for bodily injury or death of not less than \$1 million per person and \$1 million each occurrence, and property damage limits of \$1 million for each occurrence. A single limit of \$1 million of bodily injury and property damage is acceptable. This required insurance may be in a policy or policies of insurance, primary and excess including the umbrella or catastrophe form.

The Owner shall have the right at any time to require public liability insurance and property damage liability insurance greater than those required in subsection "b" and "c" of this Section. In any such event, the additional premium or premiums payable solely as the result of such additional insurance shall be added to the Contract price.

The Owner shall be named as Additional Insured on all policies of insurance required in subsections "b" and "c" of this Section.

The policies of insurance shall be in such form and issued by such insurer as shall be satisfactory to the Owner. The Bidder shall furnish the Owner a certificate evidencing compliance with the foregoing requirements which shall provide not less than (30) days prior written notice to the Owner of any cancellation or material change in the insurance.

ARTICLE V--REMEDIES

Section 1. Liquidated Damages. The time of the delivery of the Equipment is of the essence of the Contract. Should the Bidder neglect, refuse or fail to deliver the Equipment within the time herein agreed upon, after giving effect to extensions of time, if any, herein provided, then, in that event and in view of the difficulty of estimating with exactness damages caused by such delay, the Owner shall have the right to deduct from and retain out of such moneys which may be then due, or which may become due and

payable to the Bidder the sum of N/A dollars (---) per day for each and every day that such delivery is delayed beyond the specified time, as liquidated damages and not as a penalty; if the amount due and to become due from the Owner to the Bidder is insufficient to pay in full any such liquidated damages, the Bidder shall pay to the Owner the amount necessary to effect such payment in full: Provided, however, that the Owner shall promptly notify the Bidder in writing of the manner in which the amount retained, deducted or claimed as liquidated damages was computed.

Section 2. Cumulative Remedies. *Every right or remedy herein conferred upon or reserved to the Owner or the Government or the Administrator shall be cumulative, shall be in addition to every right and remedy now or hereafter existing at law or in equity or by statute and the pursuit of any right or remedy shall not be construed as an election: Provided, however, that the provisions of Section 1 of this Article shall be the exclusive measure of damages for failure by the Bidder to deliver the Equipment within the time herein agreed upon.*

ARTICLE VI--MISCELLANEOUS

Section 1. Definitions.

- a. *The term "Administrator" shall mean the Administrator of the Rural Utilities Service of the United States of America and his or her duly authorized representative or any other person in whom or authority in which may be vested the duties and functions which the Administrator is now authorized by law to perform.*
- b. *The term "Engineer" shall mean the Engineer employed by the Owner, to provide engineering services for the project and said Engineer's duly authorized assistants and representatives.*

Section 2. Materials and Supplies. *In the performance of this contract there shall be furnished only such unmanufactured articles, materials, and supplies as have been mined or produced in the United States or in any eligible country, and only such manufactured articles, materials, and supplies as have been manufactured in the United States or in any eligible country substantially all from articles, materials, or supplies mined, produced or manufactured, as the case may be, in the United States or in any eligible country; provided that other articles, materials, or supplies may be used in the event and to the extent that the Administrator shall expressly in writing authorize such use pursuant to the provisions of the Rural Electrification Act of 1938, being Title IV of Public Resolution No. 122, 75th Congress, approved June 21, 1938. For the purposes of this section, an "eligible country" is any country that applies with respect to the United States an agreement ensuring reciprocal access for United States products and services and suppliers to the markets of that country, as determined by the United States Trade Representative. The Bidder agrees to submit to the Owner such certificates with respect to compliance with the foregoing provision as the Administrator from time to time may require.*

Section 3. Patent Infringement. *The Bidder shall hold harmless and indemnify the Owner from any and all claims, suits and proceedings for the infringement of any patent or patents covering Equipment purchased hereunder.*

Section 4. Compliance with Laws. *The Bidder shall comply with all federal, state, and local laws, rules, and regulations applicable to its performance under the contract and the construction of the project. The Bidder acknowledges that it is familiar with the Rural Electrification Act of 1936, as amended, the Anti Kick-Back Act of 1986 (41 U.S.C. 51 et seq), and 18 U.S.C. §§ 286, 287, 641, 661, 874, 1001, and 1366, as amended.*

The Bidder represents that to the extent required by Executive Orders 12549 (3 CFR, 1985-1988 Comp., p. 189) and 12689 (3 CFR, 1989 Comp., p. 235), Debarment and Suspension, and 7 CFR part 3017, it has submitted to the Owner a duly executed certification in the form prescribed in 7 CFR part 3017.

The Bidder represents that, to the extent required, it has complied with the requirements of Pub. L. 101-121, Section 319, 103 Stat. 701, 750-765 (31 U.S.C. 1352), entitled "Limitation on use of appropriated funds to influence certain Federal contracting and financial transactions," and any rules and regulations issued pursuant thereto.

Section 5. Equal Opportunity Provisions.

a. Bidder's Representations.

The Bidder represents that:

It has , does not have , 100 or more employees, and if it has, that it has , has not , furnished the Equal Employment Opportunity-Employers Information Report EEO-1, Standard Form 100, required of employers with 100 or more employees pursuant to Executive Order 11246 of September 24, 1965, and Title VII of the Civil Rights Act of 1964.

The Bidder agrees that it will obtain, prior to the award of any subcontract for more than \$10,000 hereunder to a subcontractor with 100 or more employees, a statement, signed by the proposed subcontractor, that the proposed subcontractor has filed a current report on Standard Form 100.

The Bidder agrees that if it has 100 or more employees and has not submitted a report on Standard Form 100 for the current reporting year and that if this Contract will amount to more than \$10,000, the Bidder will file such report, as required by law, and notify the Owner in writing of such filing prior to the Owner's acceptance of this Proposal.

b. Equal Opportunity Clause. During the performance of this Contract, the Bidder agrees as follows:

- (1) The Bidder will not discriminate against any employee or applicant for employment because of race, color, religion, sex or national origin. The Bidder will take affirmative action to ensure that applicants are employed, and that employees are treated during employment without regard to their race, color, religion, sex or national origin. Such action shall include, but not be limited to, the following: Employment, upgrading, demotions or transfer; recruitment or recruitment advertising; layoff or termination; rates of pay or other forms of compensation; and selection of training, including apprenticeship. The Bidder agrees to post in conspicuous places, available to employees and applicants for employment, notices to be provided setting forth the provisions of this Equal Opportunity Clause.*
- (2) The Bidder will, in all solicitations or advertisements for employees placed by or on behalf of the Bidder, state that all qualified applicants will receive consideration for employment without regard to race, color, religion, sex or national origin.*
- (3) The Bidder will send to each labor union or representative of workers, with which it has a collective bargaining agreement or other contract or understanding, a notice to be provided advising the said labor union or workers' representative of the Bidder's commitments under this section, and shall post copies of the notice in conspicuous places available to employees and applicants for employment.*
- (4) The Bidder will comply with all provisions of Executive Order 11246 of September 24, 1965, and the rules, regulations and relevant orders of the Secretary of Labor.*
- (5) The Bidder will furnish all information and reports required by Executive Order 11246 of September 24, 1965, and by rules, regulations, and orders of the Secretary of Labor, or pursuant thereto, and will permit access to its books, records, and accounts by the administering agency and the Secretary of Labor for purposes of investigation to ascertain compliance with such rules, regulations, and orders.*
- (6) In the event of the Bidder's noncompliance with the Equal Opportunity Clause of this Contract or with any of the said rules, regulations, or orders, this Contract may be canceled, terminated, or suspended in whole or in part, and the Bidder may be declared ineligible for further Government contracts or federally assisted construction contracts in accordance with procedures authorized in Executive Order 11246 of September 24, 1965, and such other sanctions may be imposed and remedies invoked as provided in Executive Order 11246 of*

September 24, 1965, or by rule, regulation, or order of the Secretary of Labor, or as provided by law.

(7) *The Bidder will include this Equal Opportunity Clause in every subcontract or purchase order unless exempted by the rules, regulations, or order of the Secretary of Labor issued pursuant to Section 204 of Executive Order 11246 of September 24, 1965, so that such provisions will be binding upon each subcontractor or vendor. The Bidder will take such action with respect to any subcontract or purchase order as the administering agency may direct as a means of enforcing such provisions, including sanctions for noncompliance; Provided, however, that in the event Bidder becomes involved in, or is threatened with, litigation with a subcontractor or vendor as a result of such direction by the administering agency, the Bidder may request the United States to enter into such litigation to protect the interests of the United States.*

see attached EKPC additions page 1

- c. *Certificate of Nonsegregated Facilities. The Bidder certifies that it does not maintain or provide for its employees any segregated facilities at any of its establishments, and that it does not permit its employees to perform their services at any location, under its control, where segregated facilities are maintained. The Bidder certifies further that it will not maintain or provide for its employees any segregated facilities at any of its establishments, and that it will not permit its employees to perform their services at any location, under its control, where segregated facilities are maintained. The Bidder agrees that a breach of this certification is a violation of the Equal Opportunity Clause in this Contract. As used in this certification, the term "segregated facilities" means any waiting rooms, work areas, restrooms and washrooms, restaurants and other eating areas, timeclocks, locker rooms and other storage or dressing areas, parking lots, drinking fountains, recreation or entertainment areas, transportation, and housing facilities provided for employees which are segregated by explicit directive or are in fact segregated on the basis of race, color, religion, or national origin, because of habit, local custom, or otherwise. The Bidder agrees that (except where it has obtained identical certifications from proposed subcontractors for specific time periods) it will obtain identical certifications from proposed subcontractors prior to the award of subcontracts exceeding \$10,000 which are not exempt from the provisions of the Equal Opportunity Clause, and that it will retain such certifications in its files.*

Section 6. Successors and Assigns. *Each and all of the covenants and agreements herein contained shall extend to and be binding upon the successors and assigns of the parties hereto. The Owner and Bidder acknowledge that this Contract is assigned to the Government, acting through the Administrator, for security purposes under the Owner's mortgage and security instrument.*

Section 7. Independent Contractor. *The Bidder shall perform the work as an independent contractor, not as a subcontractor, agent, or employee of the Owner. Upon acceptance of this Proposal, the successful Bidder shall be the Contractor and all references in the Proposal to the Bidder shall apply to the Contractor.*

Section 8. Approval by the Administrator: This contract does _____, does not X, require approval of the Administrator. No acceptance of a Proposal for a contract upon which approval of the Administrator is required shall become effective until the contract has been approved by the Administrator; provided that no obligation shall arise hereunder unless such approval is given within one-hundred twenty (120) days after the date set for the opening of the proposals. The acceptance of a Proposal for a contract upon which approval of the Administrator is not required shall become effective the date of acceptance by the Owner.

ATTEST

David A. Best
ASST. Secretary

Dated _____

Meade Electric Company, Inc.

Bidder

Chad Cant

Vice President

9550 W. 55th Street, Suite A
McCook, IL 60525

Address

The Proposal must be signed with the full name of the Bidder. If the Bidder is a partnership, the Proposal must be signed in the partnership name by a partner. If the Bidder is a corporation, the Proposal must be signed in the corporate name by a duly authorized officer and the corporate seal affixed and attested by the Secretary of the Corporation.

ACCEPTANCE

Subject to the approval of the Administrator, if approval of the Administrator is required, the Owner hereby accepts the foregoing Proposal of the Bidder, Meade Electric Company, Inc.

for the following Equipment
480 Volt Motor Control Center, Variable Frequency Drive (VFD), shipping to
the Pendleton County Landfill, 1374 Bryan Griffin Road, Butler, Kentucky 41006,
as quoted by Revere Electric Supply, and a Meade handling adder.

for a total contract price of \$ 61,773.00 (Sixty-One Thousand Seven Hundred
Seventy-Three dollars.)

East Kentucky Power Cooperative, Inc.
Owner
By *Douglas W. V.P. In Charge*
President & CEO

Secretary

5/04/06, 2006
Date of Contract

EKPC Additlons, Page 9 dated March 7, 2005

The Following Additional General Conditions Shall be Added to This Contract RUS Form 198:

Page 9, Article VI, Section 5, the following paragraph will be added as (8)

- "(8) When this order and contract refer to manufactured goods or to work or services, Seller warrants and agrees that it has complied and will comply with (1) Fair Labor Standards Act; (2) Social Security and Workman's Compensation Laws, if work is done on Purchaser's premises; and (3) all other applicable Federal, State and local laws, codes and regulations. It is the policy of Purchaser to provide equal opportunities in employment without regard to race, color, religion, sex, age, or national origin and to employ and advance qualified disabled veterans, handicapped or disabled persons and Vietnam era veterans. Purchaser complies with the requirements placed on government contractors and subcontractors by Executive Order 11246, Section 402 of the Vietnam Era Veterans Readjustment Assistance Act of 1974 and Section 503 of the Rehabilitation Act of 1973, and it is agreed that as a Subcontractor, vendor, or supplier, Seller will also comply with the Executive Order, laws, and applicable rules and regulations. Seller agrees to indemnify Purchaser and save Purchaser harmless if Seller fails to comply with the foregoing, and in the event of such failure Purchaser may, in addition, cancel this order and contract. Seller invoices for work or materials covered hereby shall state that Seller has complied with the requirements of the Fair Labor Standards Act of 1938 as amended."

U.S. DEPARTMENT OF AGRICULTURE

**CERTIFICATION REGARDING DEBARMENT, SUSPENSION, AND OTHER
RESPONSIBILITY MATTERS - PRIMARY COVERED TRANSACTIONS**

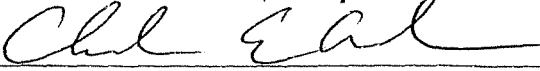
This certification is required by the regulations implementing Executive Order 12549, Debarment and Suspension, 7 CFR 3017, Section 3017.510, Participants' responsibilities. The regulations were published as Part IV of the January 30, 1989, Federal Register (pages 4722 - 4733). Copies of the regulations may be obtained by contacting the Department of Agriculture agency offering the proposed covered transaction.

(BEFORE COMPLETING CERTIFICATION, READ INSTRUCTIONS ON THE FOLLOWING PAGE)

- (1) The prospective primary participant certifies to the best of its knowledge and belief, that it and its principals:
- (a) are not presently debarred, suspended, proposed for debarment, declared ineligible, or voluntarily excluded from covered transactions by any Federal department or agency;
 - (b) have not within a three-year period preceding this proposal been convicted of or had a civil judgment rendered against them for commission of fraud or a criminal offense in connection with obtaining, attempting to obtain, or performing a public (Federal, State or local) transaction or contract under a public transaction; violation of Federal or State antitrust statutes or commission of embezzlement, theft, forgery, bribery, falsification or destruction of records, making false statements, or receiving stolen property;
 - (c) are not presently indicted for or otherwise criminally or civilly charged by a governmental entity (Federal, State or local) with commission of any of the offenses enumerated in paragraph (1)(b) of this certification; and
 - (d) have not within a three-year period preceding this application/proposal had one or more public transactions (Federal, State or local) terminated for cause or default.
- (2) Where the prospective primary participant is unable to certify to any of the statements in this certification, such prospective participant shall attach an explanation to this proposal.

Meade Electric Company, Inc.
Organization Name PR/Award or Project Name

Charles E. Anderson
Name and Title of Authorized Representative

 5/1/2006
Signature Date

LOBBYING CERTIFICATION

Certification for Contracts, Grants, Loans, and Cooperative Agreements

The undersigned certifies, to the best of his or her knowledge and belief, that:

(1) No Federal appropriated funds have been paid or will be paid, by or on behalf of the undersigned, to any person for influencing or attempting to influence an officer or employee of any agency, a Member of Congress, an officer or employee of Congress, or an employee of a Member of Congress in connection with the awarding of any Federal contract, the making of any Federal grant, the making of any Federal loan, the entering into of any cooperative agreement, and the extension, continuation, renewal, amendment, or modification of any Federal contract, grant, loan, or cooperative agreement.

(2) If any funds other than Federal appropriated funds have been paid or will be paid to any person for influencing or attempting to influence an officer or employee of any agency, a Member of Congress, an officer or employee of Congress, or an employee of a Member of Congress in connection with this Federal contract, grant, loan, or cooperative agreement, the undersigned shall complete and submit Standard Form-LLL, "Disclosure Form to Report Lobbying," in accordance with its instructions.

(3) The undersigned shall require that the language of this certification be included in the award documents for all subawards at all tiers (including subcontracts, subgrants, and contracts under grants, loans, and cooperative agreements) and that all subrecipients shall certify and disclose accordingly.

This certification is a material representation of fact upon which reliance was placed when this transaction was made or entered into. Submission of this certification is a prerequisite for making or entering into this transaction imposed by section 1352, title 31, U.S. Code. Any person who fails to file the required certification shall be subject to a civil penalty of not less than \$10,000 and not more than \$100,000 for each such failure.

Meade Electric Company, Inc.

Organization Name

Charles E. Anderson

Name of Authorized Official



Signature

5/1/2006
Date



9550 W. 55th Street • Suite A • McCook, IL 60525 • (708) 588-2500

March 20, 2006

Revere Electric
ATTN: Ron Pyrzynski
2501 W. Washington
Chicago, IL 60612

RE: East Kentucky Power Cooperative Landfill Gas Energy Project
480Volt Motor Control Center Equipment Bid Solicitation

Dear Mr. Pyrzynski:

The Meade Electric Company is issuing equipment bid solicitations for the East Kentucky Power Cooperative Landfill Gas Energy Project in Pendleton County, near Falmouth, KY

The following documentation should be utilized in the preparation of your bid:

- Specification sheet
- Equipment bid sheet
- MCC Tabulation Sheet

Please note that your bids should include the attached bid sheet, a list of any exceptions and clarifications, and any product descriptive literature which you believe is necessary to fully define your offering.

Bids are due by 2:00 p.m. March 31, 2006 and should be submitted to:

Ralph Tyree
East Kentucky Power Cooperative
4775 East Lexington Road
Winchester, KY 40391
Telephone: 859-744-4812
Fax: 859-744-6008

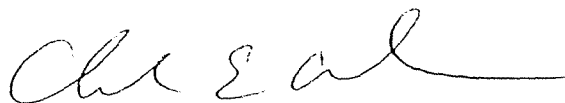
A copy of your proposal should be sent to my attention at the address indicated on this letterhead. Submission of bids by facsimile is acceptable. East Kentucky Power Cooperative will conduct a private bid opening and reserves the right to reject any and all bids.

March 20, 2006
Revere Electric
ATTN: Ron Pyrzynski
Page Two

Equipment delivery is being requested on or before August 31, 2006. Pricing should include delivery F.O.B. job site, and additional pricing information should be provided for extended warranty. Contract terms will be per RUS Form 198.

If you have any technical questions, please contact me in writing via fax at 708-588-2501 or via e-mail at canderson@meadeelectric.com

Sincerely,



Charles E. Anderson
Vice President

cc: R. Tyree
Enclosures

EQUIPMENT BID SHEET
480V MOTOR CONTROL CENTER – 5 Engine Configuration

PHYSICAL DATA:

Dimensions: _____ L X _____ W X _____ H

Weight: _____ Lbs

ELECTRICAL DATA:

Main Bus Rating: Material = _____, _____ A Continuous, _____ A Withstand

Section Bus Rating: Material = _____, _____ A Continuous, _____ A Withstand

Main Breaker: Type = _____, _____ A Continuous, _____ A Interrupting

Feeder Breaker: Motor Circuit Protector Type = _____, _____ A Interrupting

Thermal Magnetic Type = _____, _____ A Interrupting

PRICING QUOTATION:

Price for MCC: \$ _____

Shipping to Pendleton County Landfill site (Falmouth, KY): \$ _____

Total Price, MCC plus Shipping: \$ _____

MISCELLANEOUS INFORMATION:

Anticipated shop drawing date: _____ Days A.R.O.

Anticipated ship date: _____ Days A.R.O.

Standard Warranty Period: _____ after _____

Pricing for Extended Warranty (18 months after delivery): \$ _____

CLARIFICATIONS & EXCEPTIONS:

480V Motor Control Center Specification Sheet

Description:

The Motor Control Center (MCC) shall be a three phase, dead-front, free standing floor-mounted, indoor device consisting of draw-out unit buckets and fixed bus work housed in a sheet metal enclosure. The MCC shall be designed for power plant service and shall meet or exceed all applicable ANSI, NEMA, IEEE standards, and NEC® and CEA specifications.

The MCC vertical sections shall be approximately 20" wide by 20" deep by 90" high, and shall contain fully rated horizontal copper bus, 300A vertical copper bus, and a 1/4" by 2" copper ground bus. Wireways shall be provided on the bottom and right side of each vertical section for power and control wiring. Conduit entrance will be from the bottom of the MCC.

Unit buckets shall be plug-in and include safety features such as an interlocked door latching mechanism and padlockable handle mechanism with positive trip indication. Each unit bucket shall be provided with a control power transformer, indicating lights, control switches, and pull apart terminal blocks as indicated. The control power transformer shall be sized for the control load requirements plus 50VA, and be protected by primary and secondary fuses. Indicating lights shall be 120V AC transformer type and be provided with faceplates. Control switches shall contain operator, contact blocks and faceplates. Engraved phenolic nameplates shall be provided on each unit bucket with descriptions as indicated.

Overcurrent devices shall be 3 pole, thermal-magnetic circuit breakers for general purpose loads, and 3 pole, magnetic only circuit breakers with adjustable elements for motor starter protection. The main circuit breaker shall be thermal-magnetic and contain an adjustable magnetic trip element.

Full Voltage Non-Reversing (FVNR) and Two Speed Two Winding (TSTW) Starters shall consist of NEMA rated 3 pole devices with 120VAC coil and normally open (N.O.) and normally closed (N.C.) auxiliary contacts provided as required. Two speed contactors shall be mechanically and electrically interlocked, and provided with a time-delay relay having an adjustable 1 to 30 second delay range, to provide for motor speed coast down when transitioning from high to low speeds. Motor Overload protection devices shall be thermal bimetallic type with adjustable current setting range, manual reset, and contact for control circuit interlock.

Variable frequency drives (VFD) shall be designed to control NEMA Design B motors in variable torque (fan) applications. The drives shall provide volts/hertz control over a minimum 10 to 90 Hz output range with capability for 150% 1 minute overload, +/- 3 Hz line frequency variation and +/-10% line voltage variation. The drive shall contain integral over-current, motor overload, ground fault, over-voltage and over-temperature protection. The drives shall include input line filters to limit harmonic noise to within the specifications indicated by IEEE Standard 519-1992. The drive control system shall

provide for PID loop control with 4-20mA Input Signal, Local Speed Display, Auto/Manual Speed Control Selector, Local Manual Speed Control (e.g., potentiometer), and auxiliary dry contacts. The drive shall be a minimum of 95% efficient.

The MCC shall include a solid state metering and voltage protection device (IQ DP-4000 or equal). capable of measuring volts, amps, frequency, watts, VARs, volt-amperes, and % total harmonic distortion, and also providing alarm contact outputs for over-voltage, under-voltage, phase loss, phase unbalance and phase reversal. The metering device shall be provided with necessary current and potential transformers and overcurrent protection.

The MCC Finish shall include a three-step electrodeposited and oven-hardened epoxy primer (E-coat), as well as a polyester powder coat and a urethane final coat. Color shall be manufacturer's standard ANSI white on bucket interior and gray on MCC exterior.

Tests to be performed on the MCC shall include:

- Insulation Resistance
- Over Potential
- Control Circuit Functional Test
- Other Routine Manufacturer Tests

Electrical Ratings:

Voltage Rating:	480Y/277
Nominal Insulation Rating (Volts):	600V
60-Hz Dry 1 min Withstand:	1.6kV
Main Horizontal Bus Continuous Current Rating:	600A
Vertical Bus Continuous Current Rating:	300A
Fault Current Withstand Rating:	42,000A rms sym minimum
Overcurrent Device Interrupting Rating:	25,000A rms sym minimum

Terminal Cable Connections:

Main Breaker Terminals:	2 – 500kcmil per Phase
Grounding Bus:	#4/0 AWG NEMA 2 Hole (maximum)

Approved Manufacturers:

Allen-Bradley
Cutler-Hammer
Square D

Motor Control Center Tabulation Sheet

MCC Designation: MCC
 Electrical Ratings: 480V, 3 Phase, 3 Wire, 60 Hz
 600A Continuous, 42,000A rms Symmetrical Interrupting
 Enclosure: NEMA 1A
 Class/Type: Class 1, Type B Wiring
 MCB Location: Bottom Left
 Ground Bus Location: Bottom
 Conduit Entrance: Bottom Only

#	UNIT TYPE	UNIT RATING	LOAD RATING	LOAD F.L.A.	CONTROL CIRCUIT DEVICES			OTHER DEVICES	NAMEPLATE ENGRAVING			
					UNIT C.P.T.	CONTROL SWITCHES	INDICATING LIGHTS		AUX. CONTACTS N.O.	N.C.	LINE 1	LINE 2
1	MCB	600A	440KVA*	528*	n/a	n/a	n/a	n/a	n/a	MCC	Main Circuit	Breaker
2	R&M	600A	n/a	n/a	n/a	n/a	n/a	n/a	n/a	Relaying and	Metering	Devices
3	VFD	Size 5	150HP	156	1	H-O-A	R,G	2	2	Fuel Gas	Compressor	Motor
4	TSSW	Size 1	5/1.25HP	7.8/3	1	H-O-A-L-H	R,G	2**	2**	Gas Compressor	Cooler	Motor
5	VFD	Size 2	25HP	34	1	H-O-A	R,G	2	2	Engine #1	Radiator	Fan Motor
6	VFD	Size 2	25HP	34	1	H-O-A	R,G	2	2	Engine #2	Radiator	Fan Motor
7	VFD	Size 2	25HP	34	1	H-O-A	R,G	2	2	Engine #3	Radiator	Fan Motor
8	VFD	Size 2	25HP	34	1	H-O-A	R,G	2	2	Engine #4	Radiator	Fan Motor
9	VFD	Size 2	25HP	34	1	H-O-A	R,G	2	2	Engine #5	Radiator	Fan Motor
10	FVNR	Size 1	10HP	14	1	H-O-A	R,G	2	2	Engine Room	Supply Fan	Motor #SF-1
11	FVNR	Size 1	10HP	14	1	H-O-A	R,G	2	2	Engine Room	Supply Fan	Motor #SF-2
12	FVNR	Size 1	10HP	14	1	H-O-A	R,G	2	2	Engine Room	Supply Fan	Motor #SF-3
13	FVNR	Size 1	10HP	14	1	H-O-A	R,G	2	2	Engine Room	Supply Fan	Motor #SF-4
14	FVNR	Size 1	10HP	14	1	H-O-A	R,G	2	2	Engine Room	Supply Fan	Motor #SF-5
15	FVNR	Size 1	5HP	7.6	1	H-O-A	R,G	2	2	Engine Room	Exhaust Fan	Motor #EF-1
16	FVNR	Size 1	5HP	7.6	1	H-O-A	R,G	2	2	Engine Room	Exhaust Fan	Motor #EF-2
17	FVNR	Size 1	5HP	7.6	1	H-O-A	R,G	2	2	Engine Room	Exhaust Fan	Motor #EF-3
18	FVNR	Size 1	5HP	7.6	1	H-O-A	R,G	2	2	Engine Room	Exhaust Fan	Motor #EF-4
19	FVNR	Size 1	5HP	7.6	1	H-O-A	R,G	2	2	Engine Room	Exhaust Fan	Motor #EF-5
20	FVNR	Size 1	1HP	1.8	1	H-O-A	R,G	2	2	Engine Room	Exhaust Fan	Motor #EF-6
21	FVNR	Size 1	0.5HP	24	1	H-O-A	R,G	2	2	Compressor Rm	Exhaust Fan	Fan Motor
22	CB	20A	10HP	1.1	n/a	n/a	n/a	n/a	n/a	Engine Crank	Case Vent	Fan Motor
23	CB	30A	17.4KVA	24	n/a	n/a	n/a	n/a	n/a	Air Compressor	Room Control	Feeder
24	CB	125A	50KVA	104	n/a	n/a	n/a	n/a	n/a	Control	Room HVAC	#RTU-1
25	CB	70A	45KVA	54	n/a	n/a	n/a	n/a	n/a	Transformer T-3 & Panelboard	#DP-1 Feed	#DP-2 Feed
26	CB	50A	30KW	36	n/a	n/a	n/a	n/a	n/a	Transformer T-4 & Panelboard	#DP-1 Feed	#DP-2 Feed
27	CB	20A	3HP	5.4	n/a	n/a	n/a	n/a	n/a	Engine Room	Unit Heaters	#UH-1, 2 & 3
28	FVNR	Size 1	n/a	n/a	1	H-O-A	R,G	2	2	Condensate	Pump	Feed
29	CB	30A	n/a	n/a	n/a	n/a	n/a	n/a	n/a	Spare	Spare	
30	CB	20A	n/a	n/a	n/a	n/a	n/a	n/a	n/a	Spare	Spare	

LEGEND: MCB Main Circuit Breaker
 G.F.I. Ground Fault Interrupting Device
 R&M Electronic Protective Relaying & Metering Devices
 PT Potential Transformer
 CT Current Transformer
 FVNR Full Voltage Non-Reversing Combination Starter
 TSTW Two Speed Two Winding Combination Starter
 CB Circuit Breaker
 XFMR Dry Type Power Transformer
 PNLBD Panelboard
 VFD Variable Frequency Drive

NOTES:
 * - Maximum Coincidental Load
 ** - Provide for both High-Speed and Low-Speed Contactors
 VFD+ - Provisions only for future VFD additions.

OTHER DEVICES:
 CPT Control Power Transformer
 H-O-A Hand-Off-Auto, 3 Position, Maintained Contact Selector Switch
 L-H Low-High, 2 Position, Maintained Contact Selector Switch
 R Red (Run) Indicating Light
 G Green (Stopped) Indicating Light
 n/a Not Applicable

Ralph Tyree

From: Chuck Anderson [canderson@meadeelectric.com]
Sent: Saturday, April 01, 2006 8:33 AM
To: Ralph Tyree
Cc: Kenneth Lutes
Subject: FW: East Kentucky Quotation MCC

Ralph,

Attached is the quote from Revere Electric, which is the Allen-Bradley rep. that supplied the Hardin County MCC through Meade. Hopefully we will get another quote through the local Allen-Bradley rep.

Chuck

From: Ron Pyrzynski [mailto:rpyrzynski@revereelectric.com]
Sent: Fri 3/31/2006 2:06 PM
To: Chuck Anderson
Cc: Randy Hradek; John F Lang
Subject: RE: East Kentucky Quotation MCC

Chuck,

Revere Electric is pleased to quote Meade Electric, Mc Cook, IL. for a MCC that is to be installed by Meade Engineers at the East Kentucky Power Cooperative.

Meade cost on this project is \$58,173.00

Freight charge is approx. \$700.00 to site location.

Lead times are 5 weeks for drawings and 15 weeks after release for assembly. (this is extremely close to the requested date of 8-31-2006)

Standard warranty is 1 year, extended warranty for 1 additional year is 5% of \$58,173.00 which is \$2,910.00

Please review the attachment for specifics on this project.

If you have questions, John Lang, AB Representative and I are available.

Ron

-----Original Message-----

From: Chuck Anderson [mailto:canderson@meadeelectric.com]
Sent: Thursday, March 30, 2006 7:54 AM
To: Ron Pyrzynski
Subject: RE: East Kentucky Quotation MCC

Ron,

Please quote me at Meade.

Thanks,

4/3/2006

	1	PER WIRING DIAGRAM Y297329		
17	1	2113B-BAB-3-4RG-6XP-35CA-90011	1.0	SCI
18	1	2163RA-180NKB-3-4RG-14DA1C-14HBA4-14RLX-52CA	6.0	SCII
20	1	2113B-BAB-3-4RG-6XP-33CA-90011	1.0	SCI
21	1	2100-BK10	1.0	SCI
		DOCUMENTATION - WITHIN EACH UNIT		
	45	HEATER ELEMENTS		SCI
	31	NAMEPLATES (ENGRAVED PHENOLIC)		SCI

Total Space Factors Used = 48.0
Delivery Program Type = ENG

The details of the proposed motor control center are as follows:

CATEGORY	DESCRIPTION
Total Section(s)	8
Total Shipping Block(s)	4
Section Depth	Front Mounted, 20" Deep
Section Height	90" High
Enclosure	1G - with Gasketed Doors
MCC Connection Type	Main Circuit Breaker
Incoming Cable Entry	Bottom, Section 1
Main Bus Rating	600A
Main Bus Material	Copper / Tin Plated
Main Bus Bracing	42kA (rms symmetrical)
Horizontal Ground Bus	1/4" X 2", Bottom, Unplated Copper
Vertical Ground Bus	Plug-in Zinc Plated Steel
Stab Opening Protection	None
Master Nameplate	No

Quotation Prepared For: EAST KENTUCKY POWER
By Salesperson: 005
MCC Name: 480 VOLT MCC
A-B Reference: 01241359/0001
Wiring Type: B-T Control and Power Terminal Blocks
Enclosure Type: 1G - with Gasketed Doors
Volts: 480 Volts / 60 Hertz
Date/Time: 03/30/06 - 15:00

Motor Control Center Details

Wiring Diagram within Each Unit
Section Depth: Front Mounted, 20" Deep
Section Height: 90" High
Bottom Plate(s): No

MCC Connection Type: Main Circuit Breaker
Incoming Line Cable Entry: Bottom
Ground Lug Size: #6 AWG - 250 kcmil (2 Supplied as Standard)

Main Bus Rating: 600A
Main Bus Material: Copper / Tin Plated
Main Bus Bracing: 42kA (rms symmetrical)
Horizontal Ground Bus Size: 1/4" X 2"
Horizontal Ground Bus Location: Bottom
Vertical Ground Bus Type: Plug-in Zinc Plated Steel
Ground Bus Plating: None

Stab Opening Protection: None
Neutral Connection Plate Location: None
Master Nameplate Quantity: 0

Total Section(s): 8
Total Blocks(s): 4
Total Unit(s): 31

Section by Section Details

Section Number: 01

Section Width: 20" wide
Enclosure Width: 20" wide
Incoming Lug Compartment: Yes

Section Number: 02

Section Width: 20" wide
Enclosure Width: 20" wide

Section Number: 03

Section Width: 20" wide
Enclosure Width: 20" wide

Section Number: 04

Section Width: 20" wide
Enclosure Width: 20" wide

Section Number: 05

Section Width: 25" wide
Enclosure Width: 25" wide

Section Number: 06

Section Width: 20" wide
Enclosure Width: 20" wide

Section Number: 07

Section Width: 20" wide
Enclosure Width: 20" wide

Section Number: 08

Section Width: 20" wide
Enclosure Width: 20" wide

QTY	UNIT DESCRIPTION
1	Main 3-Pole Circuit Breaker - 600A Frame Rating - Bottom Mounted with 600A Trip
5	Full Voltage Non-Reversing Starter - 10 HP with Circuit Breaker Instantaneous
5	Full Voltage Non-Reversing Starter - 5 HP with Circuit Breaker Instantaneous
2	Feeder 3-Pole Circuit Breaker - 150A Frame Rating with 30A Trip
3	Feeder 3-Pole Circuit Breaker - 150A Frame Rating with 20A Trip
1	Feeder 3-Pole Circuit Breaker - 150A Frame Rating with 125A Trip
1	Feeder 3-Pole Circuit Breaker - 150A Frame Rating with 70A Trip
1	Feeder 3-Pole Circuit Breaker - 150A Frame Rating with 50A Trip
1	Full Voltage Non-Reversing Starter - 10 HP with Circuit Breaker Instantaneous
1	Feeder Fusible Disconnect Switch - 30A Rating with Fuse Clip Class CC
5	Variable Frequency AC Drive (Power Flex 700) - 25 HP with Circuit Breaker Instantaneous
1	Two Speed 1-Winding Starter - 5 HP with Circuit Breaker Instantaneous
1	Full Voltage Non-Reversing Starter - 1 HP with Circuit Breaker Instantaneous
1	Variable Frequency AC Drive (Power Flex 700) - 150 HP with Circuit Breaker Instantaneous
1	Full Voltage Non-Reversing Starter - 0.5 HP with Circuit Breaker Instantaneous
1	Blank Unit Door - 1.0 Space Factor

Note: Additional description report printouts, specific to this MCC available upon request include:

- Detailed Unit and Option description - one Unit ID per page.
- Spreadsheet printout with Unit Catalog numbers and Options.
- Spreadsheet printout with Unit Nameplate legend data.
- Spreadsheet printout with Unit Heater Element data.

MCC Name: 480 VOLT MCC
Customer Name: EAST KENTUCKY POWER

Unit ID: 1
Unit Description: Mains /MCB - Main 3-Pole Circuit Breaker
Allen-Bradley Catalog: 2193MB-EKC-52CT-80B500
Unit Location(s): 01J
Delivery Program: SC-II
Line Voltage: 480 Volts / 60 Hertz
Disconnect Type: Circuit Breaker
Enclosure Type: 1G - with Gasketed Doors
Space Factor: 2.0
Required Section Width: 20"
Wiring Diagram: CS70593808

Circuit Breaker Description...
35k at 480V (LD Frame) with Frame Rating of 600A
Bottom Mounted
600A Trip

Lugs Supplied...
Mechanical Type Line Lugs for Copper/Aluminum Wire
500 kcmil Size Wire
2 Cables Per Phase

Unit Nameplate
Phenolic - White with Black Letters
MCC
MAIN CIRCUIT
BREAKER

Options...

MCC Name: 480 VOLT MCC
Customer Name: EAST KENTUCKY POWER

Unit ID: 3
Unit Description: Contactors and Starters /FVNR - Full Voltage Non-Reversing
Allen-Bradley Catalog: 2113B-BAB-3-4RG-6XP-41CA-90011
Unit Location(s): 04A 04C 04E 04G 08A
Delivery Program: ENGR
Line Voltage: 480 Volts / 60 Hertz
Disconnect Type: Circuit Breaker
Enclosure Type: 1G - with Gasketed Doors
Space Factor: 1.0
Unit Size: 1
Required Section Width: 20"
Wiring Diagram: CS70578323

Wiring...
B-T Control and Power Terminal Blocks

Horsepower...
10 HP

Circuit Breaker...
Instantaneous
100kA at 480V (HMCP Frame)

Control...
Transformer with Secondary Fuse
100 Watt Extra Capacity
Primary Fusing
120V/60Hz

Control Wiring...
#16 AWG Cu, Type MTW

Unit Nameplate
Phenolic - White with Black Letters
Location: 04A
ENGINE ROOM
SUPPLY FAN
MOTOR #SF-2

Location: 04C
ENGINE ROOM
SUPPLY FAN
MOTOR #SF-3

Location: 04E
ENGINE ROOM
SUPPLY FAN
MOTOR #SF-4

Location: 04G
ENGINE ROOM
SUPPLY FAN
MOTOR #SF-5

MCC Name: 480 VOLT MCC
Customer Name: EAST KENTUCKY POWER

Unit ID: 3

Unit Nameplate (Continued)

Location: 08A
SPARE

Overload Relay(s)...
Eutectic

Heater Element(s)...
Rpm = 1800
Full Load Current = 14.000
Heater Element = W55
Service Factor = 1.15

Options...
Add Selector Switch : HAND-OFF-AUTO (-3/-3F for AC Drives)
Add Pilot Light(s) : ON-OFF, Type : Standard, Color(s) : Red-Green
Add Starter Mounted Auxiliary Contacts : 2 Normally Open, 2 Normally Closed

Engineered Spec(s)/Modification(s)...
Modifications (Quantity/Mods).
(1) W/700CF WIRED CONTROL RELAY(2 N.O. 2 N.C.)
(1) PER DIAGRAM Y317552

MCC Name: 480 VOLT MCC
Customer Name: EAST KENTUCKY POWER

Unit ID: 4
Unit Description: Contactors and Starters /FVNR - Full Voltage Non-Reversing
Allen-Bradley Catalog: 2113B-BAB-3-4RG-6XP-39CA-90011
Unit Location(s): 03C 03E 03G 03J 03L
Delivery Program: ENGR
Line Voltage: 480 Volts / 60 Hertz
Disconnect Type: Circuit Breaker
Enclosure Type: 1G - with Gasketed Doors
Space Factor: 1.0
Unit Size: 1
Required Section Width: 20"
Wiring Diagram: CS70578323

Wiring...
B-T Control and Power Terminal Blocks

Horsepower...
5 HP

Circuit Breaker...
Instantaneous
100kA at 480V (HMCP Frame)

Control...
Transformer with Secondary Fuse
100 Watt Extra Capacity
Primary Fusing
120V/60Hz

Control Wiring...
#16 AWG Cu, Type MTW

Unit Nameplate
Phenolic - White with Black Letters
Location: 03C
ENGINE ROOM
EXHAUST FAN
MOTOR #EF-1

Location: 03E
ENGINE ROOM
EXHAUST FAN
MOTOR #EF-2

Location: 03G
ENGINE ROOM
EXHAUST FAN
MOTOR #EF-3

Location: 03J
ENGINE ROOM
EXHAUST FAN
MOTOR #EF-4

MCC Name: 480 VOLT MCC
Customer Name: EAST KENTUCKY POWER

Unit ID: 4

Unit Nameplate (Continued)

Location: 03L
ENGINE ROOM
EXHAUST FAN
MOTOR #EF-5

Overload Relay(s)...

Eutectic

Heater Element(s)...

Rpm = 1800
Full Load Current = 7.600
Heater Element = W49
Service Factor = 1.15

Options...

Add Selector Switch : HAND-OFF-AUTO (-3/-3F for AC Drives)
Add Pilot Light(s) : ON-OFF, Type : Standard, Color(s) : Red-Green
Add Starter Mounted Auxiliary Contacts : 2 Normally Open, 2 Normally Closed

Engineered Spec(s)/Modification(s)...

Modifications (Quantity/Mods):
(1) W/700CF WIRED CONTROL RELAY(2 N.O. 2 N.C.)
(1) PER DIAGRAM Y317552

MCC Name: 480 VOLT MCC
Customer Name: EAST KENTUCKY POWER

Unit ID: 5
Unit Description: Feeders /FCB - Feeder 3-Pole Circuit Breaker
Allen-Bradley Catalog: 2193F-AKC-32CB
Unit Location(s): 01A 03A
Delivery Program: SC-I
Line Voltage: 480 Volts / 60 Hertz
Disconnect Type: Circuit Breaker
Enclosure Type: 1G - with Gasketed Doors
Space Factor: 1.0
Required Section Width: 20"
Wiring Diagram: CS70593915

Circuit Breaker Description...
35k at 480V (FD Frame) with Frame Rating of 150A
Plug-in Unit
30A Trip

Lugs Supplied...
Standard Type Load Lugs for Copper/Aluminum Wire
#14-1/0 AWG Size Wire
1 Cables Per Phase

Unit Nameplate
Phenolic - White with Black Letters
Location: 01A
CONTROL
ROOM HVAC
#RTU-1

Location: 03A
SPARE

Options...

MCC Name: 480 VOLT MCC
Customer Name: EAST KENTUCKY POWER

Unit ID: 6
Unit Description: Feeders /FCB - Feeder 3-Pole Circuit Breaker
Allen-Bradley Catalog: 2193F-AKC-31CB
Unit Location(s): 02A 02J 02L
Delivery Program: SC-I
Line Voltage: 480 Volts / 60 Hertz
Disconnect Type: Circuit Breaker
Enclosure Type: 1G - with Gasketed Doors
Space Factor: 1.0
Required Section Width: 20"
Wiring Diagram: CS70593915

Circuit Breaker Description...
35k at 480V (FD Frame) with Frame Rating of 150A
Plug-in Unit
20A Trip

Lugs Supplied...
Standard Type Load Lugs for Copper/Aluminum Wire
#14-1/0 AWG Size Wire
1 Cables Per Phase

Unit Nameplate
Phenolic - White with Black Letters
Location: 02A
AIR COMPRESSOR
MOTOR CONTROL
FEEDER

Location: 02J
SPARE

Location: 02L
CONDENSATE
PUMP
FEED

Options...

MCC Name: 480 VOLT MCC
Customer Name: EAST KENTUCKY POWER

Unit ID: 7
Unit Description: Feeders /FCB - Feeder 3-Pole Circuit Breaker
Allen-Bradley Catalog: 2193F-BKC-41CB
Unit Location(s): 02G
Delivery Program: SC-I
Line Voltage: 480 Volts / 60 Hertz
Disconnect Type: Circuit Breaker
Enclosure Type: 1G - with Gasketed Doors
Space Factor: 1.0
Required Section Width: 20"
Wiring Diagram: CS70593916

Circuit Breaker Description...
35k at 480V (FD Frame) with Frame Rating of 150A
Plug-in Unit
125A Trip

Lugs Supplied...
Standard Type Load Lugs for Copper/Aluminum Wire
#4-4/0 AWG Size Wire
1 Cables Per Phase

Unit Nameplate
Phenolic - White with Black Letters
TRANSFORMER T-3
& PANELBOARD
#DP-1 FEED

Options...

MCC Name: 480 VOLT MCC
Customer Name: EAST KENTUCKY POWER

Unit ID: 8
Unit Description: Feeders /FCB - Feeder 3-Pole Circuit Breaker
Allen-Bradley Catalog: 2193F-AKC-37CB
Unit Location(s): 02E
Delivery Program: SC-I
Line Voltage: 480 Volts / 60 Hertz
Disconnect Type: Circuit Breaker
Enclosure Type: 1G - with Gasketed Doors
Space Factor: 1.0
Required Section Width: 20"
Wiring Diagram: CS70593915

Circuit Breaker Description...
35k at 480V (FD Frame) with Frame Rating of 150A
Plug-in Unit
70A Trip

Lugs Supplied...
Standard Type Load Lugs for Copper/Aluminum Wire
#14-1/0 AWG Size Wire
1 Cables Per Phase

Unit Nameplate
Phenolic - White with Black Letters
TRANSFORMER T-4
& PANELBOARD
#DP-2 FEED

Options...

MCC Name: 480 VOLT MCC
Customer Name: EAST KENTUCKY POWER

Unit ID: 9
Unit Description: Feeders /FCB - Feeder 3-Pole Circuit Breaker
Allen-Bradley Catalog: 2193F-AKC-35CB
Unit Location(s): 02C
Delivery Program: SC-I
Line Voltage: 480 Volts / 60 Hertz
Disconnect Type: Circuit Breaker
Enclosure Type: 1G - with Gasketed Doors
Space Factor: 1.0
Required Section Width: 20"
Wiring Diagram: CS70593915

Circuit Breaker Description...
35k at 480V (FD Frame) with Frame Rating of 150A
Plug-in Unit
50A Trip

Lugs Supplied...
Standard Type Load Lugs for Copper/Aluminum Wire
#14-1/0 AWG Size Wire
1 Cables Per Phase

Unit Nameplate
Phenolic - White with Black Letters
ENGINE ROOM
UNIT HEATERS
#UH-1,2,& 3

Options...

MCC Name: 480 VOLT MCC
Customer Name: EAST KENTUCKY POWER

Unit ID: 11
Unit Description: Contactors and Starters /FVNR - Full Voltage Non-Reversing
Allen-Bradley Catalog: 2113B-BAB-3-4RG-6XP-41CA-90011
Unit Location(s): 01E
Delivery Program: SC-I
Line Voltage: 480 Volts / 60 Hertz
Disconnect Type: Circuit Breaker
Enclosure Type: 1G - with Gasketed Doors
Space Factor: 1.0
Unit Size: 1
Required Section Width: 20"
Wiring Diagram: CS70578323

Wiring...
B-T Control and Power Terminal Blocks

Horsepower...
10 HP

Circuit Breaker...
Instantaneous
100kA at 480V (HMCP Frame)

Control...
Transformer with Secondary Fuse
100 Watt Extra Capacity
Primary Fusing
120V/60Hz

Control Wiring...
#16 AWG Cu, Type MTW

Unit Nameplate
Phenolic - White with Black Letters
ENGINE ROOM
SUPPLY FAN
MOTOR #SF-1

Overload Relay(s)...
Eutectic

Heater Element(s)...
Rpm = 1800
Full Load Current = 14.000
Heater Element = W55
Service Factor = 1.15

Options...
Add Selector Switch : HAND-OFF-AUTO (-3/-3F for AC Drives)
Add Pilot Light(s) : ON-OFF, Type : Standard, Color(s) : Red-Green
Add Starter Mounted Auxiliary Contacts : 2 Normally Open, 2 Normally Closed

MCC Name: 480 VOLT MCC
Customer Name: EAST KENTUCKY POWER

Unit ID: 14
Unit Description: Feeders /FDS - Feeder Fusible Disconnect Switch
Allen-Bradley Catalog: 2192F-BKC-24C
Unit Location(s): 01G
Delivery Program: ENGR
Line Voltage: 480 Volts / 60 Hertz
Disconnect Type: Fusible Disconnect
Enclosure Type: 1G - with Gasketed Doors
Space Factor: 1.0
Required Section Width: 20"
Wiring Diagram: CS70057589

Fusible Disconnect Switch Description...

30A Switch Rating
Plug-in Unit
Class CC Fuse Clip

Lugs Supplied

Standard Type Load Lugs for Copper Wire
#14-#8 AWG Size Wire
1 Cables Per Phase

Unit Nameplate

Phenolic - White with Black Letters
RELAYING AND
METERING
DEVICES

Options...

Engineered Spec(s)/Modification(s)...

Modifications (Quantity/Mods):
(1) C-H IQ-DP4030 METERING UNIT W/CT, PT AND CPT

MCC Name: 480 VOLT MCC

Customer Name: EAST KENTUCKY POWER

Unit ID: 15

Unit Description: Variable Frequency AC Drives /VFD - Variable Frequency AC Drive (PowerFlex 700)

Allen-Bradley Catalog: 2163RA-034NKB-3-4RG-14DA1C-14HBA4-14RLX-44CA

Unit Location(s): 06A 06G 07A 07G 08G

Delivery Program: SC-I

Line Voltage: 480 Volts / 60 Hertz

Disconnect Type: Circuit Breaker

Enclosure Type: 1G - with Gasketed Doors

Space Factor: 3.0

Required Section Width: 20"

Wiring Diagram: CS70593809

Wiring

A - No Terminal Blocks

Horsepower...

25 HP

(Normal Duty)

Circuit Breaker...

Instantaneous

100kA at 480V (HMCP Frame)

Human Interface Module...

LCD Display, Analog Potentiometer - Door Mounted

Control

Transformer with Secondary Fuse

Standard Capacity

Internal Primary Protection

120V/60Hz

Control Wiring

#16 AWG Cu, Type MTW

Unit Nameplate

Phenolic - White with Black Letters

Location: 06A

ENGINE #1

RADIATOR

FAN MOTOR

Location: 06G

ENGINE #2

RADIATOR

FAN MOTOR

Location: 07A

ENGINE #3

RADIATOR

FAN MOTOR

Location: 07G

MCC Name: 480 VOLT MCC
Customer Name: EAST KENTUCKY POWER

Unit ID: 15

Unit Nameplate (Continued)

ENGINE #4
RADIATOR
FAN MOTOR

Location: 08G
ENGINE #5
RADIATOR
FAN MOTOR

Options...

Add Pilot Light(s) : RUN-AT SPEED, Type : Standard, Color(s) : Red-Green
Add Drive Selector Switch [Auto-Manual <speed select>] (-3)
Add a line reactor (-14RLX)
Add 24VDC Control Voltage Interface with Vector Control (-14DA1C)

MCC Name: 480 VOLT MCC
Customer Name: EAST KENTUCKY POWER

Unit ID: 16
Unit Description: Contactors and Starters /TS1W - Two Speed 1-Winding
Allen-Bradley Catalog: 2123FB-BAB-4RG-6XP-39CA-90011
Unit Location(s): 04J
Delivery Program: ENGR
Line Voltage: 480 Volts / 60 Hertz
Disconnect Type: Circuit Breaker
Enclosure Type: 1G - with Gasketed Doors
Space Factor: 2.0
Unit Size: 1
Required Section Width: 20"
Wiring Diagram: CS70593810

Wiring...

B-T Control and Power Terminal Blocks

Horsepower...

5 HP

Circuit Breaker...

Instantaneous
100kA at 480V (HMCP Frame)

Control...

Transformer with Secondary Fuse
100 Watt Extra Capacity
Primary Fusing
120V/60Hz

Control Wiring...

#16 AWG Cu, Type MTW

Unit Nameplate

Phenolic - White with Black Letters
GAS COMPRESSOR
COOLER
MOTOR

Overload Relay(s)...

Eutectic

Heater Element(s)...

Rpm = 1800
Full Load Current = 7.600
Heater Element = W49
Service Factor = 1.15
Two Speed Unit
Rpm2 = 0000
Full Load Current2 = 0.000
Heater Element2 = W48

Options...

Add Pilot Light(s) : HIGH-LOW, Type : Standard, Color(s) : Red-Green

MCC Name: 480 VOLT MCC
Customer Name: EAST KENTUCKY POWER

Unit ID: 16

Options... (Continued)

Add Starter Mounted Auxiliary Contacts : 2 Normally Open, 2 Normally Closed

Engineered Spec(s)/Modification(s)...

Modifications (Quantity/Mods):

- (1) 700CF(TIMED DECELERATION TO LOW SPEED)
- (1) H-O-A SEL. SWITCH
- (1) LOW-HIGH SEL. SWITCH
- (1) PER WIRING DIAGRAM Y297329

MCC Name: 480 VOLT MCC
Customer Name: EAST KENTUCKY POWER

Unit ID: 17
Unit Description: Contactors and Starters /FVNR - Full Voltage Non-Reversing
Allen-Bradley Catalog: 2113B-BAB-3-4RG-6XP-35CA-90011
Unit Location(s): 01C
Delivery Program: SC-I
Line Voltage: 480 Volts / 60 Hertz
Disconnect Type: Circuit Breaker
Enclosure Type: 1G - with Gasketed Doors
Space Factor: 1.0
Unit Size: 1
Required Section Width: 20"
Wiring Diagram: CS70578323

Wiring...
B-T Control and Power Terminal Blocks

Horsepower...
1 HP

Circuit Breaker...
Instantaneous
100kA at 480V (HMCP Frame)

Control...
Transformer with Secondary Fuse
100 Watt Extra Capacity
Primary Fusing
120V/60Hz

Control Wiring...
#16 AWG Cu, Type MTW

Unit Nameplate
Phenolic - White with Black Letters
COMPRESSOR ROOM
EXHAUST FAN
MOTOR #EF-6

Overload Relay(s)...
Eutectic

Heater Element(s)...
Rpm = 1800
Full Load Current = 1.800
Heater Element = W34
Service Factor = 1.15

Options...
Add Selector Switch : HAND-OFF-AUTO (-3/-3F for AC Drives)
Add Pilot Light(s) : ON-OFF, Type : Standard, Color(s) : Red-Green
Add Starter Mounted Auxiliary Contacts : 2 Normally Open, 2 Normally Closed

MCC Name: 480 VOLT MCC
Customer Name: EAST KENTUCKY POWER

Unit ID: 18
Unit Description: Variable Frequency AC Drives /VFD - Variable Frequency AC Drive (PowerFlex 700)
Allen-Bradley Catalog: 2163RA-180NKB-3-4RG-14DA1C-14HBA4-14RLX-52CA
Unit Location(s): 05A
Delivery Program: SC-II
Line Voltage: 480 Volts / 60 Hertz
Disconnect Type: Circuit Breaker
Enclosure Type: 1G - with Gasketed Doors
Space Factor: 6.0
Required Section Width: 25"
Wiring Diagram: CS70593811

Wiring

A - No Terminal Blocks

Horsepower...

150 HP
(Normal Duty)

Circuit Breaker...

Instantaneous
100kA at 480V (HMCP Frame)

Human Interface Module...

LCD Display, Analog Potentiometer - Door Mounted

Control

Transformer with Secondary Fuse
Standard Capacity
Internal Primary Protection
120V/60Hz

Control Wiring

#16 AWG Cu, Type MTW

Unit Nameplate

Phenolic - White with Black Letters
FUEL GAS
COMPRESSOR
MOTOR

Options...

Add Pilot Light(s): RUN-AT SPEED, Type: Standard, Color(s): Red-Green
Add Drive Selector Switch [Auto-Manual <speed select>] (-3)
Add a line reactor (-14RLX)
Add 24VDC Control Voltage Interface with Vector Control (-14DA1C)

MCC Name: 480 VOLT MCC
Customer Name: EAST KENTUCKY POWER

Unit ID: 20
Unit Description: Contactors and Starters /FVNR - Full Voltage Non-Reversing
Allen-Bradley Catalog: 2113B-BAB-3-4RG-6XP-33CA-90011
Unit Location(s): 08C
Delivery Program: SC-I
Line Voltage: 480 Volts / 60 Hertz
Disconnect Type: Circuit Breaker
Enclosure Type: 1G - with Gasketed Doors
Space Factor: 1.0
Unit Size: 1
Required Section Width: 20"
Wiring Diagram: CS70578323

Wiring...

B-T Control and Power Terminal Blocks

Horsepower...

0.5 HP

Circuit Breaker...

Instantaneous
100kA at 480V (HMCP Frame)

Control...

Transformer with Secondary Fuse
100 Watt Extra Capacity
Primary Fusing
120V/60Hz

Control Wiring...

#16 AWG Cu, Type MTW

Unit Nameplate

Phenolic - White with Black Letters
ENGINE CRANK
CASE VENT
FAN MOTOR

Overload Relay(s)...

Eutectic

Heater Element(s)...

Rpm = 1800
Full Load Current = 1.100
Heater Element = W29
Service Factor = 1.15

Options...

Add Selector Switch : HAND-OFF-AUTO (-3/-3F for AC Drives)
Add Pilot Light(s): ON-OFF, Type : Standard, Color(s) : Red-Green
Add Starter Mounted Auxiliary Contacts : 2 Normally Open, 2 Normally Closed

MCC Name: 480 VOLT MCC
Customer Name: EAST KENTUCKY POWER

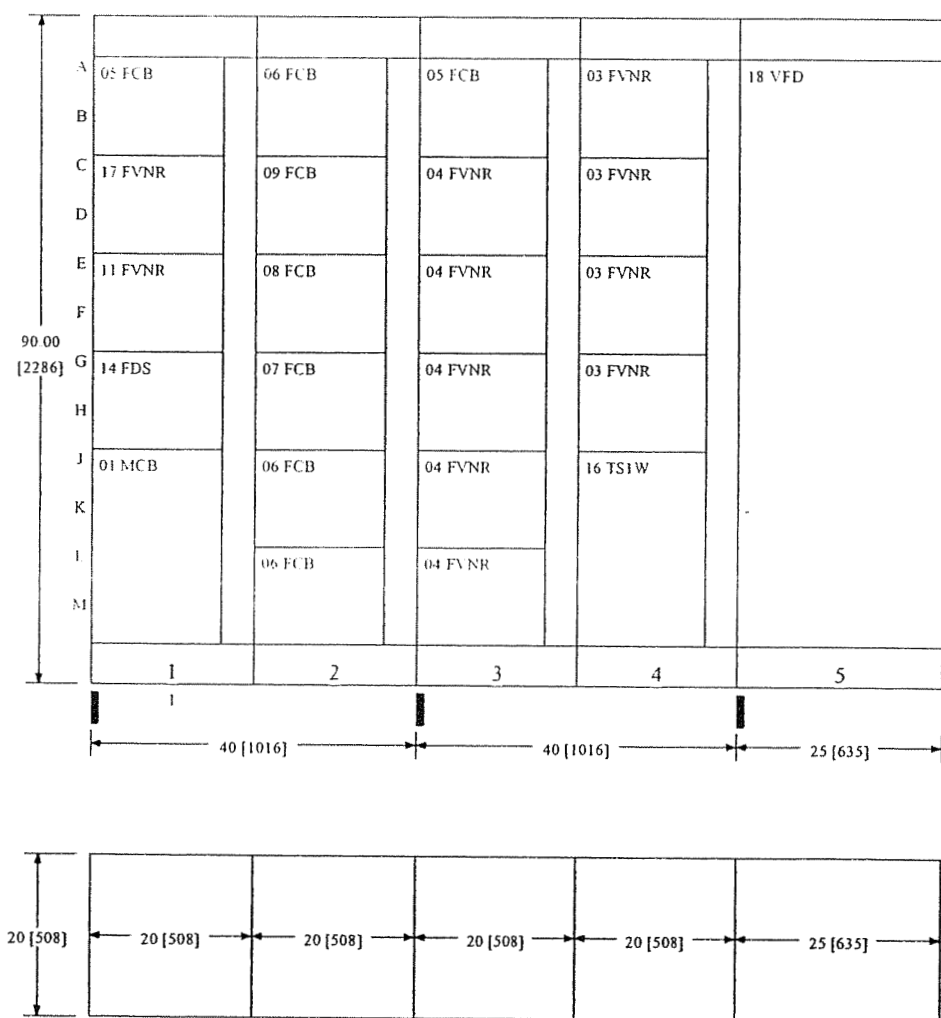
Unit ID: 21
Unit Description: Miscellaneous /DOOR - Blank Unit Door
Allen-Bradley Catalog: 2100-BK10
Unit Location(s): 08E
Delivery Program: SC-I
Line Voltage: 480 Volts / 60 Hertz
Disconnect Type: Circuit Breaker
Enclosure Type: 1G - with Gasketed Doors
Required Section Width: 20"

Space Factor...
1.0

Unit Nameplate
Phenolic - White with Black Letters
[***EMPTY NAMEPLATE***]

Options...

Rockwell Automation/Allen-Bradley
CENTERONE MOTOR CONTROL CENTER LINE-UP

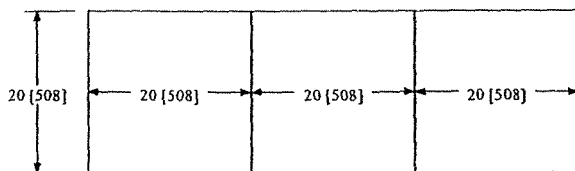
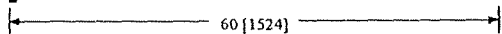
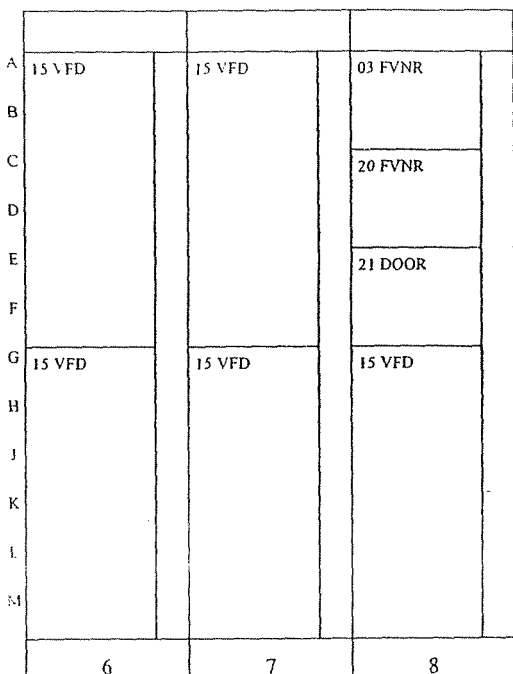


NOTE : Dimensions are subject to change after design review.
ENCLOSURE : 1G - with Gasketed Doors

SECTION CODE LEGEND
 6 = 600 amp vertical bus in section N = Neutral connection plate in section
 9 = 9-inch wireway section P = Pull box mounted on top of section
 C = Corner section V = 9-inch wireway has Vertical Neutral Bus
 I = Incoming line in section W = Implicit 9-inch wireway in section

CUSTOMER : EAST KENTUCKY POWER
 SALESPERSON : 005
 MCC : 480 VOLT MCC
 REF NUM : I241359/1
 DATE/TIME : 03/30/06 / 15:01:34

Rockwell Automation/Allen-Bradley
CENTERONE MOTOR CONTROL CENTER LINE-UP

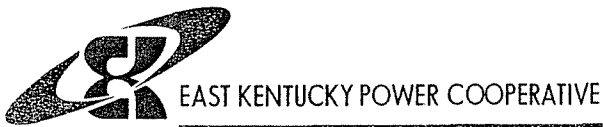


NOTE : Dimensions are subject to change after design review.
ENCLOSURE : 1G - with Gasketed Doors

SECTION CODE LEGEND

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CUSTOMER : EAST KENTUCKY POWER
SALESPERSON : 005
MCC : 480 VOLT MCC
REF NUM : 1241359/1
DATE/TIME : 03/30/06 / 15:01:34



May 18, 2006

Mr. Larry K. Peyton
Wayne Power Systems Division
14000 Cecil Avenue
P. O. Box 35900
Louisville, Kentucky 40232-5900

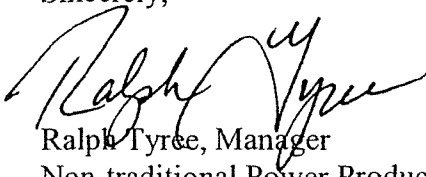
Subject: East Kentucky Power Cooperative, Inc
Pendleton County Landfill Gas to Electric Generating Facility
Revised Caterpillar Engine/Genset Purchase Contract

Dear Larry:

Please find enclosed, one (1) original executed contract for the purchase of four (4) Caterpillar 3516 LE Engine/Gensets for the Pendleton County Landfill Gas to Electric Generating plant, near Butler, Kentucky.

If you should have any questions, please contact me.

Sincerely,



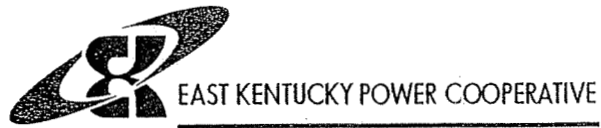
Ralph Tyree, Manager
Non-traditional Power Production Projects

c: Chuck Anderson Meade Electric Company

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Pendleton County Landfill Gas to Electric Generating Facility

Engine/Generator Systems Contract

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U.S. Department of Agriculture
Rural Utilities Service

EQUIPMENT CONTRACT

NOTICE AND INSTRUCTIONS TO BIDDERS

1. Sealed proposals for the furnishing and delivering of 4 - Caterpillar Landfill Gas Engine/Generator Systems East Kentucky Power Cooperative, Inc., Pendleton of equipment for the rural electric project of County Landfill Gas to Electric Generating Facility RUS designation Ky 59 Fayette, (hereinafter called the "Owner") will be received by the Owner on or before _____ o'clock _____ M., _____, 20____, at its office at 4775 Lexington Road, Winchester KY at which time and place the proposals will be _____ publicly opened and read.
 privately opened. The Owner, subsequent to the bid opening, may elect to conduct clarifying discussions with the bidder to resolve any questions related to the substance of the bidder's proposal and to arrive at a final price for a responsive bid.
Any proposals received subsequent to the time specified will be promptly returned to the Bidder unopened.
2. **Obtaining Documents.** The Plans, Specifications, and Construction Drawings, together with all necessary forms and other documents for bidders may be obtained from the Owner, or from the Engineer Meade Electric Company, Inc. at the latter's office at 9550 W 55th Street Suite A, McCook, IL upon the payment of \$ Not Applicable, which payment will not be subject to refund. The Plans, Specifications, and Construction Drawings may be examined at the office of the Owner or at the office of the Engineer.
3. **Manner of Submitting Proposals.** Proposals and all supporting instruments must be submitted on the forms furnished by the Owner and must be delivered in a sealed envelope addressed to the Owner. The name and address of the Bidder and the date and hour of the opening of bids must appear on the envelope in which the Proposal is submitted. Proposals must be completed in ink or typewritten. No alterations or interlineations will be permitted, unless made before submission, and initialed and dated. The successful Bidder will be required to execute two additional counterparts of the Proposal.
4. **Due Diligence.** Prior to the submission of the Proposal, the Bidder shall make and shall be deemed to have made a careful examination of the Plans, Specifications, Construction Drawings, and form of Proposal, and shall review the location and nature of the proposed construction, the transportation facilities, the kind and character of soil and terrain to be encountered, the kind of facilities required before and during the construction of the project, general local conditions, environmental and historic preservation considerations, and all other matters that may affect the cost and time of completion of the work. Bidder will be required to comply with all federal, state, and local laws, rules, and regulations applicable to its performance, including those pertaining to the licensing of contractors, and the Anti Kick-Back Act of 1986 (41 U.S.C. 51 et seq)
5. Proposals will be accepted only from those prequalified bidders invited by the Owner to submit a proposal.
6. **The Time for Delivery of the Equipment** is of the essence of the Contract and shall be as specified by the Engineer in the Proposal.

7. **Evaluation Factors.** *In estimating the lowest cost to the Owner as one of the factors in deciding the award of the Contract, the Owner will consider, in addition to the price quoted in the Proposals, the following:*

Performance Specifications of Engine/Generator Sets

8. **Debarment Certification.** *The Bidder must provide to the Owner a suspension and debarment certificate in the form attached hereto.*
9. **Contract is Entire Agreement.** *The Contract to be effected by the acceptance of the Proposal shall be deemed to include the entire agreement between the parties thereto, and the Bidder shall not claim any modifications thereof resulting from any representation or promise made at any time by any officer, agent or employee of the Owner or by any other person.*
10. **Minor Irregularities.** *The Owner reserves the right to waive minor irregularities or minor errors in any Proposal, if it appears to the Owner that such irregularities or errors were made through inadvertence. Any such irregularities or errors so waived must be corrected on the Proposal in which they occur prior to the acceptance thereof by the Owner.*
11. **Bid Rejection.** *The Owner reserves the right to reject any or all Proposals.*
12. **Definition of Terms.** *The terms "Administrator" and "Engineer" as used throughout this Contract shall be as defined in Article VI, Section 1, of the Proposal.*

East Kentucky Power Cooperative, Inc.

Owner

By

Roy M. Palk

President & Chief Executive Officer

Title

5-17 . 20 06

Date

PROPOSAL

TO:

East Kentucky Power Cooperative, Inc.
(hereinafter called the "Owner")

ARTICLE I--GENERAL

Section 1. Offer to Furnish and Deliver. *The undersigned (hereinafter called the "Bidder") hereby proposes to furnish and deliver the equipment (hereinafter called the "Equipment") described in the Plans, Specifications, ~~and~~ Construction Drawings for the following prices:*

Land equipment contract summary

Item: _____ Price: _____

Item: _____ Price: **\$1,579,512.00**

The prices of Equipment set forth herein shall include the cost of delivery to:

Pendleton County Landfill Gas to Electric Generating Facility

The prices set forth herein do not include any sums which are or may be payable by the Bidder on account of taxes imposed by any taxing authority upon the sale, purchase or use of the Equipment. If any such tax is applicable to the sale, purchase or use of the Equipment hereunder, the amount thereof shall be added to the purchase price and paid by the Owner.

Section 2. Materials and Equipment. *The Bidder agrees to furnish and use in the construction of the project under this Proposal, in the event the Proposal is accepted, only such "fully accepted," "conditionally accepted," and "technically accepted" materials and equipment which have been accepted by RUS as indicated in the current RUS Informational Publication 202-1, "List of Materials Acceptable for Use on Systems of RUS Electrification Borrowers," including revisions adopted prior to the Bid Opening. The use of "conditionally accepted" or "technically accepted" materials and equipment requires prior consent by the Owner or Engineer.*

The Bidder will purchase all materials and equipment outright and not subject to any conditional sales agreements, bailment, lease or other agreement reserving unto the seller any right, title or interest therein. All such materials and equipment shall be new.

Section 3. Description of Contract. *The Notice and Instructions to Bidders, Plans, Specifications, and Construction Drawings, which by this reference are incorporated herein, together with the Proposal and Acceptance constitute the Contract. The Plans, Specifications, and Construction Drawings, including maps, special drawings, and approved modifications in standard specifications are attached hereto and identified as follows:*

Section 4. Due Diligence. *The Bidder has made a careful examination of the Plans, Specifications, and Construction Drawings attached hereto, and has become informed as to the location and nature of the proposed construction, the transportation facilities, the kind and character of soil and terrain to be encountered, and the kind of facilities required before and during the construction of the project, and*

has become acquainted with the labor conditions, federal, state, and local laws, rules, and regulations applicable to its performance.

Section 5. Warranty of Good Faith. *The Bidder warrants that this Proposal is made in good faith and without collusion or connection with any person or persons bidding for the same work.*

ARTICLE II--DELIVERY AND WARRANTY

Section 1. Delivery. *The Bidder shall deliver the Equipment:*

_____ within _____ days after receipt of the written order or orders of the Owner.

X not later than November 1, 20 06.

The time for delivery shall be extended for the period of any reasonable delay due exclusively to causes beyond the control and without the fault of the Bidder, including, but not limited to, acts of God, fires, strikes, and floods.

Section 2. Defective Materials and Workmanship.

- a. *All Equipment furnished hereunder shall be subject to the inspection, tests, and approval of the Owner and the Engineer, and the Bidder shall furnish all information required concerning the nature or source of any Equipment and provide adequate facilities for testing and inspecting the Equipment at the plant of the Bidder.*
- b. *The Equipment furnished hereunder shall become the property of the Owner upon delivery, provided, however, that the Owner or the Engineer, within one year after initial operation of the Equipment, or within the period for which the Equipment is guaranteed, whichever is longer, may reject any Equipment which does not comply with the Specifications attached hereto and made a part hereof or with the guarantees, if any, of the Bidder and the manufacturer. Upon any such rejection, the Bidder shall repair or replace such defective Equipment within a reasonable time after notice in writing from the Owner. If any such defective materials, equipment, or workmanship so replaced or repaired is found to be defective within one year after the completion of the replacement or repair, the Bidder shall replace or remedy such defective materials, equipment, or workmanship. In the event of failure by the Bidder so to do, the Owner may make such replacement and the cost and expense thereof shall be paid by and recoverable from the Bidder.*
- c. *All manufacturers' guarantees of Equipment, if any, shall be transferred and assigned to the Owner upon delivery of any Equipment and before final payment is made for such Equipment. Such guarantees shall be in addition to those required of the Bidder by other provisions of this Contract.*

ARTICLE III--PAYMENT

Section 1. Payments to Bidder.

- 30 days later, Owner shall
release an additional 5% of the
retainage.
- a. *Upon the shipment of any Equipment hereunder, the Bidder shall submit to the Owner a detailed statement of the Equipment shipped. The Owner shall, upon receipt of the Equipment, pay the Bidder ninety percent (90%) of the contract price of the Equipment. When the Equipment has been installed, placed in satisfactory operation, tested and accepted by the Owner, the Owner shall make final payments therefor to the Bidder; provided, however, such final payment shall be made not later than ninety (90) days after delivery of the Equipment, unless such acceptance by the Owner shall be withheld because of the fault of the Bidder.*

- b. *No payment shall be due while the Bidder is in default in respect of any of the provisions of this Contract and the Owner may withhold from the Bidder the amount of any claim by a third party against either the Bidder or the Owner based upon an alleged failure of the Bidder to perform the work hereunder in accordance with the provisions of this Contract*

ARTICLE IV--PARTICULAR UNDERTAKINGS OF THE BIDDER

The provisions of this Article IV apply to any work performed by the Bidder at the project site.

Section 1. Protection to Persons and Property. *The Bidder shall at all times take all reasonable precautions for the safety of employees on the project and of the public, and shall comply with all applicable provisions of federal, state, and local laws, rules, and regulations and building and construction codes, in addition to the safety rules and procedures of the Owner.*

The following provisions shall not limit the generality of the above requirements:

- a. *The Bidder shall at no time and under no circumstances cause or permit any employee of the Bidder to perform any work upon energized lines, or upon poles carrying energized lines, unless otherwise specified in the Notice and Instructions to Bidders.*
- b. *The Bidder shall transport and store all material in facilities and vehicles which are designed to protect the material from damage. The Bidder shall ensure that all vehicles, trailers, and other equipment used comply with all applicable licensing, traffic, and highway requirements.*
- c. *The Bidder shall conduct its operations to cause the least possible obstruction of public highways*
- d. *The Bidder shall make good and fully repair all injuries and damages to the project or any portion thereof under the control of the Bidder by reason of any act of God or other casualty or cause whether or not the same shall have occurred by reason of the Bidder's negligence.*
 - (i) *To the maximum extent permitted by law, Bidder shall defend, indemnify, and hold harmless Owner and Owner's directors, officers, and employees from all claims, causes of action, losses, liabilities, and expenses (including reasonable attorney's fees) for personal loss, injury, or death to persons (including but not limited to Bidder's employees) and loss, damage to or destruction of Owner's property or the property of any other person or entity (including but not limited to Bidder's property) in any manner arising out of or connected with the Contract, or the materials or equipment supplied or services performed by Bidder, its subcontractors and suppliers of any tier. But nothing herein shall be construed as making Bidder liable for any injury, death, loss, damage, or destruction caused by the sole negligence of Owner.*
 - (ii) *To the maximum extent permitted by law, Bidder shall defend, indemnify, and hold harmless Owner and Owner's directors, officers, and employees from all liens and claims filed or asserted against Owner, its directors, officers, and employees, or Owner's property or facilities, for services performed or materials or equipment furnished by Bidder, its subcontractors and suppliers of any tier, and from all losses, demands, and causes of action arising out of any such lien or claim. Bidder shall promptly discharge or remove any such lien or claim by bonding, payment, or otherwise and shall notify Owner promptly when it has done so. If Bidder does not cause such lien or claim to be discharged or released by payment, bonding, or otherwise, Owner shall have the right (but shall not be obligated) to pay all sums necessary to obtain any such discharge or release and to deduct all amounts so paid from the amount due Bidder.*
 - (iii) *Bidder shall provide to Owner's satisfaction evidence of Bidder's ability to comply with the indemnification provisions of subparagraphs i and ii above, which evidence may include but may not be limited to a bond or liability insurance policy obtained for this purpose through a licensed surety or insurance company.*

- e. Upon violation by the Bidder of any of the provisions of this section, after written notice of such violation given to the Bidder by the Engineer or the Owner, the Bidder shall immediately correct such violation. Upon failure of the Bidder so to do the Owner may correct such violation at the Bidder's expense. Provided, however, that the Owner may, if it deems it necessary or advisable, correct such violation at the Bidder's expense without such prior notice to the Bidder.

Section 2. Insurance. The Bidder shall take out and maintain throughout the period of its operations at the project site the following types and minimum amounts of insurance:

- a. Workers' compensation and employers' liability insurance, as required by law, covering all its employees who perform any of the obligations of the Bidder under the contract. If any employer or employee is not subject to the workers' compensation laws of the governing state, then insurance shall be obtained voluntarily to extend to the employer and employee coverage to the same extent as though the employer or employee were subject to the workers' compensation laws.
- b. Public liability insurance covering all operations under the contract shall have limits for bodily injury or death of not less than \$1 million each occurrence, limits for property damage of not less than \$1 million each occurrence, and \$1 million aggregate for accidents during the policy period. A single limit of \$1 million of bodily injury and property damage is acceptable. This required insurance may be in a policy or policies of insurance, primary and excess including the umbrella or catastrophe form.
- c. Automobile liability insurance on all motor vehicles used in connection with the contract, whether owned, nonowned, or hired, shall have limits for bodily injury or death of not less than \$1 million per person and \$1 million each occurrence, and property damage limits of \$1 million for each occurrence. A single limit of \$1 million of bodily injury and property damage is acceptable. This required insurance may be in a policy or policies of insurance, primary and excess including the umbrella or catastrophe form.

The Owner shall have the right at any time to require public liability insurance and property damage liability insurance greater than those required in subsection "b" and "c" of this Section. In any such event, the additional premium or premiums payable solely as the result of such additional insurance shall be added to the Contract price.

The Owner shall be named as Additional Insured on all policies of insurance required in subsections "b" and "c" of this Section.

The policies of insurance shall be in such form and issued by such insurer as shall be satisfactory to the Owner. The Bidder shall furnish the Owner a certificate evidencing compliance with the foregoing requirements which shall provide not less than (30) days prior written notice to the Owner of any cancellation or material change in the insurance.

ARTICLE V--REMEDIES

Section 1. Liquidated Damages. The time of the delivery of the Equipment is of the essence of the Contract. Should the Bidder neglect, refuse or fail to deliver the Equipment within the time herein agreed upon, after giving effect to extensions of time, if any, herein provided, then, in that event and in view of the difficulty of estimating with exactness damages caused by such delay, the Owner shall have the right to deduct from and retain out of such moneys which may be then due, or which may become due and

payable to the Bidder the sum of Not Applicable dollars (---) per day for each and every day that such delivery is delayed beyond the specified time, as liquidated damages and not as a penalty; if the amount due and to become due from the Owner to the Bidder is insufficient to pay in full any such liquidated damages, the Bidder shall pay to the Owner the amount necessary to effect such payment in full: Provided, however, that the Owner shall promptly notify the Bidder in writing of the manner in which the amount retained, deducted or claimed as liquidated damages was computed.

Section 2. Cumulative Remedies. *Every right or remedy herein conferred upon or reserved to the Owner or the Government or the Administrator shall be cumulative, shall be in addition to every right and remedy now or hereafter existing at law or in equity or by statute and the pursuit of any right or remedy shall not be construed as an election: Provided, however, that the provisions of Section 1 of this Article shall be the exclusive measure of damages for failure by the Bidder to deliver the Equipment within the time herein agreed upon.*

ARTICLE VI--MISCELLANEOUS

Section 1. Definitions.

- a. *The term "Administrator" shall mean the Administrator of the Rural Utilities Service of the United States of America and his or her duly authorized representative or any other person in whom or authority in which may be vested the duties and functions which the Administrator is now authorized by law to perform.*
- b. *The term "Engineer" shall mean the Engineer employed by the Owner, to provide engineering services for the project and said Engineer's duly authorized assistants and representatives.*

Section 2. Materials and Supplies. *In the performance of this contract there shall be furnished only such unmanufactured articles, materials, and supplies as have been mined or produced in the United States or in any eligible country, and only such manufactured articles, materials, and supplies as have been manufactured in the United States or in any eligible country substantially all from articles, materials, or supplies mined, produced or manufactured, as the case may be, in the United States or in any eligible country; provided that other articles, materials, or supplies may be used in the event and to the extent that the Administrator shall expressly in writing authorize such use pursuant to the provisions of the Rural Electrification Act of 1938, being Title IV of Public Resolution No. 122, 75th Congress, approved June 21, 1938. For the purposes of this section, an "eligible country" is any country that applies with respect to the United States an agreement ensuring reciprocal access for United States products and services and suppliers to the markets of that country, as determined by the United States Trade Representative. The Bidder agrees to submit to the Owner such certificates with respect to compliance with the foregoing provision as the Administrator from time to time may require.*

Section 3. Patent Infringement. *The Bidder shall hold harmless and indemnify the Owner from any and all claims, suits and proceedings for the infringement of any patent or patents covering Equipment purchased hereunder.*

Section 4. Compliance with Laws. *The Bidder shall comply with all federal, state, and local laws, rules, and regulations applicable to its performance under the contract and the construction of the project. The Bidder acknowledges that it is familiar with the Rural Electrification Act of 1936, as amended, the Anti Kick-Back Act of 1986 (41 U.S.C. 51 et seq), and 18 U.S.C. §§ 286, 287, 641, 661, 874, 1001, and 1366, as amended.*

The Bidder represents that to the extent required by Executive Orders 12549 (3 CFR, 1985-1988 Comp., p. 189) and 12689 (3 CFR, 1989 Comp., p. 235), Debarment and Suspension, and 7 CFR part 3017, it has submitted to the Owner a duly executed certification in the form prescribed in 7 CFR part 3017.

The Bidder represents that, to the extent required, it has complied with the requirements of Pub. L. 101-121, Section 319, 103 Stat. 701, 750-765 (31 U.S.C. 1352), entitled "Limitation on use of appropriated funds to influence certain Federal contracting and financial transactions," and any rules and regulations issued pursuant thereto.

Section 5. Equal Opportunity Provisions.

a. Bidder's Representations.

The Bidder represents that.

It has X, does not have , 100 or more employees, and if it has, that it has X, has not , furnished the Equal Employment Opportunity-Employers Information Report EEO-1, Standard Form 100, required of employers with 100 or more employees pursuant to Executive Order 11246 of September 24, 1965, and Title VII of the Civil Rights Act of 1964.

The Bidder agrees that it will obtain, prior to the award of any subcontract for more than \$10,000 hereunder to a subcontractor with 100 or more employees, a statement, signed by the proposed subcontractor, that the proposed subcontractor has filed a current report on Standard Form 100.

The Bidder agrees that if it has 100 or more employees and has not submitted a report on Standard Form 100 for the current reporting year and that if this Contract will amount to more than \$10,000, the Bidder will file such report, as required by law, and notify the Owner in writing of such filing prior to the Owner's acceptance of this Proposal.

b. Equal Opportunity Clause. During the performance of this Contract, the Bidder agrees as follows:

- (1) The Bidder will not discriminate against any employee or applicant for employment because of race, color, religion, sex or national origin. The Bidder will take affirmative action to ensure that applicants are employed, and that employees are treated during employment without regard to their race, color, religion, sex or national origin. Such action shall include, but not be limited to, the following: Employment, upgrading, demotions or transfer; recruitment or recruitment advertising; layoff or termination; rates of pay or other forms of compensation; and selection of training, including apprenticeship. The Bidder agrees to post in conspicuous places, available to employees and applicants for employment, notices to be provided setting forth the provisions of this Equal Opportunity Clause.*
- (2) The Bidder will, in all solicitations or advertisements for employees placed by or on behalf of the Bidder, state that all qualified applicants will receive consideration for employment without regard to race, color, religion, sex or national origin.*
- (3) The Bidder will send to each labor union or representative of workers, with which it has a collective bargaining agreement or other contract or understanding, a notice to be provided advising the said labor union or workers' representative of the Bidder's commitments under this section, and shall post copies of the notice in conspicuous places available to employees and applicants for employment.*
- (4) The Bidder will comply with all provisions of Executive Order 11246 of September 24, 1965, and the rules, regulations and relevant orders of the Secretary of Labor.*
- (5) The Bidder will furnish all information and reports required by Executive Order 11246 of September 24, 1965, and by rules, regulations, and orders of the Secretary of Labor, or pursuant thereto, and will permit access to its books, records, and accounts by the administering agency and the Secretary of Labor for purposes of investigation to ascertain compliance with such rules, regulations, and orders.*
- (6) In the event of the Bidder's noncompliance with the Equal Opportunity Clause of this Contract or with any of the said rules, regulations, or orders, this Contract may be canceled, terminated, or suspended in whole or in part, and the Bidder may be declared ineligible for further Government contracts or federally assisted construction contracts in accordance with procedures authorized in Executive Order 11246 of September 24, 1965, and such other sanctions may be imposed and remedies invoked as provided in Executive Order 11246 of*

September 24, 1965, or by rule, regulation, or order of the Secretary of Labor, or as provided by law.

(7) *The Bidder will include this Equal Opportunity Clause in every subcontract or purchase order unless exempted by the rules, regulations, or order of the Secretary of Labor issued pursuant to Section 204 of Executive Order 11246 of September 24, 1965, so that such provisions will be binding upon each subcontractor or vendor. The Bidder will take such action with respect to any subcontract or purchase order as the administering agency may direct as a means of enforcing such provisions, including sanctions for noncompliance; Provided, however, that in the event Bidder becomes involved in, or is threatened with, litigation with a subcontractor or vendor as a result of such direction by the administering agency, the Bidder may request the United States to enter into such litigation to protect the interests of the United States.*

see attached EKPC additions page 1

- c. *Certificate of Nonsegregated Facilities. The Bidder certifies that it does not maintain or provide for its employees any segregated facilities at any of its establishments, and that it does not permit its employees to perform their services at any location, under its control, where segregated facilities are maintained. The Bidder certifies further that it will not maintain or provide for its employees any segregated facilities at any of its establishments, and that it will not permit its employees to perform their services at any location, under its control, where segregated facilities are maintained. The Bidder agrees that a breach of this certification is a violation of the Equal Opportunity Clause in this Contract. As used in this certification, the term "segregated facilities" means any waiting rooms, work areas, restrooms and washrooms, restaurants and other eating areas, timeclocks, locker rooms and other storage or dressing areas, parking lots, drinking fountains, recreation or entertainment areas, transportation, and housing facilities provided for employees which are segregated by explicit directive or are in fact segregated on the basis of race, color, religion, or national origin, because of habit, local custom, or otherwise. The Bidder agrees that (except where it has obtained identical certifications from proposed subcontractors for specific time periods) it will obtain identical certifications from proposed subcontractors prior to the award of subcontracts exceeding \$10,000 which are not exempt from the provisions of the Equal Opportunity Clause, and that it will retain such certifications in its files.*

Section 6. Successors and Assigns. *Each and all of the covenants and agreements herein contained shall extend to and be binding upon the successors and assigns of the parties hereto. The Owner and Bidder acknowledge that this Contract is assigned to the Government, acting through the Administrator, for security purposes under the Owner's mortgage and security instrument.*

Section 7. Independent Contractor. *The Bidder shall perform the work as an independent contractor, not as a subcontractor, agent, or employee of the Owner. Upon acceptance of this Proposal, the successful Bidder shall be the Contractor and all references in the Proposal to the Bidder shall apply to the Contractor.*

Section 8. Approval by the Administrator: This contract does _____, does not X, require approval of the Administrator. No acceptance of a Proposal for a contract upon which approval of the Administrator is required shall become effective until the contract has been approved by the Administrator; provided that no obligation shall arise hereunder unless such approval is given within one-hundred twenty (120) days after the date set for the opening of the proposals. The acceptance of a Proposal for a contract upon which approval of the Administrator is not required shall become effective the date of acceptance by the Owner.

ATTEST:

George D. Thomas
Secretary

Dated 5/11/06

Whayne Supply Company
Bidder

Frank Lewis
Vice-President
1400 Cecil Avenue, P. O. Box 35900
Lexington, Kentucky 40211
Address

The Proposal must be signed with the full name of the Bidder. If the Bidder is a partnership, the Proposal must be signed in the partnership name by a partner. If the Bidder is a corporation, the Proposal must be signed in the corporate name by a duly authorized officer and the corporate seal affixed and attested by the Secretary of the Corporation.

ACCEPTANCE

Subject to the approval of the Administrator, if approval of the Administrator is required, the Owner hereby accepts the foregoing Proposal of the Bidder, Whayne Supply Company for the following Equipment:

4 Caterpillar Landfill Gas Engine/Generator Sets

for a total contract price of \$ 1,579,512.00 (One Million Five Hundred Seventy-Nine Thousand Five Hundred Twelve dollars)

East Kentucky Power Cooperative, Inc.

By Ray M. Falk Owner
President & CEO

Secretary

5-17, 2006
Date of Contract

EKPC Additions, Page 9 dated March 7, 2005

The Following Additional General Conditions Shall be Added to This Contract RUS Form 198:

Page 9, Article VI, Section 5, the following paragraph will be added as (8)

"(8) When this order and contract refer to manufactured goods or to work or services, Seller warrants and agrees that it has complied and will comply with (1) Fair Labor Standards Act; (2) Social Security and Workman's Compensation Laws, if work is done on Purchaser's premises; and (3) all other applicable Federal, State and local laws, codes and regulations. It is the policy of Purchaser to provide equal opportunities in employment without regard to race, color, religion, sex, age, or national origin and to employ and advance qualified disabled veterans, handicapped or disabled persons and Vietnam era veterans. Purchaser complies with the requirements placed on government contractors and subcontractors by Executive Order 11246, Section 402 of the Vietnam Era Veterans Readjustment Assistance Act of 1974 and Section 503 of the Rehabilitation Act of 1973, and it is agreed that as a Subcontractor, vendor, or supplier, Seller will also comply with the Executive Order, laws, and applicable rules and regulations. Seller agrees to indemnify Purchaser and save Purchaser harmless if Seller fails to comply with the foregoing, and in the event of such failure Purchaser may, in addition, cancel this order and contract. Seller invoices for work or materials covered hereby shall state that Seller has complied with the requirements of the Fair Labor Standards Act of 1938 as amended."

U.S. DEPARTMENT OF AGRICULTURE

Certification Regarding Debarment, Suspension, Ineligibility
and Voluntary Exclusion - Lower Tier Covered Transactions

This certification is required by the regulations implementing Executive Order 12549, Debarment and Suspension, 7 CFR Part 3017, Section 3017.510, Participants' responsibilities. The regulations were published as Part IV of the January 30, 1989, Federal Register (pages 4722-4733). Copies of the regulations may be obtained by contacting the Department of Agriculture agency with which this transaction originated.

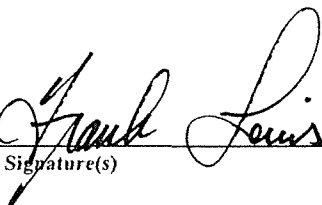
(BEFORE COMPLETING CERTIFICATION, READ INSTRUCTIONS ON REVERSE)

- (1) The prospective lower tier participant certifies, by submission of this proposal, that neither it nor its principals is presently debarred, suspended, proposed for debarment, declared ineligible, or voluntarily excluded from participation in this transaction by any Federal department or agency.
- (2) Where the prospective lower tier participant is unable to certify to any of the statements in this certification, such prospective participant shall attach an explanation to this proposal.

Whayne Supply Company
Organization Name

East Kentucky Power Cooperative, Inc.
Pendleton County Landfill Gas to Electric
PR/Award Number or Project Name Generating
Facility

Frank Lewis, Vice President-General Manager-Power Systems Division
Name(s) and Title(s) of Authorized Representative(s)


Signature(s)

05/09/2006
Date

Instructions for Certification

1. By signing and submitting this form, the prospective lower tier participant is providing the certification set out on the reverse side in accordance with these instructions.
2. The certification in this clause is a material representation of fact upon which reliance was placed when this transaction was entered into. If it is later determined that the prospective lower tier participant knowingly rendered an erroneous certification, in addition to other remedies available to the Federal Government, the department or agency with which this transaction originated may pursue available remedies, including suspension and/or debarment.
3. The prospective lower tier participant shall provide immediate written notice to the person to which this proposal is submitted if at any time the prospective lower tier participant learns that its certification was erroneous when submitted or has become erroneous by reason of changed circumstances.
4. The terms "covered transaction," "debarred," "suspended," "ineligible," "lower tier covered transaction," "participant," "person," "primary covered transaction," "principal," "proposal," and "voluntarily excluded," as used in this clause, have the meanings set out in the Definitions and Coverage sections of rules implementing Executive Order 12549. You may contact the person to which this proposal is submitted for assistance in obtaining a copy of those regulations.
5. The prospective lower tier participant agrees by submitting this form that, should the proposed covered transaction be entered into, it shall not knowingly enter into any lower tier covered transaction with a person who is debarred, suspended, declared ineligible, or voluntarily excluded from participation in this covered transaction, unless authorized by the department or agency with which this transaction originated.
6. The prospective lower tier participant further agrees by submitting this form that it will include this clause titled "Certification Regarding Debarment, Suspension, Ineligibility and Voluntary Exclusion - Lower Tier Covered Transactions," without modification, in all lower tier covered transactions and in all solicitations for lower tier covered transactions.
- 7* A participant in a covered transaction may rely upon a certification of a prospective participant in a lower tier covered transaction that it is not debarred, suspended, ineligible, or voluntarily excluded from the covered transaction, unless it knows that the certification is erroneous. A participant may decide the method and frequency by which it determines the eligibility of its principals. Each participant may, but is not required to, check the Nonprocurement List.
8. Nothing contained in the foregoing shall be construed to require establishment of a system of records in order to render in good faith the certification required by this clause. The knowledge and information of a participant is not required to exceed that which is normally possessed by a prudent person in the ordinary course of business dealings.
9. Except for transactions authorized under paragraph 5 of these instructions, if a participant in a covered transaction knowingly enters into a lower tier covered transaction with a person who is suspended, debarred, ineligible, or voluntarily excluded from participation in this transaction, in addition to other remedies available to the Federal Government, the department or agency with which this transaction originated may pursue available remedies, including suspension and/or debarment.

LOBBYING CERTIFICATION

Certification for Contracts, Grants, Loans, and Cooperative Agreements

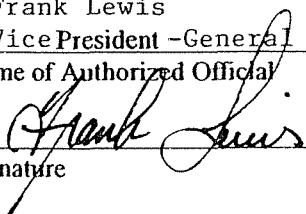
The undersigned certifies, to the best of his or her knowledge and belief, that:

(1) No Federal appropriated funds have been paid or will be paid, by or on behalf of the undersigned, to any person for influencing or attempting to influence an officer or employee of any agency, a Member of Congress, an officer or employee of Congress, or an employee of a Member of Congress in connection with the awarding of any Federal contract, the making of any Federal grant, the making of any Federal loan, the entering into of any cooperative agreement, and the extension, continuation, renewal, amendment, or modification of any Federal contract, grant, loan, or cooperative agreement.

(2) If any funds other than Federal appropriated funds have been paid or will be paid to any person for influencing or attempting to influence an officer or employee of any agency, a Member of Congress, an officer or employee of Congress, or an employee of a Member of Congress in connection with this Federal contract, grant, loan, or cooperative agreement, the undersigned shall complete and submit Standard Form-LLL, "Disclosure Form to Report Lobbying," in accordance with its instructions.

(3) The undersigned shall require that the language of this certification be included in the award documents for all subawards at all tiers (including subcontracts, subgrants, and contracts under grants, loans, and cooperative agreements) and that all subrecipients shall certify and disclose accordingly.

This certification is a material representation of fact upon which reliance was placed when this transaction was made or entered into. Submission of this certification is a prerequisite for making or entering into this transaction imposed by section 1352, title 31, U.S. Code. Any person who fails to file the required certification shall be subject to a civil penalty of not less than \$10,000 and not more than \$100,000 for each such failure.

Whayne Supply Company
Organization Name
Frank Lewis
Vice President - General Manager - Power Systems Division
Name of Authorized Official

Signature
05/09/2006
Date

()

(

)



POWER SYSTEMS DIVISION

P.O. Box 35900
Louisville, Kentucky 40232-5900
Phone (502) 774-4441
Fax (502) 778-1429

May 2, 2006

East KY Power Cooperative, Inc.
PO Box 707
Winchester, KY 40392-0707

Attn: Mr. Ralph Tyree

Subject: Pendleton County Landfill
Quotation - Caterpillar G3516-SITA LE Landfill Gas Power Generation System
Revision 2

Gentlemen:

With reference to the above subject, we are deleting from our quotation of yesterday the exhaust rain caps per your e-mail of this morning, as follows:

Caterpillar Generator Sets

Four new Caterpillar Model G3516-SITA LE 130 Landfill Gas Electric Set Engines, each directly connected to a SR4B 804 frame single bearing synchronous generator permanent magnet excited, 60 Hz., 3 phase, 1200 RPM, 800 kW continuous without fan, 4160 volts, and each includes accessories per the attached Bill of Material:

NET PRICE PER UNIT.	\$394,878.00
TOTAL NET PRICE F.O.B. JOBSITE FOR FOUR GENSETS	
TAX AND UNLOADING NOT INCLUDED.\$1,579,512.00

DRAWINGS: Two to three weeks after receipt of order.

DELIVERY: Based on your verbal Letter of Intent, which was confirmed on December 28, 2005, we ordered the above units on December 22, 2005 and we now anticipate an Ready to Ship (RTS) date of mid October 2006. All 3500 Series engines and generator sets are on Managed Distribution and delivery is quite a problem as you are aware.

TERMS: Net 30 days with 1.5 percent per month added to the unpaid balance.

FIRM: 30 days

Comments concerning this quotation are as follows:

1. We have included lube oil from Caterpillar that is recommended for landfill gas engines.
2. Wiring of the gas pressure regulators that you will remote mount is included.
3. Setting of the VFD's on each remote radiator is included.
4. Wayne will record initial intake and exhaust valve projections for each engine.
5. Thermocouples for the variable speed fan drives are included.
6. Relocation of the Cat wiring harness at startup to facilitate removal of each individual valve cover is included.

7. The Cat CIM modules are shipped loose.

Thank you for allowing us an opportunity to quote on Caterpillar equipment and we look forward to working with you on this project.

Very truly yours,

Larry K. Peyton
Power Systems Division

BILL OF MATERIAL

East Kentucky Power Cooperative, Inc.
Winchester, KY

For

Pendleton County Landfill

G3516-SITA LE Landfill Gas Power Generation System

Caterpillar Generator Sets

Four new Caterpillar Model G3516-SITA LE 130 Landfill Gas Electric Set Engines, each directly connected to a SR4B 804 frame single bearing synchronous generator permanent magnet excited, 60 Hz., 3 phase, 1200 RPM, 800 kW continuous without fan, 4160 volts, and each includes accessories as listed below:

- Air cleaner, Intermediate duty, with service indicator
- Thermostats (high temperature) and housing, full open temperature 130° C (265° F).
- Jacket water pump (high temperature seal), gear driven, centrifugal, non-self-priming
- Aftercooler, corrosion resistant for landfill gas use
- Aftercooler water pump, gear driven, centrifugal, non-self-priming
- Aftercooler thermostats and housing, full open temperature 66° C (151° F)
- Oil cooler thermostatic control to maintain 93° C (200° F) minimum oil temperature.
- Exhaust manifolds, watercooled
- Exhaust and intake valves and guides, corrosion resistant
- Flywheel, SAE No. 00
- Flywheel housing, SAE No. 00
- SAE standard rotation
- Governor, Woodward 2301D electronic load share type with EG3P actuator
- Gas pressure regulator (requires 1-5 psi gas)
- Carburetor for 400 - 600 Btu fuel (minimum methane number 130)
- Two stainless steel flexible gas connections
- Caterpillar electronic ignition system (E.I.S.), includes detonation sensitive timing
- Instrument panel, RH, 12 hole
 - Oil Pressure
 - Oil Temperature
 - Jacket water pressure
 - Water Temperature
 - Oil Pressure differential
 - Intake manifold temperature
 - Service meter
 - Exhaust pyrometer and thermocouples (individual exhaust ports and right and left bank exhaust stacks)
 - Intake manifold pressure gauge
- Crankcase ventilation system breathers
- Oil cooler
- Oil filters, RH
- Shallow oil pan, 110 gallon
- Lubricating oil cooler, separate circuit, thermostatically controlled oil temperature
- Pre-lubrication / post-lubrication pump, 24VDC
- Cat lube oil level meter with 25 gallon lube oil day tank
- Two stainless steel flexible oil line connections
- Rails, engine mounting, 330 mm (13 in), industrial-type
- Vibration isolators, elastomer pad type
- Front housing, two-sided

Electronic shutoff system. Requires 24 V power source and is shipped loose for remote mounting with a 20 foot wiring harness. The system is energized to run and is provided with a status control box that includes shutoff control system and power, warning and shutdown lights. Also included is a customer interface module with contacts for switchgear interface as follows:

- Low oil pressure, low idle 69 kPa (10 psi): high idle 207 kPa (30 psi).
- High coolant temperature 124° C (255° F)
- High oil temperature 102° C (215° F)
- High intake air temperature alarm 71° C (160° F)
- Overspeed
- Emergency stop pushbutton
- Jacket water pressure
- Detonation
- Gas valve 50.8 mm (2 in) pipe size. Energized to run.
- Start, run, stop switch

Paint, Caterpillar yellow

Vibration damper and guard

Lifting eyes

Brushless SR4 804 Frame generator installed. Includes 4160 volt permanent magnet, form wound generator with VPI and six (6) leads, .8333 pitch, 93.9% efficiency, 80°C temperature rise, flexible plate coupling, 330 mm (13 in) mounting rails and hardware. Generator arrangement 7C-4914 with 115-230 volt, 1200-watt space heater. Rating shown is generator set electrical output without fan. Does not include power terminal strip. Recommended for Continuous duty applications. 800 EkW at 1200 rpm, 54 C (130 F) SCAC.

Voltage regulator, Caterpillar digital

Generator mounted control panel, EMCP II+ in NEMA 1 enclosure and includes voltmeter, ammeter, frequency meter, with separate LCD display for each, 0.5% accuracy; voltmeter/ammeter phase selector switch; cool down timer factory set for five minutes; emergency stop switch with LED indicator; LCD indicator for engine speed, battery DC volts, lube oil pressure, coolant temperature, operating hours and system diagnostic codes; auxiliary relay, illumination lights, automatic starting controls quoted above, 3 phase power metering, (kW, kVAR, PF, %kW, kWh, L-N voltages), programmable protective relay functions, (under voltage, over voltage, over frequency, under frequency, reverse power, over current (phase and total), (kW level), 3 spare LED's(programmable).

Customer Interface Module - CIM, shipped loose, provides dry contacts for low coolant temperature, low oil pressure, system not in automatic alarm, high coolant temperature alarm, high coolant level shutdown, low oil pressure shutdown, overcrank, overspeed shutdown, EMCP diagnostic shutdown.

Pre-alarm panel generator mounted per NFPA110 and includes all necessary contactors Starting motors-dual 24 VDC for use in an ambient of -22° to 68° F

Start switch in the junction box

Batteries consisting of two Caterpillar 12 volt 190 ampere-hour batteries with acid, rack and cables

Trickle charger, LaMarche A46-30-24, 120-volt AC input, 24 volt DC output, 30 ampere and is of the two-rate type which will float the batteries at 2.17 volts per cell and includes a low voltage alarm relay

Jacket water heater -single jacket water heater, UL recognized. LH mounted. 240-480 volt, single phase, 6 kW. Fixed thermostat, set for cut in at 60° C (140° F). Includes low water temperature switch.

Radiator, for remote mounting, Americool Model F16-103-1 horizontal dual core type with vertical air flow, galvanize coating on all components designed for landfill environment, round tube finned construction, 25 HP single speed motor suitable for variable frequency drive by others, 277/480 volt, 3 phase, and of sufficient capacity to maintain a safe operating temperature in an ambient of 110°F, one 80 gallon and one 40 gallon expansion tank, fan vibration switch, low level switch for each circuit, and thermocouples for use with your variable speed drive (Note: the natural gas

engine requires two cooling circuits, one for engine jacket water and one for the 130° aftercooler circuit. This will require two pipe runs from the engine to the radiator and back)

Stainless steel braided flexible connectors for installation at the radiator and engine

Anti-freeze, as required to fill system with 50/50 mixture

Exhaust silencer, 10" diameter, Maxim M-51 side inlet type for critical areas – includes type "D" legs installed by Maxim (shipped loose for your installation at the site)

Flexible exhaust fitting, stainless steel, 10" diameter – two provided

Shrink-wrap polyethylene protection applied at the factory prior to shipment

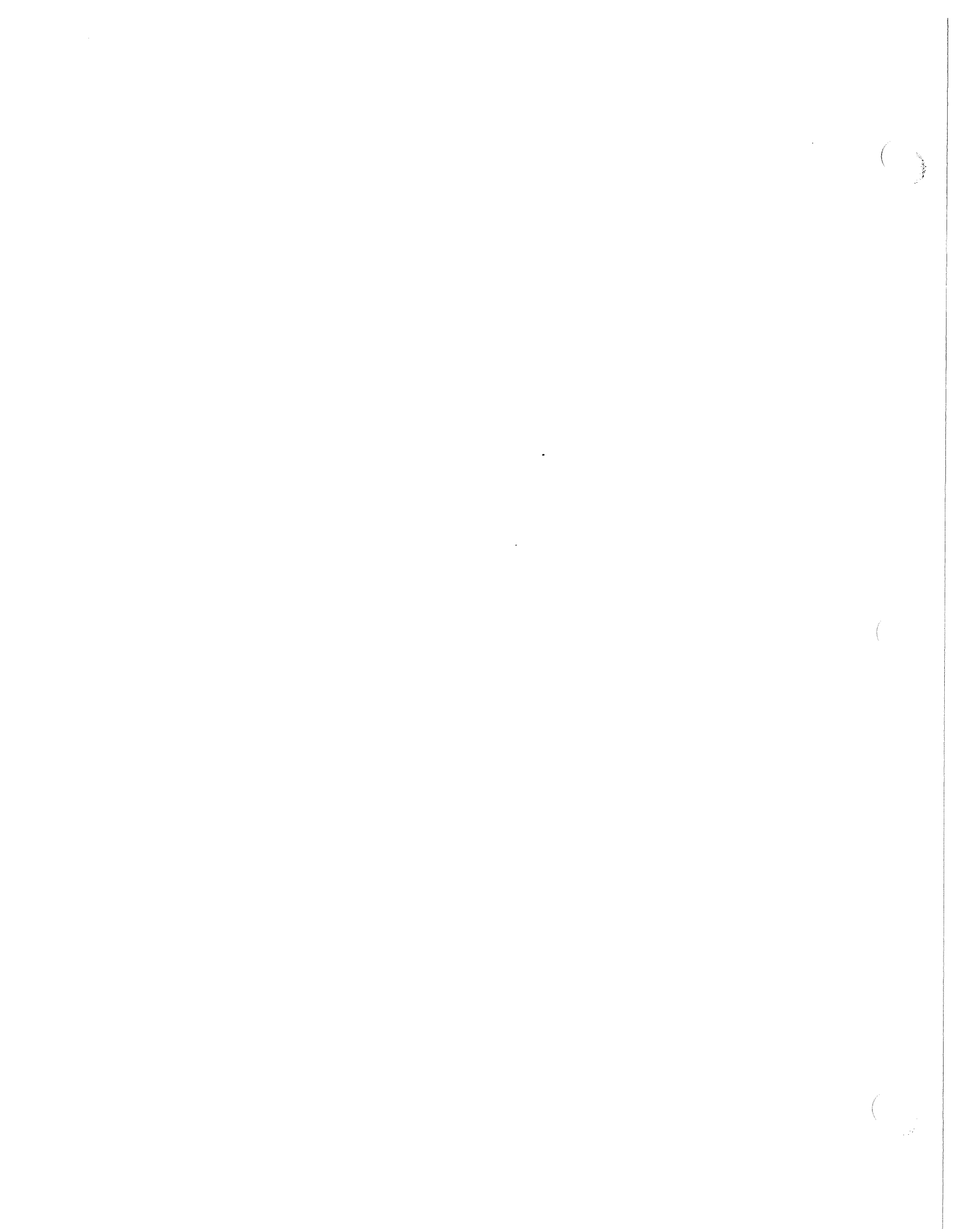
Field Testing

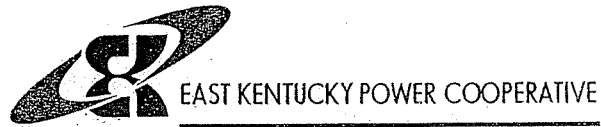
Startup and personnel training, 3 days per generator set

O & M Manuals - 5 sets

Drawings – 10 sets or as needed

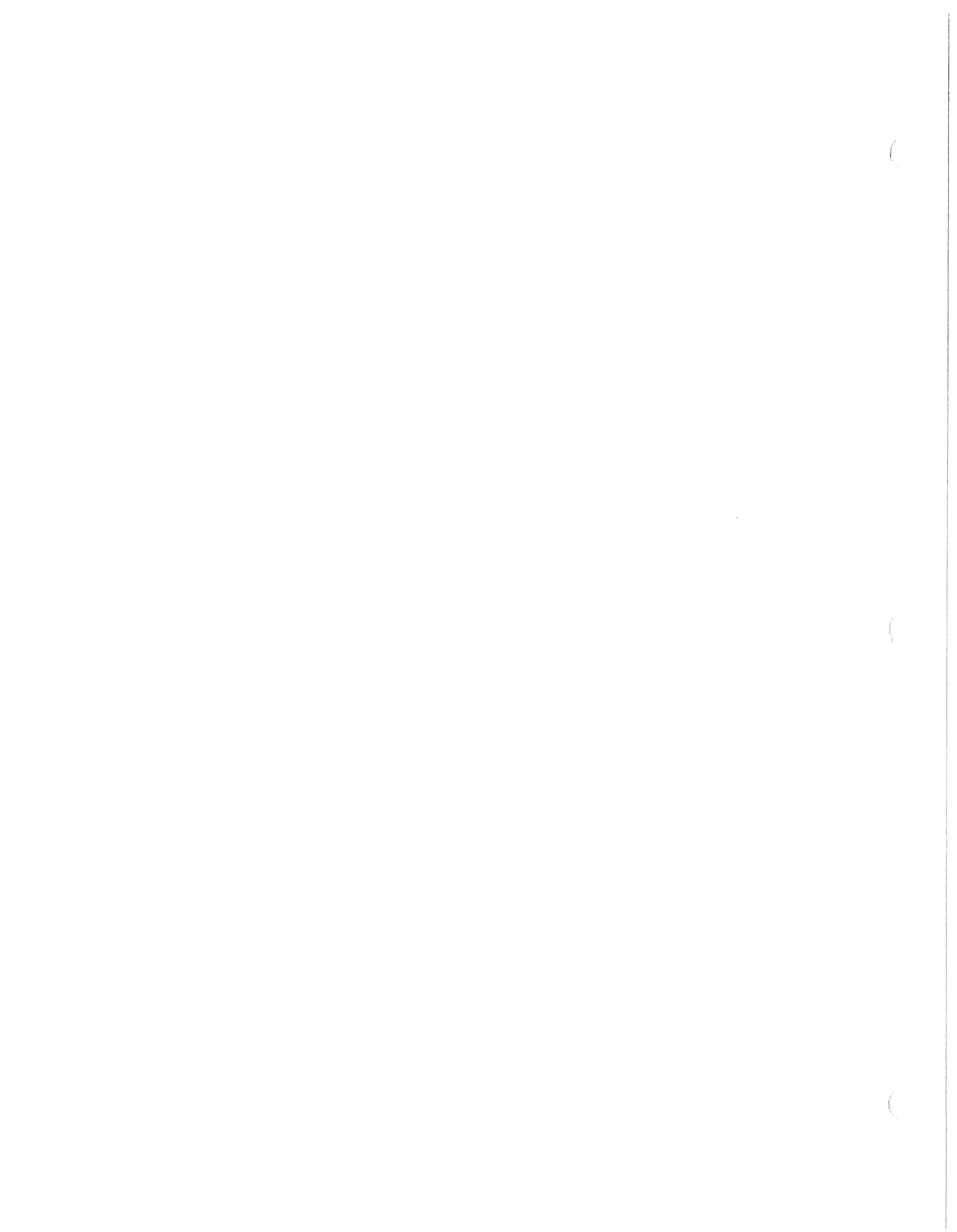
WARRANTY: One year beginning with the date of start-up of the equipment





Pendleton County Landfill Gas to Electric Generating Facility

Fuel Gas Compressor Skid Contract



U.S. Department of Agriculture
Rural Utilities Service

EQUIPMENT CONTRACT

NOTICE AND INSTRUCTIONS TO BIDDERS

1. Sealed proposals for the furnishing and delivering of a b Fuel Gas Compressor Skid

of equipment for the rural electric project of East Kentucky Power Cooperative, Inc.,
RUS designation Ky 59 Fayette, (hereinafter called the "Owner") will be received by the Owner on or
before _____ o'clock _____ M., _____, 20____, at its office
at _____ at which time and place the proposals will be
_____ publicly opened and read.

_____ privately opened. The Owner, subsequent to the bid opening, may elect to conduct clarifying discussions
with the bidder to resolve any questions related to the substance of the bidder's proposal and to arrive at a final
price for a responsive bid.

Any proposals received subsequent to the time specified will be promptly returned to the Bidder unopened.
2. **Obtaining Documents.** The Plans, Specifications, and Construction Drawings, together with all necessary
forms and other documents for bidders may be obtained from the Owner, or from the Engineer Meade Electric
Company, Inc. at the latter's office at 9550 W 55th Street, Suite A, McCook, Illinois
upon the payment of \$ N/A, which payment will not be subject to refund. The Plans,
Specifications, and Construction Drawings may be examined at the office of the Owner or at the office of the
Engineer.
3. **Manner of Submitting Proposals.** Proposals and all supporting instruments must be submitted on the forms
furnished by the Owner and must be delivered in a sealed envelope addressed to the Owner. The name and
address of the Bidder and the date and hour of the opening of bids must appear on the envelope in which the
Proposal is submitted. Proposals must be completed in ink or typewritten. No alterations or interlineations
will be permitted, unless made before submission, and initialed and dated. The successful Bidder will be
required to execute two additional counterparts of the Proposal.
4. **Due Diligence.** Prior to the submission of the Proposal, the Bidder shall make and shall be deemed to have
made a careful examination of the Plans, Specifications, Construction Drawings, and form of Proposal, and
shall review the location and nature of the proposed construction, the transportation facilities, the kind and
character of soil and terrain to be encountered, the kind of facilities required before and during the
construction of the project, general local conditions, environmental and historic preservation considerations,
and all other matters that may affect the cost and time of completion of the work. Bidder will be required to
comply with all federal, state, and local laws, rules, and regulations applicable to its performance, including
those pertaining to the licensing of contractors, and the Anti Kick-Back Act of 1986 (41 U.S.C. 51 et seq).
5. Proposals will be accepted only from those prequalified bidders invited by the Owner to submit a proposal.
6. **The Time for Delivery of the Equipment** is of the essence of the Contract and shall be as specified by the
Engineer in the Proposal.

7. **Evaluation Factors.** *In estimating the lowest cost to the Owner as one of the factors in deciding the award of the Contract, the Owner will consider, in addition to the price quoted in the Proposals, the following:*

In Conformance with all specifications

8. **Debarment Certification.** *The Bidder must provide to the Owner a suspension and debarment certificate in the form attached hereto.*
9. **Contract is Entire Agreement.** *The Contract to be effected by the acceptance of the Proposal shall be deemed to include the entire agreement between the parties thereto, and the Bidder shall not claim any modifications thereof resulting from any representation or promise made at any time by any officer, agent or employee of the Owner or by any other person.*
10. **Minor Irregularities.** *The Owner reserves the right to waive minor irregularities or minor errors in any Proposal, if it appears to the Owner that such irregularities or errors were made through inadvertence. Any such irregularities or errors so waived must be corrected on the Proposal in which they occur prior to the acceptance thereof by the Owner.*
11. **Bid Rejection.** *The Owner reserves the right to reject any or all Proposals.*
12. **Definition of Terms.** *The terms "Administrator" and "Engineer" as used throughout this Contract shall be as defined in Article VI, Section 1, of the Proposal*

East Kentucky Power Cooperative,
Owner
By Ray M. Falk
President & Chief Executive Officer
Title
May 9 . 2006
Date

PROPOSAL

TO:

East Kentucky Power Cooperative, Inc.

(hereinafter called the "Owner")

ARTICLE I--GENERAL

Section 1. Offer to Furnish and Deliver. *The undersigned (hereinafter called the "Bidder") hereby proposes to furnish and deliver the equipment (hereinafter called the "Equipment") described in the Plans, Specifications, and Construction Drawings for the following prices:*

Item: Fuel Gas Compressor Skid Price: \$ 259,250.00

Item: _____ Price: _____

The prices of Equipment set forth herein shall include the cost of delivery to:

EKPC Landfill Gas-to-Energy Project - Pendleton County Landfill

The prices set forth herein do not include any sums which are or may be payable by the Bidder on account of taxes imposed by any taxing authority upon the sale, purchase or use of the Equipment. If any such tax is applicable to the sale, purchase or use of the Equipment hereunder, the amount thereof shall be added to the purchase price and paid by the Owner.

Section 2. Materials and Equipment. *The Bidder agrees to furnish and use in the construction of the project under this Proposal, in the event the Proposal is accepted, only such "fully accepted," "conditionally accepted," and "technically accepted" materials and equipment which have been accepted by RUS as indicated in the current RUS Informational Publication 202-1, "List of Materials Acceptable for Use on Systems of RUS Electrification Borrowers," including revisions adopted prior to the Bid Opening. The use of "conditionally accepted" or "technically accepted" materials and equipment requires prior consent by the Owner or Engineer.*

The Bidder will purchase all materials and equipment outright and not subject to any conditional sales agreements, bailment, lease or other agreement reserving unto the seller any right, title or interest therein. All such materials and equipment shall be new.

Section 3. Description of Contract. *The Notice and Instructions to Bidders, Plans, Specifications, and Construction Drawings, which by this reference are incorporated herein, together with the Proposal and Acceptance constitute the Contract. The Plans, Specifications, and Construction Drawings, including maps, special drawings, and approved modifications in standard specifications are attached hereto and identified as follows:*

Notice and Instructions to Bidders dated March 20, 2006 and
Lectrodryer's Proposal dated March 30, 2006 (see tab).

Section 4. Due Diligence. *The Bidder has made a careful examination of the Plans, Specifications, and Construction Drawings attached hereto, and has become informed as to the location and nature of the proposed construction, the transportation facilities, the kind and character of soil and terrain to be encountered, and the kind of facilities required before and during the construction of the project, and*

has become acquainted with the labor conditions, federal, state, and local laws, rules, and regulations applicable to its performance.

Section 5. Warranty of Good Faith. *The Bidder warrants that this Proposal is made in good faith and without collusion or connection with any person or persons bidding for the same work.*

ARTICLE II--DELIVERY AND WARRANTY

Section 1. Delivery. *The Bidder shall deliver the Equipment:*

_____ within _____ days after receipt of the written order or orders of the Owner.

X not later than September 29, 2006.

The time for delivery shall be extended for the period of any reasonable delay due exclusively to causes beyond the control and without the fault of the Bidder, including, but not limited to, acts of God, fires, strikes, and floods.

Section 2. Defective Materials and Workmanship.

- a. *All Equipment furnished hereunder shall be subject to the inspection, tests, and approval of the Owner and the Engineer, and the Bidder shall furnish all information required concerning the nature or source of any Equipment and provide adequate facilities for testing and inspecting the Equipment at the plant of the Bidder.*
- b. *The Equipment furnished hereunder shall become the property of the Owner upon delivery, provided, however, that the Owner or the Engineer, within one year after initial operation of the Equipment, or within the period for which the Equipment is guaranteed, whichever is longer, may reject any Equipment which does not comply with the Specifications attached hereto and made a part hereof or with the guarantees, if any, of the Bidder and the manufacturer. Upon any such rejection, the Bidder shall repair or replace such defective Equipment within a reasonable time after notice in writing from the Owner. If any such defective materials, equipment, or workmanship so replaced or repaired is found to be defective within one year after the completion of the replacement or repair, the Bidder shall replace or remedy such defective materials, equipment, or workmanship. In the event of failure by the Bidder so to do, the Owner may make such replacement and the cost and expense thereof shall be paid by and recoverable from the Bidder.*
- c. *All manufacturers' guarantees of Equipment, if any, shall be transferred and assigned to the Owner upon delivery of any Equipment and before final payment is made for such Equipment. Such guarantees shall be in addition to those required of the Bidder by other provisions of this Contract.*

ARTICLE III--PAYMENT

Section 1. Payments to Bidder.

- a. *Upon the shipment of any Equipment hereunder, the Bidder shall submit to the Owner a detailed statement of the Equipment shipped. The Owner shall, upon receipt of the Equipment, pay the Bidder ninety percent (90%) of the contract price of the Equipment. When the Equipment has been installed, placed in satisfactory operation, tested and accepted by the Owner, the Owner shall make final payments therefor to the Bidder; provided, however, such final payment shall be made not later than thirty (30) days after delivery of the Equipment, unless such acceptance by the Owner shall be withheld because of the fault of the Bidder.*

- b. *No payment shall be due while the Bidder is in default in respect of any of the provisions of this Contract and the Owner may withhold from the Bidder the amount of any claim by a third party against either the Bidder or the Owner based upon an alleged failure of the Bidder to perform the work hereunder in accordance with the provisions of this Contract*

ARTICLE IV--PARTICULAR UNDERTAKINGS OF THE BIDDER

The provisions of this Article IV apply to any work performed by the Bidder at the project site.

Section 1. Protection to Persons and Property. *The Bidder shall at all times take all reasonable precautions for the safety of employees on the project and of the public, and shall comply with all applicable provisions of federal, state, and local laws, rules, and regulations and building and construction codes, in addition to the safety rules and procedures of the Owner.*

The following provisions shall not limit the generality of the above requirements:

- a. *The Bidder shall at no time and under no circumstances cause or permit any employee of the Bidder to perform any work upon energized lines, or upon poles carrying energized lines, unless otherwise specified in the Notice and Instructions to Bidders.*
- b. *The Bidder shall transport and store all material in facilities and vehicles which are designed to protect the material from damage. The Bidder shall ensure that all vehicles, trailers, and other equipment used comply with all applicable licensing, traffic, and highway requirements.*
- c. *The Bidder shall conduct its operations to cause the least possible obstruction of public highways*
- d. *The Bidder shall make good and fully repair all injuries and damages to the project or any portion thereof under the control of the Bidder by reason of any act of God or other casualty or cause whether or not the same shall have occurred by reason of the Bidder's negligence.*
- (i) *To the maximum extent permitted by law, Bidder shall defend, indemnify, and hold harmless Owner and Owner's directors, officers, and employees from all claims, causes of action, losses, liabilities, and expenses (including reasonable attorney's fees) for personal loss, injury, or death to persons (including but not limited to Bidder's employees) and loss, damage to or destruction of Owner's property or the property of any other person or entity (including but not limited to Bidder's property) in any manner arising out of or connected with the Contract, or the materials or equipment supplied or services performed by Bidder, its subcontractors and suppliers of any tier. But nothing herein shall be construed as making Bidder liable for any injury, death, loss, damage, or destruction caused by the sole negligence of Owner.*
- (ii) *To the maximum extent permitted by law, Bidder shall defend, indemnify, and hold harmless Owner and Owner's directors, officers, and employees from all liens and claims filed or asserted against Owner, its directors, officers, and employees, or Owner's property or facilities, for services performed or materials or equipment furnished by Bidder, its subcontractors and suppliers of any tier, and from all losses, demands, and causes of action arising out of any such lien or claim. Bidder shall promptly discharge or remove any such lien or claim by bonding, payment, or otherwise and shall notify Owner promptly when it has done so. If Bidder does not cause such lien or claim to be discharged or released by payment, bonding, or otherwise, Owner shall have the right (but shall not be obligated) to pay all sums necessary to obtain any such discharge or release and to deduct all amounts so paid from the amount due Bidder.*
- (iii) *Bidder shall provide to Owner's satisfaction evidence of Bidder's ability to comply with the indemnification provisions of subparagraphs i and ii above, which evidence may include but may not be limited to a bond or liability insurance policy obtained for this purpose through a licensed surety or insurance company.*

- e. Upon violation by the Bidder of any of the provisions of this section, after written notice of such violation given to the Bidder by the Engineer or the Owner, the Bidder shall immediately correct such violation. Upon failure of the Bidder so to do the Owner may correct such violation at the Bidder's expense. Provided, however, that the Owner may, if it deems it necessary or advisable, correct such violation at the Bidder's expense without such prior notice to the Bidder

Section 2. **Insurance.** The Bidder shall take out and maintain throughout the period of its operations at the project site the following types and minimum amounts of insurance:

- a. Workers' compensation and employers' liability insurance, as required by law, covering all its employees who perform any of the obligations of the Bidder under the contract. If any employer or employee is not subject to the workers' compensation laws of the governing state, then insurance shall be obtained voluntarily to extend to the employer and employee coverage to the same extent as though the employer or employee were subject to the workers' compensation laws.
- b. Public liability insurance covering all operations under the contract shall have limits for bodily injury or death of not less than \$1 million each occurrence, limits for property damage of not less than \$1 million each occurrence, and \$1 million aggregate for accidents during the policy period. A single limit of \$1 million of bodily injury and property damage is acceptable. This required insurance may be in a policy or policies of insurance, primary and excess including the umbrella or catastrophe form.
- c. Automobile liability insurance on all motor vehicles used in connection with the contract, whether owned, nonowned, or hired, shall have limits for bodily injury or death of not less than \$1 million per person and \$1 million each occurrence, and property damage limits of \$1 million for each occurrence. A single limit of \$1 million of bodily injury and property damage is acceptable. This required insurance may be in a policy or policies of insurance, primary and excess including the umbrella or catastrophe form

The Owner shall have the right at any time to require public liability insurance and property damage liability insurance greater than those required in subsection "b" and "c" of this Section. In any such event, the additional premium or premiums payable solely as the result of such additional insurance shall be added to the Contract price.

The Owner shall be named as Additional Insured on all policies of insurance required in subsections "b" and "c" of this Section.

The policies of insurance shall be in such form and issued by such insurer as shall be satisfactory to the Owner. The Bidder shall furnish the Owner a certificate evidencing compliance with the foregoing requirements which shall provide not less than (30) days prior written notice to the Owner of any cancellation or material change in the insurance.

ARTICLE V--REMEDIES

Section 1. **Liquidated Damages.** The time of the delivery of the Equipment is of the essence of the Contract. Should the Bidder neglect, refuse or fail to deliver the Equipment within the time herein agreed upon, after giving effect to extensions of time, if any, herein provided, then, in that event and in view of the difficulty of estimating with exactness damages caused by such delay, the Owner shall have the right to deduct from and retain out of such moneys which may be then due, or which may become due and

payable to the Bidder the sum of N/A dollars () per day for each and every day that such delivery is delayed beyond the specified time, as liquidated damages and not as a penalty; if the amount due and to become due from the Owner to the Bidder is insufficient to pay in full any such liquidated damages, the Bidder shall pay to the Owner the amount necessary to effect such payment in full. Provided, however, that the Owner shall promptly notify the Bidder in writing of the manner in which the amount retained, deducted or claimed as liquidated damages was computed.

Section 2. Cumulative Remedies. *Every right or remedy herein conferred upon or reserved to the Owner or the Government or the Administrator shall be cumulative, shall be in addition to every right and remedy now or hereafter existing at law or in equity or by statute and the pursuit of any right or remedy shall not be construed as an election: Provided, however, that the provisions of Section 1 of this Article shall be the exclusive measure of damages for failure by the Bidder to deliver the Equipment within the time herein agreed upon.*

ARTICLE VI--MISCELLANEOUS

Section 1. Definitions.

- a. *The term "Administrator" shall mean the Administrator of the Rural Utilities Service of the United States of America and his or her duly authorized representative or any other person in whom or authority in which may be vested the duties and functions which the Administrator is now authorized by law to perform.*
- b. *The term "Engineer" shall mean the Engineer employed by the Owner, to provide engineering services for the project and said Engineer's duly authorized assistants and representatives.*

Section 2. Materials and Supplies. *In the performance of this contract there shall be furnished only such unmanufactured articles, materials, and supplies as have been mined or produced in the United States or in any eligible country, and only such manufactured articles, materials, and supplies as have been manufactured in the United States or in any eligible country substantially all from articles, materials, or supplies mined, produced or manufactured, as the case may be, in the United States or in any eligible country; provided that other articles, materials, or supplies may be used in the event and to the extent that the Administrator shall expressly in writing authorize such use pursuant to the provisions of the Rural Electrification Act of 1938, being Title IV of Public Resolution No. 122, 75th Congress, approved June 21, 1938. For the purposes of this section, an "eligible country" is any country that applies with respect to the United States an agreement ensuring reciprocal access for United States products and services and suppliers to the markets of that country, as determined by the United States Trade Representative. The Bidder agrees to submit to the Owner such certificates with respect to compliance with the foregoing provision as the Administrator from time to time may require.*

Section 3. Patent Infringement. *The Bidder shall hold harmless and indemnify the Owner from any and all claims, suits and proceedings for the infringement of any patent or patents covering Equipment purchased hereunder.*

Section 4. Compliance with Laws. *The Bidder shall comply with all federal, state, and local laws, rules, and regulations applicable to its performance under the contract and the construction of the project. The Bidder acknowledges that it is familiar with the Rural Electrification Act of 1936, as amended, the Anti Kick-Back Act of 1986 (41 U.S.C. 51 et seq), and 18 U.S.C. §§ 286, 287, 641, 661, 874, 1001, and 1366, as amended.*

The Bidder represents that to the extent required by Executive Orders 12549 (3 CFR, 1985-1988 Comp., p. 189) and 12689 (3 CFR, 1989 Comp., p. 235), Debarment and Suspension, and 7 CFR part 3017, it has submitted to the Owner a duly executed certification in the form prescribed in 7 CFR part 3017.

The Bidder represents that, to the extent required, it has complied with the requirements of Pub. L. 101-121, Section 319, 103 Stat. 701, 750-765 (31 U.S.C. 1352), entitled "Limitation on use of appropriated funds to influence certain Federal contracting and financial transactions," and any rules and regulations issued pursuant thereto.

Section 5. Equal Opportunity Provisions.

a. Bidder's Representations.

The Bidder represents that

It has , does not have X, 100 or more employees, and if it has, that it has , has not X, furnished the Equal Employment Opportunity-Employers Information Report EEO-1, Standard Form 100, required of employers with 100 or more employees pursuant to Executive Order 11246 of September 24, 1965, and Title VII of the Civil Rights Act of 1964.

The Bidder agrees that it will obtain, prior to the award of any subcontract for more than \$10,000 hereunder to a subcontractor with 100 or more employees, a statement, signed by the proposed subcontractor, that the proposed subcontractor has filed a current report on Standard Form 100.

The Bidder agrees that if it has 100 or more employees and has not submitted a report on Standard Form 100 for the current reporting year and that if this Contract will amount to more than \$10,000, the Bidder will file such report, as required by law, and notify the Owner in writing of such filing prior to the Owner's acceptance of this Proposal.

b. Equal Opportunity Clause. During the performance of this Contract, the Bidder agrees as follows:

- (1) The Bidder will not discriminate against any employee or applicant for employment because of race, color, religion, sex or national origin. The Bidder will take affirmative action to ensure that applicants are employed, and that employees are treated during employment without regard to their race, color, religion, sex or national origin. Such action shall include, but not be limited to, the following: Employment, upgrading, demotions or transfer, recruitment or recruitment advertising, layoff or termination; rates of pay or other forms of compensation; and selection of training, including apprenticeship. The Bidder agrees to post in conspicuous places, available to employees and applicants for employment, notices to be provided setting forth the provisions of this Equal Opportunity Clause.*
- (2) The Bidder will, in all solicitations or advertisements for employees placed by or on behalf of the Bidder, state that all qualified applicants will receive consideration for employment without regard to race, color, religion, sex or national origin.*
- (3) The Bidder will send to each labor union or representative of workers, with which it has a collective bargaining agreement or other contract or understanding, a notice to be provided advising the said labor union or workers' representative of the Bidder's commitments under this section, and shall post copies of the notice in conspicuous places available to employees and applicants for employment.*
- (4) The Bidder will comply with all provisions of Executive Order 11246 of September 24, 1965, and the rules, regulations and relevant orders of the Secretary of Labor.*
- (5) The Bidder will furnish all information and reports required by Executive Order 11246 of September 24, 1965, and by rules, regulations, and orders of the Secretary of Labor, or pursuant thereto, and will permit access to its books, records, and accounts by the administering agency and the Secretary of Labor for purposes of investigation to ascertain compliance with such rules, regulations, and orders.*
- (6) In the event of the Bidder's noncompliance with the Equal Opportunity Clause of this Contract or with any of the said rules, regulations, or orders, this Contract may be canceled, terminated, or suspended in whole or in part, and the Bidder may be declared ineligible for further Government contracts or federally assisted construction contracts in accordance with procedures authorized in Executive Order 11246 of September 24, 1965, and such other sanctions may be imposed and remedies invoked as provided in Executive Order 11246 of*

September 24, 1965, or by rule, regulation, or order of the Secretary of Labor, or as provided by law.

(7) The Bidder will include this Equal Opportunity Clause in every subcontract or purchase order unless exempted by the rules, regulations, or order of the Secretary of Labor issued pursuant to Section 204 of Executive Order 11246 of September 24, 1965, so that such provisions will be binding upon each subcontractor or vendor. The Bidder will take such action with respect to any subcontract or purchase order as the administering agency may direct as a means of enforcing such provisions, including sanctions for noncompliance; Provided, however, that in the event Bidder becomes involved in, or is threatened with, litigation with a subcontractor or vendor as a result of such direction by the administering agency, the Bidder may request the United States to enter into such litigation to protect the interests of the United States.

see attached EKPC additions page 1

c. *Certificate of Nonsegregated Facilities.* The Bidder certifies that it does not maintain or provide for its employees any segregated facilities at any of its establishments, and that it does not permit its employees to perform their services at any location, under its control, where segregated facilities are maintained. The Bidder certifies further that it will not maintain or provide for its employees any segregated facilities at any of its establishments, and that it will not permit its employees to perform their services at any location, under its control, where segregated facilities are maintained. The Bidder agrees that a breach of this certification is a violation of the Equal Opportunity Clause in this Contract. As used in this certification, the term "segregated facilities" means any waiting rooms, work areas, restrooms and washrooms, restaurants and other eating areas, timeclocks, locker rooms and other storage or dressing areas, parking lots, drinking fountains, recreation or entertainment areas, transportation, and housing facilities provided for employees which are segregated by explicit directive or are in fact segregated on the basis of race, color, religion, or national origin, because of habit, local custom, or otherwise. The Bidder agrees that (except where it has obtained identical certifications from proposed subcontractors for specific time periods) it will obtain identical certifications from proposed subcontractors prior to the award of subcontracts exceeding \$10,000 which are not exempt from the provisions of the Equal Opportunity Clause, and that it will retain such certifications in its files.

Section 6. Successors and Assigns. Each and all of the covenants and agreements herein contained shall extend to and be binding upon the successors and assigns of the parties hereto. The Owner and Bidder acknowledge that this Contract is assigned to the Government, acting through the Administrator, for security purposes under the Owner's mortgage and security instrument.

Section 7. Independent Contractor. The Bidder shall perform the work as an independent contractor, not as a subcontractor, agent, or employee of the Owner. Upon acceptance of this Proposal, the successful Bidder shall be the Contractor and all references in the Proposal to the Bidder shall apply to the Contractor.

Section 8. **Approval by the Administrator:** This contract does _____, does not X, require approval of the Administrator. No acceptance of a Proposal for a contract upon which approval of the Administrator is required shall become effective until the contract has been approved by the Administrator; provided that no obligation shall arise hereunder unless such approval is given within one-hundred twenty (120) days after the date set for the opening of the proposals. The acceptance of a Proposal for a contract upon which approval of the Administrator is not required shall become effective the date of acceptance by the Owner.

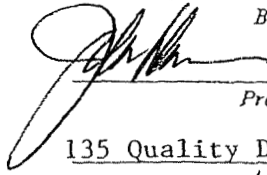
ATTEST:

Secretary

Dated _____

Lectrodryer, LLC

Bidder



John McPherson

President

135 Quality Drive, Richmond, KY 40475
Address

The Proposal must be signed with the full name of the Bidder. If the Bidder is a partnership, the Proposal must be signed in the partnership name by a partner. If the Bidder is a corporation, the Proposal must be signed in the corporate name by a duly authorized officer and the corporate seal affixed and attested by the Secretary of the Corporation.

ACCEPTANCE

Subject to the approval of the Administrator, if approval of the Administrator is required, the Owner hereby accepts the foregoing Proposal of the Bidder, Lectrodryer, LLC

_____ for the following Equipment:

Fuel Gas Compressor Skid, 3 day start-up period including travel and subsistence and shipping to the site.

_____ for a total contract price of \$ 259,250.00 (Two Hundred Fifty-Nine Thousand Two Hundred Fifty dollars.)

East Kentucky Power Cooperative, Inc.

Owner

By Ray M. Palk
President & CEO

Secretary

May 9, 2006
Date of Contract

EKPC Additlons, Page 9 dated March 7, 2005

The Following Additional General Conditions Shall be Added to This Contract RUS Form 198:

Page 9, Article VI, Section 5, the following paragraph will be added as (8)

- "(8) When this order and contract refer to manufactured goods or to work or services, Seller warrants and agrees that it has complied and will comply with (1) Fair Labor Standards Act; (2) Social Security and Workman's Compensation Laws, if work is done on Purchaser's premises; and (3) all other applicable Federal, State and local laws, codes and regulations. It is the policy of Purchaser to provide equal opportunities in employment without regard to race, color, religion, sex, age, or national origin and to employ and advance qualified disabled veterans, handicapped or disabled persons and Vietnam era veterans. Purchaser complies with the requirements placed on government contractors and subcontractors by Executive Order 11246, Section 402 of the Vietnam Era Veterans Readjustment Assistance Act of 1974 and Section 503 of the Rehabilitation Act of 1973, and it is agreed that as a Subcontractor, vendor, or supplier, Seller will also comply with the Executive Order, laws, and applicable rules and regulations. Seller agrees to indemnify Purchaser and save Purchaser harmless if Seller fails to comply with the foregoing, and in the event of such failure Purchaser may, in addition, cancel this order and contract. Seller invoices for work or materials covered hereby shall state that Seller has complied with the requirements of the Fair Labor Standards Act of 1938 as amended."

U.S. Department of Agriculture
Rural Utilities Service

*Certification Regarding Debarment, Suspension, and Other Responsibility
Matters – Primary Covered Transactions*

This certification is required by the regulations implementing Executive Order 12549, Debarment and Suspension, 7 CFR Part 3017, Section 3017.510, Participants' Responsibilities. The regulations were published as Part IV of the January 30, 1989, Federal Register (pages 4722-4733). Copies of the regulations may be obtained by contacting the Department of Agriculture agency offering the proposed transaction.

- (1) The prospective primary participant certifies to the best of its knowledge and belief, that it and its principals:
- (a) are not presently debarred, suspended, proposed for Debarment, declared ineligible, or voluntarily excluded from covered transactions by any Federal department or agency;
 - (b) have not within a 3-year period preceding this proposal been convicted of or had a civil judgment rendered against them for commission of fraud or a criminal offense in connection with obtaining, attempting to obtain, or performing a public (Federal, State, or local) transaction or contract under a public transaction; violation of Federal or State antitrust statutes or commission of embezzlement, theft, forgery, bribery, falsification or destruction of records, making false statements, or receiving stolen property;
 - (c) are not presently indicted for or otherwise criminally or civilly charged by a governmental entity (Federal, State, or local) with commission of any of the offenses enumerated in paragraph (1)(b) of this certification; and
 - (d) have not within a 3-year period preceding this application/proposal had one or more public transactions (Federal, State, or local) terminated for cause or default.
- (2) Where the prospective primary participant is unable to certify to any of the statements in this certification, such prospective participant shall attach an explanation to this proposal.

Lectrodryer, LLC
Organization Name

[Signature]
Authorized Representative's Signature

May 1, 2006
Date

John McPhearson
Name Typed or Printed

(This is not an official Government form. It has been prepared to assist and expedite the application process and is only intended for use in the Rural Broadband Access Loan and Loan Guarantee Program.)

U.S. Department of Agriculture
Rural Utilities Service

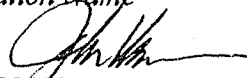
*Certification Regarding Lobbying for Contracts, Grants,
Loans, and Cooperative Agreements*

The undersigned certifies, to the best of his or her knowledge and belief, that:

- (1) No Federal appropriated funds have been paid or will be paid, by or on behalf of the undersigned, to any person for influencing or attempting to influence an officer or employee of any agency, a Member of Congress, an officer or employee of Congress, or an employee of a Member of Congress in connection with the awarding of any Federal contract, the making of any Federal grant or loan, the entering into of any cooperative agreement, and the extension, continuation, renewal, amendment, or modification of any Federal contract, grant, loan, or cooperative agreement.
- (2) If any funds other than Federal appropriated funds have been paid or will be paid to any person for influencing or attempting to influence an officer or employee of any agency, a Member of Congress, an officer or employee of Congress, or an employee of a Member of Congress in connection with this Federal contract, grant, loan, or cooperative agreement, the undersigned shall complete and submit Standard Form-LLL, "Disclosure Form to Report Lobbying," in accordance with its instructions. (Copies of this form may be obtained from RUS.)
- (3) The undersigned shall require that the language of this certification be included in the award documents for all subawards at all tiers (including subcontracts, subgrants, and contracts under grants, loans, and cooperative agreements) and that all subrecipients shall certify and disclose accordingly.

This certification is a material representation of fact upon which reliance was placed when this transaction was made or entered into. Submission of this certification is a prerequisite for making or entering into this transaction imposed by section 1352, title 31, U.S. Code. Any person who fails to file the required certification shall be subject to a civil penalty of not less than \$10,000 and not more than \$100,000 for each such failure.

Lectrodryer, LLC
Organization Name


Authorized Representative's Signature

May 1, 2006
Date

JOHN McPHERSON
Name Typed or Printed

(This is not an official Government form. It has been prepared to assist and expedite the application process and is only intended for use in the Rural Broadband Access Loan and Loan Guarantee Program.)

SECTION 11930
LANDFILL GAS COMPRESSOR SYSTEM

PART 1 GENERAL

1.01 DESCRIPTION OF WORK AND DEFINITIONS

A. System Description

This specification covers the design and performance requirements for a landfill fuel gas compression system (FGC). The FGC will provide landfill fuel gas to five (5) Caterpillar 3516 low pressure engine generator sets (three engines initially). The FGC shall consist of a skid-mounted gas compression system designed to operate in an automated, unattended mode for continuous operation 24 hours per day, 365 days per year. The FGC shall be designed for indoor or outdoor installation with the exception of the gas cooler which shall be located outdoors. Design objectives shall strive to avoid complex control systems, facilitate ease of maintenance and to operate the equipment at a high degree of reliability. Each piece of equipment shall be selected for its performance characteristics and proven satisfactory operation in landfill gas or comparable service. The design shall be an efficient system applying proven engineering practices and state-of-the-art technology. All components shall be new, of high quality, free from defects in manufacture and workmanship, low in maintenance, and intended for a long service life.

B. Definitions

1. Vendor - Manufacturer/Supplier of the landfill fuel gas blower and clean-up system.
2. Contractor - General Contractor or his Subcontractor performing installation and construction work at the jobsite.
3. FGC - Landfill fuel gas compression and clean-up system consisting of blower, electric motors, oil management system, automatic suction valve, suction liquid knockout vessel, aerial after cooler, discharge coalescing gas filter, gas reheat exchanger, piping, controls, safety shutdowns, on-skid electrical wiring, local gauge/control panel, skid frame and all other equipment and materials as described in this specification.
4. Buyer - Responsible party, whether General Contractor or Owner, for purchasing and receiving of FGC.

C. Vendor Responsibility

Vendor shall furnish all labor, materials, equipment, freight, taxes and supervision for the design, fabrication and delivery of the equipment as described herein, with all appurtenances necessary to perform the specified function, whether expressly described or not, F.O.B. jobsite.

D. Work By Others

1. Off-loading, inspection, on-site storage and installation of FGC.
2. Providing power from power source to power connections on Vendor-supplied, skid-mounted equipment and control panels.
3. Control wiring from FGC summary shutdown contacts to remote mounted controls or annunciator panel (not part of FGC).
4. Field welding of Vendor supplied interconnecting pipe spools between FGC main blower skid and off-skid aftercooler.

1.02 REFERENCES

- A. American National Standards Institute (ANSI):
 - 1. ANSI B19.3-1991 - Safety Standard for Blowers for Process Industries
 - 2. ANSI B31.3 - Power Piping, Latest Edition
- B. American Society of Mechanical Engineers (ASME):
 - 1. ASME Boiler and Pressure Vessel Code Section VIII, Division 1, Latest Edition
- C. Code of Federal Regulations (CFR) Title 49 Part 192, Latest Edition
- D. National Electrical Code (NEC), Latest Edition
- E. Occupational Safety and Health Administration (OSHA) General Industry Standards, Latest Edition
- F. Steel Structures Painting Council (SSPC), Latest Edition

1.03 SUBMITTALS

A. Drawings

Drawings furnished shall contain sufficient information that when combined with other Documents, the FGC may be properly installed, operated and maintained. Each drawing is to have a title block in the lower right hand corner with certification, reference, revision number, date and drawing title.

B. Project Schedule

A project schedule (bar chart) showing the major activities with their commencement dates and projected completion dates shall be issued to Buyer at time of receipt of Purchase Order. This schedule shall be resubmitted at any time changes are made.

C. Progress Reports

Written progress reports shall be issued every two weeks to Buyer starting from date of purchase order to include:

- 1. Project schedule status
- 2. Scheduling problems
- 3. Possible delays
- 4. Deviations from initial schedule

D. Design Information

Four (4) weeks after the receipt of the purchase order, the following will be provided to the Buyer for design of the FGC facility:

1. Utility Requirements

Submit utility requirements for all energy consumers such as pumps, electric motors, heaters, pneumatic actuators, etc. within four (4) weeks after receipt of purchase order. Preliminary requirements shall be submitted with proposal.

2. Heat rejection data shall be supplied for the following:

- a. Blower
- b. Process piping
- c. Gas Cooler
- d. Oil Cooler
- e. Utility piping
- f. Total heat rejection of the FGC

E. Preliminary Issue

The following documentation shall be submitted to Buyer "For Approval" within six (6) weeks after receipt of purchase order and shall be reviewed and approved by Buyer or Buyer's representative prior to ordering materials and fabrication:

- 1. Customer drawings for the FGC:
 - a. Flow, P&ID and utility diagrams.
 - b. Electrical wiring diagrams and cable schedule.
 - c. General arrangement plans and elevations with customer connections noted on a legend located on the drawings upper right hand corner (certified dimensionally correct). All customer connections should be identified (including electrical motors, heaters, controls, etc.).
- 2. Equipment list, specifications and equipment flow charts.
- 3. Control panel layout with name plate wording.
- 4. Control logic and start sequence (narrative).
- 5. Performance curves for the FGC showing capacity, pressure, and power (kW) required from 0% to 120% of rated capacity.
- 6. Electric motor curves (motor speed vs. torque and current, and time vs. current)
- 7. Expected condensate volumes.
- 8. Equipment noise data shall be furnished for the FGC and each major component (including aerial cooler) and shall contain expected noise levels (in dbA) at the following frequencies: 31.5, 63, 125, 250, 500, 1K, 2K, 4K and 8K Hz. Approval shall be given for the noise emissions levels prior to purchase of such equipment.
- 9. Weight and size information of all equipment requiring foundations shall be supplied. Information shall be sufficient to design and construct equipment foundations (by others) and shall include anchor bolt patterns, overall dimensions, vibration information, operating weights, etc. Information shall be included on general arrangement drawings.
- 10. Leveling procedures and grouting recommendations.
- 11. Initial oil fill and cooling capacities, including make up due to loss or consumption, lubrication recommendations and filter sizes and quantities.

F. "Certified" Submittal

Four (4) weeks after review and approval comments have been received by Vendor, all Drawings and Documents listed in 1.03.E shall be resubmitted to Buyer. Drawings shall be certified dimensionally correct. All Drawings and Documents shall be issued "Certified".

G. "As-Built" Drawings

Within four (4) weeks after the FGC fabrication is completed submit "as-builts" with all revisions noted, certified and dated.

H. "As-Installed" Drawings

After the system is installed at the jobsite, submit CADD files of "as-installed" drawings for

inclusion in operation and maintenance manuals. These drawings shall be submitted no later than four (4) weeks after the FGC has been placed in commercial operation or has achieved substantial completion.

1. Operation and Maintenance Manuals

Provide written instructions to enable the installation, operation and maintenance of the FGC. This information shall be completed in manuals with title pages containing index sheets and section titles. The Operation and Maintenance Manual shall be prepared specifically for this installation.

Three (3) Operation and Maintenance manuals per unit, one of which will be the master manual with the original vendor information, shall be supplied at time of FGC delivery and shall include the following information:

- 1. Catalog descriptions of all equipment utilized in the system as well as performance criteria for the operating conditions.
- 2. Recommended spare parts lists for all equipment, to include part name, manufacturer, part #, manufacturer's part #, cost and supplier, etc.
- 3. Operating instructions for the FGC under the conditions for which it was designed.
 - a. Start-up and shutdown procedures
 - b. Preventive maintenance schedule
 - c. Operating and safety procedures
 - d. Maintenance procedures
 - e. Emergency shutdown
 - f. Rigging procedures
 - g. Methods of disassembly
 - h. Methods of reassembly
- 4. A table indicating the proper control settings for all instrumentation on the FGC.
- 5. Certified copies of as-built drawings (to be replaced by as-installed drawings).
- 6. Troubleshooting instructions.

Two (2) copies of preliminary operating and maintenance manuals shall be supplied within two weeks following completion of FGC fabrication.

1.04 SITE CONDITIONS

A. The unit will be located at the Laurel Ridge Landfill in Lily, Kentucky.

B. Specific Site Conditions

1.	Plant Elevation	880 FASL
2.	Ambient Pressure	14.38 psia
3.	Maximum Relative Humidity	100%
4.	Average Annual Precipitation	40 inches
5.	Ambient Temperature Range	110EF Max. -20EF Min.
6.	Avg. Annual Snow Accumulation	20 inches
7.	Area Classification	NEC Class 1, Div. 2, Group D

1.05 GENERAL SERVICE DESCRIPTION

A. System Description

The FGC shall be designed to compress, clean, and deliver a volume of landfill gas at a specified pressure

and quality. The design of the FGC shall strive for efficiency, one that minimizes initial cost, seeks to operate at the lowest possible horsepower, but meets all required performance and material standards as described in this specification. The FGC shall be designed for indoor or outdoor installation.

The FGC shall consist of a blower, electric motors, automatic suction valve, inlet liquid knockout vessel, gas reheat exchanger, discharge gas coalescing filter, interconnecting piping, relief valves, safety shutdowns, on-skid electrical wiring, and local control panel, all skid-mounted. The aerial aftercooler shall be mounted off the main skid. FGC skid shall have a single flanged suction connection with a pneumatically operated fail close butterfly valve and a single flanged discharge connection.

Initial cleaning of the gas shall be accomplished by a liquid knockout vessel with a stainless steel mesh pad demister at the suction of the blower. Compression of the gas shall be followed by cooling of the gas in an aerial aftercooler. The aerial aftercooler shall be sized so that the skid shall be able to run in recycle mode without overheating. Prior to the blower discharge aftercooler, the gas shall pass through a shell and tube gas-to-gas heat exchanger for reheating the gas following final filtration. The final gas filter shall be a two stage, coalescing filter to remove condensed liquids and particulates. A gas temperature switch shall be provided to shutdown the aerial aftercooler fan in the event of low gas temperatures to prevent freeze-up of the gas passages in the aerial aftercooler.

All equipment, instrumentation, interconnecting piping, and controls are to be furnished for the jobsite in an integrated packaged system by the Vendor. The package components shall be fabricated such that unloading and setting on a foundation at the jobsite requires minimal field interconnection of piping and wiring. Skid-mounted means the process equipment is assembled and pre-piped on a steel structure of such a size and weight that permits its shipment by highway or other transport from point of fabrication to the jobsite. All freight charges shall be FOB Jobsite and paid by the Vendor and billed to Buyer at cost.

B. Functional Conditions

1. Landfill Gas Inlet Design Conditions

a.	Suction Pressure, max.	11.8 psia (-6" Hg vacuum)
b.	Suction Temperature	100EF
c.	Design Flow Rate, wet	1500 scfm maximum (800 scfm initial)
d.	Guaranteed Capacity	+ 3%
e.	Water Content	Saturated

2. Suction temperature of the gas may vary between 30EF and 120EF.

3. Landfill Gas Composition (Typical)

<u>Gas</u>	<u>Mol Fraction</u>
Methane	53.450
Ethane	0.050
Propane	0.040
Isobutane	0.030
Normal Butane	0.020
Isopentane +	0.010
Carbon Dioxide	42.000
Nitrogen	1.000
Oxygen	0.200
Hydrogen	0.000
Water	3.200

4. Calculated Gas Properties

- | | | |
|----|------------------|-----------|
| a. | Molecular Weight | 28.770 |
| b. | Specific Gravity | 0.992 Dry |
5. Final Discharge Gas Requirements (at FGC system discharge flange)
- | | | |
|----|--------------------------------|--|
| a. | Discharge Pressure | 4 psig |
| b. | Discharge Temperature | Min. 20EF above gas dew point
Max. 140EF |
| c. | Discharge Guaranteed Flow Rate | 1500 scfm maximum (800 scfm initial)
(based on 1500 scfm inlet flow and 3% water vapor by volume) |
| d. | Oil Carryover, max. | 50 ppmv |
| e. | Total Particulates | Less than 30 ppmw |
| f. | Maximum Particle Size | 8 micron |

1.06 QUALITY ASSURANCE

The FGC shall be manufactured at facilities to the same standards, specifications, and quality requirements as detailed in the Vendor's Quality Control Program. Quality Control Program shall be incorporated with specific inspection and test points through the entire manufacturing process. Included are the following requirements.

A. Buyout Components

Vendor procurement specifications and supplier quality requirements shall be submitted to all major suppliers. Approved vendors must have in place a specific quality plan. Suppliers shall be monitored for compliance through facility visits and through specific project inspection, both in vendor shop and via receiving inspection procedures. Supplier's standard inspection documents shall be furnished to Buyer upon request. Tests and inspections shall be to Vendor's standards.

B. Shop Manufacturing

Welding, fabrication, and assembly shall be accomplished via formal shop planning and related manufacturer specifications. Welding and weld procedures shall be in accordance with recognized industry standards (ASME, API, ANSI, etc.). All pressure vessels shall be fabricated and inspected to ASME code requirements.

PART 2 PRODUCTS

2.01 BLOWER

A. Description

1. Positive displacement, dry rotary lobe blower
2. Belt driven via electric motor controlled by variable frequency drive (VFD by others)
3. Blower driven or auxiliary lube oil pump, as necessary to allow variable speed operation
4. Oil heater
5. Expansion joints at suction and discharge
6. Dresser Roots 1012 RGS-JH, or equal (subject to approval)

2.02 ELECTRICAL MOTORS

A. Description

1. National Electric Code (NEC) Class 1, Division 2, Group D requirements.

2. Totally enclosed, fan cooled (TEFC)
3. 480 volts AC, 60 Hz, 3 phase for blower drive motor;
480 volts AC, 60 Hz, 3 phase for all other motors ½ HP and larger
120 volts AC, 60 Hz, 1 phase for all other motors less than ½ HP
4. 1.15 Service Factor (S.F.)
5. Include 110 VOLTS AC, 1 phase space heater
6. Continuous duty operation at ambient temperatures of 105°F or above.
7. Motor starters or VFD's shall not be furnished as part of the packaged system.

B. Manufacturers

1. Siemens
2. U.S. Electric Motor
3. Or equal.

2.03 CONTROL SYSTEM

A. Control System Description

1. Programmable Logic Controller (PLC) based with Touch Screen human-machine interface (HMI) display.
2. Automatic start/stop logic sequencing initiated by a single system start or stop pushbutton.
3. One (1) system control panel locally mounted on-skid with NEMA construction for mounting in a NEC Class I, Division 2 area.
4. Intrinsically safe control components.
5. "First Out" annunciators that indicate the primary cause of shutdown and then the subsequent failures.
6. Each wire, tube and gauge shall be clearly marked or tagged with their respective termination point for ease of field installation (pencil or ink marking is not satisfactory).
7. Thermocouples/capillaries shall be installed at time of fabrication.
8. Flexible conduit runs on the skid shall be limited to 3 feet in length.
9. Temperature gauges/devices shall have stainless steel thermowells.
10. Local temperature gauges shall be 4 inch min. dial face with flexible head.
11. Pressure gauges/devices will have pulsation dampeners and isolation valves.
12. Wires shall be clearly marked on both ends and the panel shall have wires placed in wire raceways and tie-wrapped.
13. Contact devices shall have explosion-proof enclosures if not intrinsically safe, and dust covers.
14. Wire termination points shall be clearly marked for proper location with black name plates and white letters.
15. The FGC shall have a system emergency stop pushbutton on the locally mounted skid panel.
16. Instrument control devices (e.g. dump valves, bypass controls) shall be pneumatically operated (instrument air supplied by others). Landfill gas as a pneumatic control media is unacceptable.
17. The FGC control system shall have a gas temperature switch to control aftercooler fan speed (high/low) and to shut down the fan on low gas temperature (e.g., 35 degrees F).

B. Local Control Panel

1. General

- a. Each device mounted on the face of the control panel shall be identified with a phenolic laminated, engraved nameplate. The nameplates are to be black with white letters.
 - b. All wires, tubes and gauges in the rear or inside of the panel shall be clearly labeled or tagged with their respective termination point for ease of maintenance.
2. The following items shall be included in the FGC control panel (but not limited to):
- a. One (1) explosion proof (EP) box for HMI, pushbuttons and switches.
 - b. One (1) push to start FGC.
 - c. One (1) push to stop FGC.
 - d. One (1) alarm reset.
 - e. One (1) key switch (on/off control).
 - f. One (1) EP horn (sounds for three seconds prior to starting FGC).
 - g. One (1) EP alarm red strobe light (shutdown indication).
 - h. One (1) EP box on skid for terminal block interconnect.
 - i. One (1) emergency shutdown.
 - j. Automatic cooler fan speed control. Include low temperature cut-out switch and timer for high to low speed transition.
 - k. FGC capacity controls for blower VFD and recycle valve (may mount external to control panel).
 - l. Runtime hour meter.
 - m. Power On indicator light
3. Gauges (Displayed on HMI unless otherwise indicated.)
- a. One (1) system suction pressure w/ shutoff valve
 - b. One (1) blower suction pressure w/ s.s. trim.
 - c. One (1) blower discharge pressure w/ s.s. trim.
 - d. One (1) blower suction temperature w/ s.s. capillary or thermocouple.
 - e. One (1) blower discharge temperature w/ s.s. capillary or thermocouple.
4. Shutdown Indications
- a. Suction gas pressure low/high.
 - b. Blower gas discharge pressure high.
 - c. Suction gas temperature high.
 - d. Blower gas discharge temperature high.
 - e. Final gas discharge temperature high.
 - f. Blower oil pressure low.
 - g. Blower oil temperature high.
 - h. Blower oil level low.
 - i. Inlet knockout vessel high liquid level.
 - j. Final coalescing filter high liquid level (upper/lower).
 - k. Blower vibration high.
 - l. Blower motor vibration high.
 - m. Gas cooler fan(s) vibration high.
 - n. Emergency shutdown (from local emergency stop pushbutton)
 - o. Customer emergency shutdown (signal by others)
 - p. Spare.
 - q. Spare.
5. One (1) set of control contacts/terminations for the following:
- a. Gas aftercooler fan speed controls (High/Low/Off).

- b. Blower main motor control (Start/Stop).
- c. Blower oil heater control.
- d. Remote FGC running indication.
- e. Remote FGC emergency shutdown.

6. One (1) set of analog control outputs for the following:

- a. Blower main motor speed control (4-20mA or 0-10V DC).

C. Local Mounted Gauges

- 1. Final discharge gas pressure w/ s.s. trim and pulsation/shutoff valve.
- 2. Final discharge gas temperature.
- 3. After reheat exchanger gas temperature.
- 3. Blower aftercooler discharge gas temperature.
- 4. Skid suction gas temperature.
- 5. Blower oil temperature.

D. Capacity Control

- 1. Pressure control via blower speed, with recycle valve control at blower minimum speed.
- 2. Recycle capacity shall be sized for 100% of actual recycle flow (zero discharge flow).
- 3. Recycle valve to have stainless steel trim.
- 4. Local mounted pneumatic controller.
- 5. FGC shall be shipped with appropriate sheaves and belts installed for initial operation at 800 scfm flow, and full rated flow of 1500 scfm in the future.

2.04 PRESSURE VESSELS

A. Description

1. General - All Vessels

- a. ASME Boiler and Pressure Vessel Code, Section VIII, Division I, latest edition.
- b. ASME code stamped with a National Board number affixed. Vessels to be code stamped:
 - 1. Inlet knockout vessel
 - 2. Final coalescing filter
 - 3. Gas reheat exchanger
- c. Bolted in place.
- d. Fabricated with removable heads and demisters.
- e. Equipped with automatic and manual liquid dump control valves for unattended operation. Automatic controls shall have isolation valves for maintenance.
- f. Vessel connections 2 inches and larger shall be flanged. Vessel connections smaller than 2 inches may be flanged at Vendor's option.
- g. Threaded fittings shall be stainless steel.
- h. Manways 6 inches or larger to have flanged davits for ease of installation and removal. Davits shall have grease fittings to lubricate the davit arm.
- i. Gaskets

1. Vessel closure or manway flanges prior to the blower in the process stream - non-asbestos, compound type gaskets, Garlock Gylon blue or similar.
 2. Vessel closure or manway flanges downstream of the blower - wire wound, non-asbestos filled, Flexitallic type gaskets, or similar.
- 2 Inlet Liquid Knockout
- a. Carbon steel, internally epoxy coated or 304/316 stainless steel.
 - b. Supplied with an automatic, pneumatic drain pump to remove liquids.
 - c. Liquid level sight gauges.
 - d. Stainless steel wire meshpad demister.
3. Final Coalescing Filter
- a. 304/316 stainless steel.
 - b. Coalescing filter/separator.
 - c. 0.3 micron absolute particulate size rating.
 - d. Liquid level sight gauges.

2.05 PUMPS

A. General

1. Isolation ball valves to allow removal without draining system.
2. ANSI type pumps.
3. Continuous duty operation.
4. NEC Class 1, Division 2, Group D.

2.06 GAS AFTERCOOLER/LUBE OIL COOLER

A. Description

1. Blower aftercooling, capable of operating in full recycle mode without overheating of gas.
2. Blower lube oil cooling.

B. Construction

1. ASME Boiler and Pressure Vessel Code, Section VIII, Division I, latest edition.
2. Unitized, horizontal, forced draft, air-cooled heat exchanger having a vertical air discharge.
3. Incorporate final gas temperature control via automatic fan motor speed control and manual louvers over blower aftercooling section.
4. Entire cooler structure, not including cooling section tubes shall be coated with epoxy paint - color shall be same as skid. (See Section 2.13 for painting specifications.)

C. Gas Aftercooler Section

1. Header removable tube type construction.
2. Stainless steel tubes with carbon steel header boxes.
3. ANSI raised face, flanged connections.

D. Blower Lube Oil Cooler Section

1. Double pass finned tubes.
2. Carbon steel tubes.
3. NPT or tubing connections.

2.07 LUBRICATION SYSTEM

A. Description

1. Blower oil system provides lubrication for the bearings and gears.
2. Heaters with thermostats and temperature control valves to maintain proper lube oil temperatures when FGC is not in operation. Heaters shall be 120/240V AC single phase.
3. Oil filters shall be designed to have a dirt loading capacity of a minimum of three (3) month filter change interval.
4. Provided with oil sample location (i.e., sample valve prior to filter).

B. Blower Lube Oil System

1. Carbon steel construction.
2. Blower driven or auxiliary lube oil pump, as required for variable speed operation.
2. Blower manufacturer recommended lube oil filtration system.
3. Thermostatic temperature control (Amot or equal) to provide bypass of aerial cooler for cold starts.

2.08 MATERIALS OF CONSTRUCTION

<u>Description</u>	<u>Material</u>
Sight gauges	Carbon steel with stainless steel trim
Vessel trim	304/316 stainless steel
Inlet knockout vessel	Epoxy coated carbon steel or 304/316 stainless steel
Final gas filter	304/316 stainless steel
Blower discharge pulsation dampener	304/316 stainless steel
Gas cooler sections	304/316 stainless steel tubes & carbon steel headers; carbon steel structure and supporting legs
Gas reheat exchanger	304/316 stainless steel
Blower oil cooler section	Carbon steel tubes
Condensate piping	304/316 stainless steel
Instrument air piping	Carbon steel
All piping that comes in contact with landfill gas	304/316 stainless steel

Blower oil piping	Carbon steel
Pipe flanges for stainless piping	Stainless steel
Inlet valve	Carbon steel, stainless steel trim
Dump and liquid level controls	Stainless steel
Instrument air tubing	Stainless steel
Process tubing	All tubing in contact with landfill gas shall be stainless steel.
Blower oil filters	Carbon steel
Shims	Stainless steel
Gas interconnecting piping	Stainless steel
Relief valves	Carbon steel with stainless steel trim

2.09 CONSTRUCTION

- A. Piping and equipment arrangements shall be designed to provide adequate clearance areas and safe access for operation and maintenance.
- B. Blower discharge piping shall be equipped with a pressure safety relief valve (PSV) that is piped to an atmospheric vent.
- C. Clear overhead access shall be provided over all equipment that requires a hoist for removal.
- D. The skid shall be designed and constructed to allow any corner to be independently raised 3 inches without damage to equipment or piping installed on the skid.
- E. FGC skid shall include a minimum of four lifting eyes for ease of installation.
- F. Mounting surfaces shall be machined milled and leveled within 0.005 inch (i.e. motor, blower, etc.). Mounting hardware for all equipment shall have lock and flat washers.
- G. Maintenance items 5 feet above the base of the skid shall have ladders and step-offs (i.e. liquid knockout and filter vessels) meeting OSHA Standards for ease of access and maintenance.
- H. Driven equipment shall have OSHA approved guards for personnel protection.
- I. Skids shall have jacking screws placed approximately 5 feet on center for leveling and setting. All equipment shall have jacking screws for X, Y and Z axis alignment (i.e., blower and electric motor).
- J. The fabrication of the skid shall conform in dimensions for installation in the engine facility. The dimensions of the main blower skid shall not exceed 8 feet wide and 14 feet long. The cooler skid shall not exceed 4-1/2 feet wide and 12 feet long. The height shall not exceed 13 feet high for the blower skid and 12 feet high for the cooler.

- K. The skid shall be laid out so that the landfill gas suction piping connection is located at the front or right side of the skid, the aftercooler piping connections are located at the rear of the skid, and the landfill gas discharge piping connection is located on the left side of the skid when viewed from the front (suction) end.

2.10 WELDING

- A. Welding on pipe spools shall conform with ANSI B31.3.
- B. Welders shall be ASME certified and all necessary documentation shall be produced upon request of Buyer.
- C. Welds shall be verified by in-process inspection and shall be documented in a certified report and submitted at the completion of fabrication. A minimum of 5% of all welds shall be radiographed at Vendor's selection and attached to the final report.

2.11 PIPING

- A. Piping and piping fabrication shall be consistent with recognized industry specifications and shall be 304 or 316L stainless steel unless otherwise noted on the Materials of Construction, Section 2.08.
- B. Piping flanges shall be ANSI 150 lbs. rated. Fabricated flanges are not acceptable.
- C. Flange connections upstream of the blower shall use Garlock type gaskets. Flange connections downstream of the blower shall use non-asbestos, wire wound, Flexitallic type gaskets.
- D. Piping 2 inches (nominal) and larger shall be butt welded and flanged.
- E. Piping wall thickness shall be designed for a minimum of 1.5 times the operating pressure.
- F. Screwed piping shall have a minimum wall thickness of ANSI schedule 40 pipe with minimum 150 lb. fittings. Close thread nipples or street elbows shall not be used.
- G. Stainless steel tubing and fittings may be substituted for piping 1 inch (nominal) or smaller; piping 1/2 inch and smaller shall use stainless steel tubing and fittings.
- H. Tubing and fittings shall be 304 or 316L stainless steel unless otherwise noted in Section 2.08.
- I. Condensate drain lines shall be manifolded to one location on the skid with all necessary check valves at each vessel for safe operation. A shut-off ball valve shall be provided at skid edge.
- J. Gas piping, where it is possible for liquids to collect, shall have drain connections (manual ball valves) and shall ensure complete drainage through low points without disassembly. Low points in gas piping are to be avoided.
- K. Isolation valves shall be placed in piping around all components to avoid loss of gas pressure and fluids during scheduled or unscheduled maintenance of the components.
- L. Instrument air lines shall be manifolded and have a coalescing filter with a shutoff ball valve. Regulation of air pressure shall be by a single point gauge and regulator (except where required by individual devices for correct operation). Dedicated instrument control connections shall be provided for all gauges and shutdowns.
- M. Oil system drain shall be brought to the skid edge. A shut-off ball valve shall be provided at skid edge.

- N. Interconnecting pipe spools shall be provided with one field weld in each X, Y and Z axis. All field welded pipe to be shipped loose is to be stamped with identifying marking to match with adjoining pipe.
- O. Interconnecting instrument air tubing shall be tagged at both ends for ease of field installation.

2.12 CLEANING

- A. Prior to testing and final assembly, all gas process piping, vessels, and utility piping shall be thoroughly cleaned. The cleaning procedure proposed shall be submitted to Buyer for approval one month prior to actual performance of any such cleaning and shall be a proven method to remove foreign materials, corrosion products and mill scale.
- B. All stainless steel piping shall be cleaned and filed with stainless steel files and wire wheels prior to welding. At no time shall stainless steel piping or components come in contact with carbon steel cleaning devices.
- C. Oil systems shall meet the cleanliness intent of API 614 standard.

2.13 PAINTING

- A. All piping, vessels, mechanical equipment and skid shall be painted per SSPC paint specification. (Alternative method shall be Ameron Amerlock 400 paint system per manufacturer's specifications.)
 - 1. Commercial sandblast per SSPC-SP6-63
 - 2. Prime inorganic Zinc - 0.0635 mm dry minimum thickness
 - 3. Top coat Epoxy Polyamide - 0.0762 to 0.1016 mm dry minimum thickness
 - 4. Color - Solar grey (paint chip available upon request)
- B. Prior to cleaning and painting, openings shall be plugged and all nameplates, labels, tags, manufacturers information and glass shall be covered. All coverings shall be removed when painting is complete.
- C. Stainless steel items shall also be sandblasted and painted. (Only exception shall be stainless steel tubing and fittings.)
- D. Piping on the underside of the skid, the underside of vessel skirts, cast aluminum boxes and subvendor supplied items shall be hand cleaned per SSPC-SP2-63 and primed with one coat of epoxy primer and finish coat.

2.14 INSPECTION AND TESTING

- A. All testing protocols shall be submitted to Buyer for review and approval prior to the start of fabrication.
- B. All utility systems shall be run tested at Vendor's shop. Tests shall be performed at operating pressures and temperatures. Any exceptions must be submitted to and approved by Buyer thirty (30) days prior to testing.
- C. The following utility piping shall be hydro-tested prior to assembly to 1.5 times its operating pressure or to a minimum of 25 psi gauge pressure.

1. Oil lines (air tested - soap bubble tested)
 2. Instrument air lines after final assembly (air tested - soap bubble tested)
 3. Condensate drain lines greater than one inch diameter
- D. Gas piping shall be hydro-tested prior to assembly to 1.5 times its operating pressure or to a minimum of 25 psi gauge pressure and the reading shall be recorded with a chart recorder for a minimum of one hour. Gas piping connections shall be air tested for flange leaks after assembly. The test shall be performed at operating pressure for a minimum of thirty (30) minutes to check for leaks when subjected to a soap-bubble test or to another approved leak test.
- E. All pressure vessels shall be tested per code requirements:
1. Final gas filter
 2. Inlet liquid knockout
 3. Gas cooler
- F. All purchased items shall have the necessary documentation to confirm code conformance.
- G. Buyer shall be notified one week prior to all testing described and tests shall include but not be limited to the following:
1. Control panel tests
 2. Vessel closures and pressure tests
 3. Pipe spool hydrostatic testing
 4. Utility system tests
 5. Shutdown safety test
 6. Blower factory tests
- H. Buyer shall also be notified for the following activities:
1. Alignment of the blower to the electric motor
 2. After skid is sandblasted and prior to painting
- I. Each manufacturer shall supply written certification that all tests have been performed together with the results of such tests.
- J. All safeties shall be checked and gauges proved operational for both temperature and pressure.
- K. Vessels shall be sufficiently filled with water to ensure the correct operation of dump valves, controls and high liquid level shutdowns.
- L. A mechanical bar-over test for the blower and electric motors shall be performed prior to shipment.
- M. Control panels shall be witness tested by Vendor and Buyer.
- N. Relief valves on all gas piping shall be certified at correct settings.
- O. Drive sheaves and belts shall be installed after the unit and the electric motor have been positioned and aligned.
- P. The Buyer's representative shall have the right to reject any components that do not conform with the specifications. The Buyer's acceptance of shop test results shall not constitute waiver of Vendor's obligation to provide equipment which meets the design operating requirements of the FGC.

2.15 COMMISSIONING AND START-UP

- A. Vendor shall include a three (3) day start-up period including travel and subsistence to begin upon notice of Buyer. Vendor shall provide additional start-up assistance as required by Buyer at Vendor's standard service rates. Vendor shall provide standard service rates to Owner prior to start-up.
- B. Vendor shall provide services for commissioning and start-up with Service Representatives who are experienced and qualified in all electrical, mechanical and process control equipment that is part of the system supplied.
- C. Part of the start-up procedure shall include verification of correct equipment installation and alignment. Alignment shall be checked at a cold setting and once again after the unit has run for a minimum of three consecutive days.
- D. Vendor shall provide an equipment start-up and check-off sheet to Buyer to certify that necessary start-up activities are accomplished. Vendor shall record and supply all initial start up data and blower log readings to compare actual verses design readings and explanations for variances.
- E. The Vendor's Service Representative shall be trained in the design, operation, and servicing of the fuel gas blower package and will be involved during factory assembly and testing to supplement training for these specific machines at no cost to Buyer.
- F. Start-up time may include, at Buyer's option, a familiarization training session for Buyer operator personnel on the blower packages.

2.16 PREPARATION FOR SHIPMENT

- A. Flanged connections shall be covered with wood discs and bolted.
- B. Screw connections shall be sealed with plastic covers.
- C. Instruments vulnerable to shipping damage shall be removed, boxed and packed for reinstallation at the jobsite.
- D. Buyer is to be notified twelve (12) weeks after receipt of purchase order which items will ship loose and require field assembly.
- E. Each unit shall be suitably prepared for at least six (6) months of outdoor storage from time of shipment in a manner requiring no major reassembly prior to operation, except as required in Item C above.
- F. Ship loose items shall have weather resistant tags indicating item identification and serial number.
- G. Exterior machined surfaces shall be coated with a suitable rust preventive.
- H. The FGC shall be delivered to the Jobsite with a complete bill of materials noting all items shipped.
- I. The FGC shall be canvased or covered with polyethylene during the shipping process.

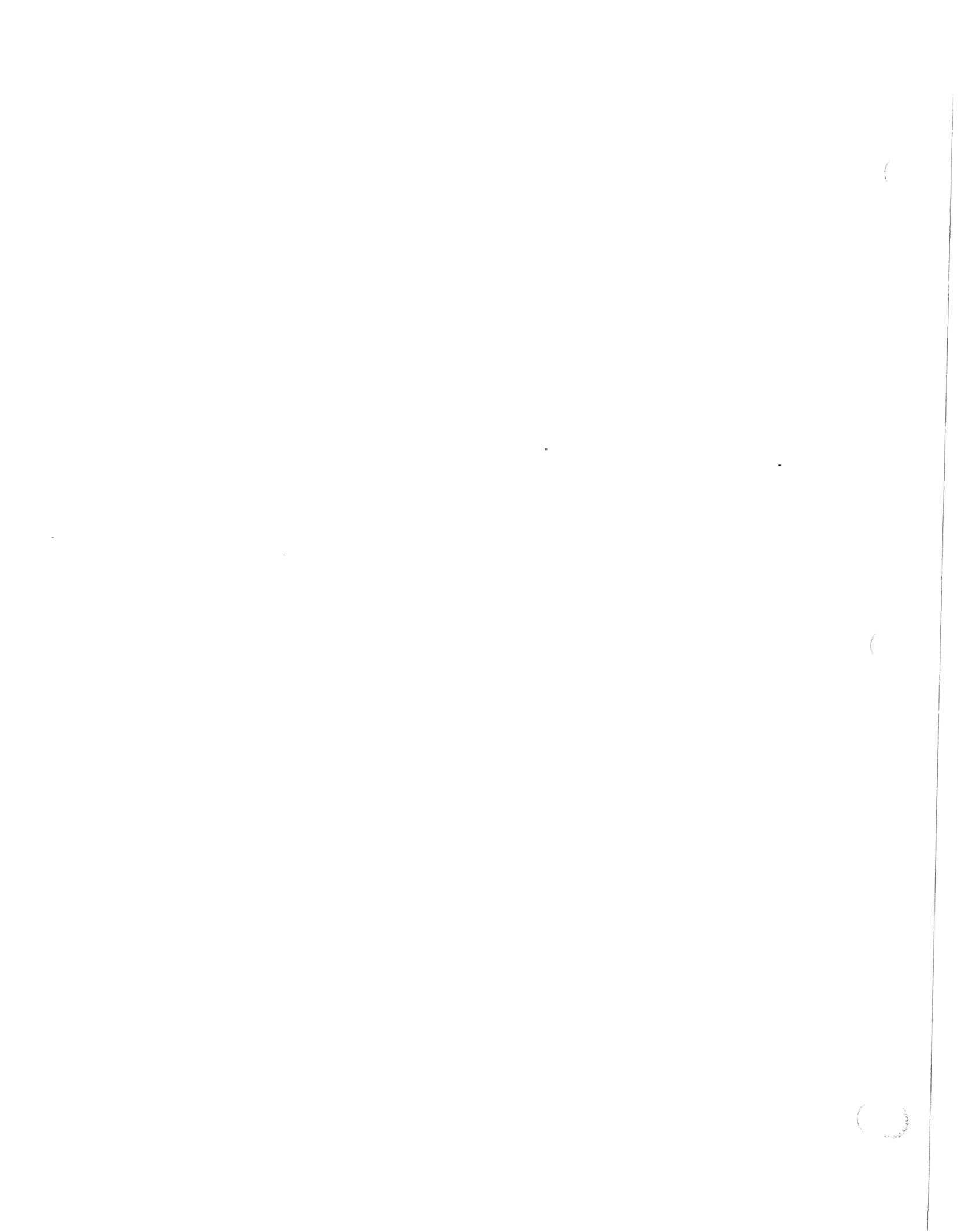
PART 3 EXECUTION

3.01 WARRANTY

It shall be the responsibility of the Vendor to design and provide an integrated system including blower, motors, vessels, controls, etc. which meets all requirements of the specifications. The FGC shall be supplied as a complete and operable package and shall be warrantied as a single package for a minimum period of 18 months after shipment and 12 months after start-up. Individual component warranties shall not be carried through unless they exceed the warranty of the package. The warranty shall ensure the proper operation of the FGC package as designed and of all components supplied.

3.02 INSTALLATION

Contractor will install the FGC in accordance with the installation instructions provided by the Vendor.



LECTRODRYER, LLC

P.O. Box 2500, Richmond, KY 40476-2602
PH: 859-624-2091 / FAX: 859-623-2436

East Kentucky Power Cooperative
4775 East Lexington Road
Winchester, KY 40391

Date: March 30, 2006

Quotation NO: 06-105-L

ATTN: Ralph Tyree
Phone: 859-744-4812
Fax: 859-744-6008

- Fuel Gas Compression System (FGC)** designed to compress 1500 SCFM of Landfill Gas from 11.8 PSIA at +30° to 120°F to a discharge pressure of 4 PSIG at 140°F maximum from a 460 volt, 3 phase, 60 hertz power supply in a Class I Group D Division II area classification.

Features include: Roots blower 1012 RGSJH, all ASME welded construction in accordance with Section VIII and B31.3, stand alone control system featuring Allen-Bradley PLC with Operator Interface, electrical construction in accordance with NEC, complete design, fabrication, and testing in Richmond, KY. Skid dimensions not to exceed (L x W x H) 14' x 8' x 13'. Weight estimate 12,000 lbs.

Also, included: Warranty 18 month after shipment or 12 months after start-up whichever occurs first, 3 days start-up assistance additional days are per attached rate schedule.

PRICE: F.O.B. Destination

\$259,250

Best regards,



Dwight Lawson
Customer Service Manager
Lectrodryer, LLC

Attachments: Field Service Rates
Service Contract Rates

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"Continuing the tradition of quality and service since 1932"



TELEPHONE CONFERENCE MINUTES

Date: April 13, 2006

Subject: Pendleton County LFGTE Fuel Gas Compressor Skid Bid Review

Participants: Dwight Lawson - Lectrodryer

Recorded By: Chuck Anderson – Meade Electric

Discussion:

The following is documentation of the Telephone conversation held regarding Lectrodryer's Proposal #06-105-L, dated 3/30/2006, to EKPC's request for bid:

1) Scope of Supply

- Lectrodryer has assumed the Blower Motor will be powered by a variable frequency drive (VFD) to control speed.
- Lectrodryer has included an automatic shut-off operator on the skid suction valve.
- Lectrodryer has included an Allen-Bradley P.L.C. and Touch Screen, which is their standard control platform.

2) Technical Clarifications

- The skid discharge pressure constraints were discussed. Lectrodryer stated that based upon their engineering estimate, the 4 PSIG discharge pressure can be maintained at full flow conditions, with maximum inlet vacuum (i.e., 11.8 PSIA) and maximum pressure drop across the skid components (e.g., filters, vessel, cooler, etc.). This can be considered worst case conditions for every variable. The determination of discharge pressure is based on recycle valve position and blower speed.
- Detailed engineering and shop drawing submittal was discussed. Lectrodryer stated that they would begin the engineering effort by visiting an EKPC plant to inspect the existing FGC skid, and then follow the same basic concept in their design. Shop drawings should be ready for submittal in 4 to 5 weeks.
- Equipment delivery lead times were discussed. Lectrodryer stated that although they manufacture heat exchangers, they would probably buy the gas cooler for this project. The gas cooler will likely be the longest lead time component. They are confident that they can ship the skid within 120 days after receipt of order.

These notes reflect Chuck Anderson's interpretation of the telephone conversation. If there are any comments or clarifications regarding the content of these notes, please contact him at telephone number (708)588-2514, or via e-mail at canderson@meadeelectric.com.


UTILITY SALES & ENGINEERING SERVICES, LLC

7508 New LaGrange Road, Suite 5 ~ Louisville, Ky 40222-4895

(502) 412-2838 Fax (502) 412-2839

E-Mail: normmayer@usesllc.com

May 1, 2006

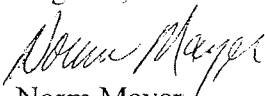

Mr. Ralph Tyree
East Kentucky Power Cooperative
4775 Lexington Road
Winchester, KY 40392

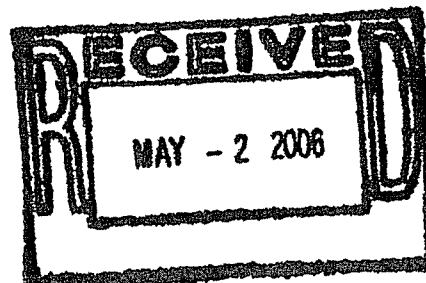
Dear Ralph,

Enclosed you will find two (2) signed originals of RUS Form 198 for supplying the 4160/480 Volt Pad Mount Transformer for the Pendleton County LFGTE generating plant.

Thanks for the business!

Regards,


Norm Mayer



U.S. Department of Agriculture
Rural Utilities Service

EQUIPMENT CONTRACT

NOTICE AND INSTRUCTIONS TO BIDDERS

1. Sealed proposals for the furnishing and delivering f.o.b. 4160-480 Volt Pad Mount Transformer

of equipment for the rural electric project of East Kentucky Power Cooperative, Inc.,
RUS designation Ky 59 Fayette (hereinafter called the "Owner") will be received by the Owner on or
before two (2) o'clock P M., March 31, 2006, at its office
at 4775 Lexington Road, Winchester, KY at which time and place the proposals will be
publicly opened and read.

privately opened. The Owner, subsequent to the bid opening, may elect to conduct clarifying discussions
with the bidder to resolve any questions related to the substance of the bidder's proposal and to arrive at a final
price for a responsive bid.

Any proposals received subsequent to the time specified will be promptly returned to the Bidder unopened.

2. **Obtaining Documents.** The Plans, Specifications, and Construction Drawings, together with all necessary
forms and other documents for bidders may be obtained from the Owner, or from the Engineer Meade Electric
Company, Inc. at the latter's office at 9550 W 55th Street, Suite A, McCook, IL

upon the payment of \$ N/A, which payment will not be subject to refund. The Plans,
Specifications, and Construction Drawings may be examined at the office of the Owner or at the office of the
Engineer.

3. **Manner of Submitting Proposals.** Proposals and all supporting instruments must be submitted on the forms
furnished by the Owner and must be delivered in a sealed envelope addressed to the Owner. The name and
address of the Bidder and the date and hour of the opening of bids must appear on the envelope in which the
Proposal is submitted. Proposals must be completed in ink or typewritten. No alterations or interlineations
will be permitted, unless made before submission, and initialed and dated. The successful Bidder will be
required to execute two additional counterparts of the Proposal.
4. **Due Diligence.** Prior to the submission of the Proposal, the Bidder shall make and shall be deemed to have
made a careful examination of the Plans, Specifications, Construction Drawings, and form of Proposal, and
shall review the location and nature of the proposed construction, the transportation facilities, the kind and
character of soil and terrain to be encountered, the kind of facilities required before and during the
construction of the project, general local conditions, environmental and historic preservation considerations,
and all other matters that may affect the cost and time of completion of the work. Bidder will be required to
comply with all federal, state, and local laws, rules, and regulations applicable to its performance, including
those pertaining to the licensing of contractors, and the Anti Kick-Back Act of 1986 (41 U.S.C. 51 et seq).
5. Proposals will be accepted only from those prequalified bidders invited by the Owner to submit a proposal.
6. The Time for Delivery of the Equipment is of the essence of the Contract and shall be as specified by the
Engineer in the Proposal.

7. **Evaluation Factors.** *In estimating the lowest cost to the Owner as one of the factors in deciding the award of the Contract, the Owner will consider, in addition to the price quoted in the Proposals, the following:*

In conformance with specifications.

8. **Debarment Certification.** *The Bidder must provide to the Owner a suspension and debarment certificate in the form attached hereto.*
9. **Contract is Entire Agreement.** *The Contract to be effected by the acceptance of the Proposal shall be deemed to include the entire agreement between the parties thereto, and the Bidder shall not claim any modifications thereof resulting from any representation or promise made at any time by any officer, agent or employee of the Owner or by any other person.*
10. **Minor Irregularities.** *The Owner reserves the right to waive minor irregularities or minor errors in any Proposal, if it appears to the Owner that such irregularities or errors were made through inadvertence. Any such irregularities or errors so waived must be corrected on the Proposal in which they occur prior to the acceptance thereof by the Owner.*
11. **Bid Rejection.** *The Owner reserves the right to reject any or all Proposals*
12. **Definition of Terms.** *The terms "Administrator" and "Engineer" as used throughout this Contract shall be as defined in Article VI, Section 1, of the Proposal*

East Kentucky Power Cooperative, Inc.

By ^{Owner} Ray M. Pall

President and Chief Executive Officer
Title

May 3, 2006
Date

PROPOSAL

TO

East Kentucky Power Cooperative, Inc.

(hereinafter called the "Owner")

ARTICLE I--GENERAL

Section 1. Offer to Furnish and Deliver. *The undersigned (hereinafter called the "Bidder") hereby proposes to furnish and deliver the equipment (hereinafter called the "Equipment") described in the Plans, Specifications, and Construction Drawings for the following prices:*

Item: 4160-480 Volt Pad Mount Transformer Price: \$7,194.00
Item: _____ Price: _____

The prices of Equipment set forth herein shall include the cost of delivery to:

East Kentucky Power Cooperative, Inc., 4775 Lexington Road, Winchester,
Kentucky 40391

The prices set forth herein do not include any sums which are or may be payable by the Bidder on account of taxes imposed by any taxing authority upon the sale, purchase or use of the Equipment. If any such tax is applicable to the sale, purchase or use of the Equipment hereunder, the amount thereof shall be added to the purchase price and paid by the Owner.

Section 2. Materials and Equipment. *The Bidder agrees to furnish and use in the construction of the project under this Proposal, in the event the Proposal is accepted, only such "fully accepted," "conditionally accepted," and "technically accepted" materials and equipment which have been accepted by RUS as indicated in the current RUS Informational Publication 202-1, "List of Materials Acceptable for Use on Systems of RUS Electrification Borrowers," including revisions adopted prior to the Bid Opening. The use of "conditionally accepted" or "technically accepted" materials and equipment requires prior consent by the Owner or Engineer.*

The Bidder will purchase all materials and equipment outright and not subject to any conditional sales agreements, bailment, lease or other agreement reserving unto the seller any right, title or interest therein. All such materials and equipment shall be new.

Section 3. Description of Contract. *The Notice and Instructions to Bidders, Plans, Specifications, and Construction Drawings, which by this reference are incorporated herein, together with the Proposal and Acceptance constitute the Contract. The Plans, Specifications, and Construction Drawings, including maps, special drawings, and approved modifications in standard specifications are attached hereto and identified as follows:*

Section 4. Due Diligence. *The Bidder has made a careful examination of the Plans, Specifications, and Construction Drawings attached hereto, and has become informed as to the location and nature of the proposed construction, the transportation facilities, the kind and character of soil and terrain to be encountered, and the kind of facilities required before and during the construction of the project, and*

has become acquainted with the labor conditions, federal, state, and local laws, rules, and regulations applicable to its performance.

Section 5. Warranty of Good Faith. *The Bidder warrants that this Proposal is made in good faith and without collusion or connection with any person or persons bidding for the same work.*

ARTICLE II--DELIVERY AND WARRANTY

Section 1. Delivery. *The Bidder shall deliver the Equipment:*

within 16-18 ~~days~~ ^{weeks} after receipt of the written order or orders of the Owner.
not later than 16-18 week ARO, 20 .

The time for delivery shall be extended for the period of any reasonable delay due exclusively to causes beyond the control and without the fault of the Bidder, including, but not limited to, acts of God, fires, strikes, and floods.

Section 2. Defective Materials and Workmanship.

- a. *All Equipment furnished hereunder shall be subject to the inspection, tests, and approval of the Owner and the Engineer, and the Bidder shall furnish all information required concerning the nature or source of any Equipment and provide adequate facilities for testing and inspecting the Equipment at the plant of the Bidder.*
- b. *The Equipment furnished hereunder shall become the property of the Owner upon delivery, provided, however, that the Owner or the Engineer, within one year after initial operation of the Equipment, or within the period for which the Equipment is guaranteed, whichever is longer, may reject any Equipment which does not comply with the Specifications attached hereto and made a part hereof or with the guarantees, if any, of the Bidder and the manufacturer. Upon any such rejection, the Bidder shall repair or replace such defective Equipment within a reasonable time after notice in writing from the Owner. If any such defective materials, equipment, or workmanship so replaced or repaired is found to be defective within one year after the completion of the replacement or repair, the Bidder shall replace or remedy such defective materials, equipment, or workmanship. In the event of failure by the Bidder so to do, the Owner may make such replacement and the cost and expense thereof shall be paid by and recoverable from the Bidder.*
- c. *All manufacturers' guarantees of Equipment, if any, shall be transferred and assigned to the Owner upon delivery of any Equipment and before final payment is made for such Equipment. Such guarantees shall be in addition to those required of the Bidder by other provisions of this Contract.*

ARTICLE III--PAYMENT

Section 1. Payments to Bidder.

- a. *Upon the shipment of any Equipment hereunder, the Bidder shall submit to the Owner a detailed statement of the Equipment shipped. The Owner shall, upon receipt of the Equipment, pay the Bidder ninety percent (90%) of the contract price of the Equipment. When the Equipment has been installed, placed in satisfactory operation, tested and accepted by the Owner, the Owner shall make final payments therefor to the Bidder; provided, however, such final payment shall be made not later than thirty (30) days after delivery of the Equipment, unless such acceptance by the Owner shall be withheld because of the fault of the Bidder.*

- b. *No payment shall be due while the Bidder is in default in respect of any of the provisions of this Contract and the Owner may withhold from the Bidder the amount of any claim by a third party against either the Bidder or the Owner based upon an alleged failure of the Bidder to perform the work hereunder in accordance with the provisions of this Contract.*

ARTICLE IV--PARTICULAR UNDERTAKINGS OF THE BIDDER

The provisions of this Article IV apply to any work performed by the Bidder at the project site.

Section 1. Protection to Persons and Property. *The Bidder shall at all times take all reasonable precautions for the safety of employees on the project and of the public, and shall comply with all applicable provisions of federal, state, and local laws, rules, and regulations and building and construction codes, in addition to the safety rules and procedures of the Owner.*

The following provisions shall not limit the generality of the above requirements:

- a. *The Bidder shall at no time and under no circumstances cause or permit any employee of the Bidder to perform any work upon energized lines, or upon poles carrying energized lines, unless otherwise specified in the Notice and Instructions to Bidders.*
- b. *The Bidder shall transport and store all material in facilities and vehicles which are designed to protect the material from damage. The Bidder shall ensure that all vehicles, trailers, and other equipment used comply with all applicable licensing, traffic, and highway requirements.*
- c. *The Bidder shall conduct its operations to cause the least possible obstruction of public highways*
- d. *The Bidder shall make good and fully repair all injuries and damages to the project or any portion thereof under the control of the Bidder by reason of any act of God or other casualty or cause whether or not the same shall have occurred by reason of the Bidder's negligence.*
- (i) *To the maximum extent permitted by law, Bidder shall defend, indemnify, and hold harmless Owner and Owner's directors, officers, and employees from all claims, causes of action, losses, liabilities, and expenses (including reasonable attorney's fees) for personal loss, injury, or death to persons (including but not limited to Bidder's employees) and loss, damage to or destruction of Owner's property or the property of any other person or entity (including but not limited to Bidder's property) in any manner arising out of or connected with the Contract, or the materials or equipment supplied or services performed by Bidder, its subcontractors and suppliers of any tier. But nothing herein shall be construed as making Bidder liable for any injury, death, loss, damage, or destruction caused by the sole negligence of Owner.*
- (ii) *To the maximum extent permitted by law, Bidder shall defend, indemnify, and hold harmless Owner and Owner's directors, officers, and employees from all liens and claims filed or asserted against Owner, its directors, officers, and employees, or Owner's property or facilities, for services performed or materials or equipment furnished by Bidder, its subcontractors and suppliers of any tier, and from all losses, demands, and causes of action arising out of any such lien or claim. Bidder shall promptly discharge or remove any such lien or claim by bonding, payment, or otherwise and shall notify Owner promptly when it has done so. If Bidder does not cause such lien or claim to be discharged or released by payment, bonding, or otherwise, Owner shall have the right (but shall not be obligated) to pay all sums necessary to obtain any such discharge or release and to deduct all amounts so paid from the amount due Bidder.*
- (iii) *Bidder shall provide to Owner's satisfaction evidence of Bidder's ability to comply with the indemnification provisions of subparagraphs i and ii above, which evidence may include but may not be limited to a bond or liability insurance policy obtained for this purpose through a licensed surety or insurance company.*

- e. Upon violation by the Bidder of any of the provisions of this section, after written notice of such violation given to the Bidder by the Engineer or the Owner, the Bidder shall immediately correct such violation. Upon failure of the Bidder so to do the Owner may correct such violation at the Bidder's expense: Provided, however, that the Owner may, if it deems it necessary or advisable, correct such violation at the Bidder's expense without such prior notice to the Bidder.

Section 2. Insurance. The Bidder shall take out and maintain throughout the period of its operations at the project site the following types and minimum amounts of insurance:

- a. Workers' compensation and employers' liability insurance, as required by law, covering all its employees who perform any of the obligations of the Bidder under the contract. If any employer or employee is not subject to the workers' compensation laws of the governing state, then insurance shall be obtained voluntarily to extend to the employer and employee coverage to the same extent as though the employer or employee were subject to the workers' compensation laws.
- b. Public liability insurance covering all operations under the contract shall have limits for bodily injury or death of not less than \$1 million each occurrence, limits for property damage of not less than \$1 million each occurrence, and \$1 million aggregate for accidents during the policy period. A single limit of \$1 million of bodily injury and property damage is acceptable. This required insurance may be in a policy or policies of insurance, primary and excess including the umbrella or catastrophe form.
- c. Automobile liability insurance on all motor vehicles used in connection with the contract, whether owned, nonowned, or hired, shall have limits for bodily injury or death of not less than \$1 million per person and \$1 million each occurrence, and property damage limits of \$1 million for each occurrence. A single limit of \$1 million of bodily injury and property damage is acceptable. This required insurance may be in a policy or policies of insurance, primary and excess including the umbrella or catastrophe form.

The Owner shall have the right at any time to require public liability insurance and property damage liability insurance greater than those required in subsection "b" and "c" of this Section. In any such event, the additional premium or premiums payable solely as the result of such additional insurance shall be added to the Contract price.

The Owner shall be named as Additional Insured on all policies of insurance required in subsections "b" and "c" of this Section.

The policies of insurance shall be in such form and issued by such insurer as shall be satisfactory to the Owner. The Bidder shall furnish the Owner a certificate evidencing compliance with the foregoing requirements which shall provide not less than (30) days prior written notice to the Owner of any cancellation or material change in the insurance.

ARTICLE V--REMEDIES

Section 1. Liquidated Damages. The time of the delivery of the Equipment is of the essence of the Contract. Should the Bidder neglect, refuse or fail to deliver the Equipment within the time herein agreed upon, after giving effect to extensions of time, if any, herein provided, then, in that event and in view of the difficulty of estimating with exactness damages caused by such delay, the Owner shall have the right to deduct from and retain out of such moneys which may be then due, or which may become due and

payable to the Bidder the sum of _____ dollars (_____) per day for each and every day that such delivery is delayed beyond the specified time, as liquidated damages and not as a penalty; if the amount due and to become due from the Owner to the Bidder is insufficient to pay in full any such liquidated damages, the Bidder shall pay to the Owner the amount necessary to effect such payment in full: Provided, however, that the Owner shall promptly notify the Bidder in writing of the manner in which the amount retained, deducted or claimed as liquidated damages was computed.

Section 2. Cumulative Remedies. *Every right or remedy herein conferred upon or reserved to the Owner or the Government or the Administrator shall be cumulative, shall be in addition to every right and remedy now or hereafter existing at law or in equity or by statute and the pursuit of any right or remedy shall not be construed as an election: Provided, however, that the provisions of Section 1 of this Article shall be the exclusive measure of damages for failure by the Bidder to deliver the Equipment within the time herein agreed upon.*

ARTICLE VI--MISCELLANEOUS

Section 1. Definitions.

- a. *The term "Administrator" shall mean the Administrator of the Rural Utilities Service of the United States of America and his or her duly authorized representative or any other person in whom or authority in which may be vested the duties and functions which the Administrator is now authorized by law to perform.*
- b. *The term "Engineer" shall mean the Engineer employed by the Owner, to provide engineering services for the project and said Engineer's duly authorized assistants and representatives.*

Section 2. Materials and Supplies. *In the performance of this contract there shall be furnished only such unmanufactured articles, materials, and supplies as have been mined or produced in the United States or in any eligible country, and only such manufactured articles, materials, and supplies as have been manufactured in the United States or in any eligible country substantially all from articles, materials, or supplies mined, produced or manufactured, as the case may be, in the United States or in any eligible country; provided that other articles, materials, or supplies may be used in the event and to the extent that the Administrator shall expressly in writing authorize such use pursuant to the provisions of the Rural Electrification Act of 1938, being Title IV of Public Resolution No. 122, 75th Congress, approved June 21, 1938. For the purposes of this section, an "eligible country" is any country that applies with respect to the United States an agreement ensuring reciprocal access for United States products and services and suppliers to the markets of that country, as determined by the United States Trade Representative. The Bidder agrees to submit to the Owner such certificates with respect to compliance with the foregoing provision as the Administrator from time to time may require.*

Section 3. Patent Infringement. *The Bidder shall hold harmless and indemnify the Owner from any and all claims, suits and proceedings for the infringement of any patent or patents covering Equipment purchased hereunder.*

Section 4. Compliance with Laws. *The Bidder shall comply with all federal, state, and local laws, rules, and regulations applicable to its performance under the contract and the construction of the project. The Bidder acknowledges that it is familiar with the Rural Electrification Act of 1936, as amended, the Anti Kick-Back Act of 1986 (41 U.S.C. 51 et seq), and 18 U.S.C. §§ 286, 287, 641, 661, 874, 1001, and 1366, as amended.*

The Bidder represents that to the extent required by Executive Orders 12549 (3 CFR, 1985-1988 Comp., p. 189) and 12689 (3 CFR, 1989 Comp., p. 235), Debarment and Suspension, and 7 CFR part 3017, it has submitted to the Owner a duly executed certification in the form prescribed in 7 CFR part 3017.

The Bidder represents that, to the extent required, it has complied with the requirements of Pub. L. 101-121, Section 319, 103 Stat. 701, 750-765 (31 U.S.C. 1352), entitled "Limitation on use of appropriated funds to influence certain Federal contracting and financial transactions," and any rules and regulations issued pursuant thereto.

Section 5. Equal Opportunity Provisions.

a. *Bidder's Representations.*

The Bidder represents that:

It has , does not have , 100 or more employees, and if it has, that it has , has not , furnished the Equal Employment Opportunity-Employers Information Report EEO-1, Standard Form 100, required of employers with 100 or more employees pursuant to Executive Order 11246 of September 24, 1965, and Title VII of the Civil Rights Act of 1964.

The Bidder agrees that it will obtain, prior to the award of any subcontract for more than \$10,000 hereunder to a subcontractor with 100 or more employees, a statement, signed by the proposed subcontractor, that the proposed subcontractor has filed a current report on Standard Form 100.

The Bidder agrees that if it has 100 or more employees and has not submitted a report on Standard Form 100 for the current reporting year and that if this Contract will amount to more than \$10,000, the Bidder will file such report, as required by law, and notify the Owner in writing of such filing prior to the Owner's acceptance of this Proposal.

b. *Equal Opportunity Clause. During the performance of this Contract, the Bidder agrees as follows:*

- (1) The Bidder will not discriminate against any employee or applicant for employment because of race, color, religion, sex or national origin. The Bidder will take affirmative action to ensure that applicants are employed, and that employees are treated during employment without regard to their race, color, religion, sex or national origin. Such action shall include, but not be limited to, the following: Employment, upgrading, demotions or transfer; recruitment or recruitment advertising; layoff or termination; rates of pay or other forms of compensation; and selection of training, including apprenticeship. The Bidder agrees to post in conspicuous places, available to employees and applicants for employment, notices to be provided setting forth the provisions of this Equal Opportunity Clause.*
- (2) The Bidder will, in all solicitations or advertisements for employees placed by or on behalf of the Bidder, state that all qualified applicants will receive consideration for employment without regard to race, color, religion, sex or national origin.*
- (3) The Bidder will send to each labor union or representative of workers, with which it has a collective bargaining agreement or other contract or understanding, a notice to be provided advising the said labor union or workers' representative of the Bidder's commitments under this section, and shall post copies of the notice in conspicuous places available to employees and applicants for employment.*
- (4) The Bidder will comply with all provisions of Executive Order 11246 of September 24, 1965, and the rules, regulations and relevant orders of the Secretary of Labor.*
- (5) The Bidder will furnish all information and reports required by Executive Order 11246 of September 24, 1965, and by rules, regulations, and orders of the Secretary of Labor, or pursuant thereto, and will permit access to its books, records, and accounts by the administering agency and the Secretary of Labor for purposes of investigation to ascertain compliance with such rules, regulations, and orders.*
- (6) In the event of the Bidder's noncompliance with the Equal Opportunity Clause of this Contract or with any of the said rules, regulations, or orders, this Contract may be canceled, terminated, or suspended in whole or in part, and the Bidder may be declared ineligible for further Government contracts or federally assisted construction contracts in accordance with procedures authorized in Executive Order 11246 of September 24, 1965, and such other sanctions may be imposed and remedies invoked as provided in Executive Order 11246 of*

September 24, 1965, or by rule, regulation, or order of the Secretary of Labor, or as provided by law

(7) *The Bidder will include this Equal Opportunity Clause in every subcontract or purchase order unless exempted by the rules, regulations, or order of the Secretary of Labor issued pursuant to Section 204 of Executive Order 11246 of September 24, 1965, so that such provisions will be binding upon each subcontractor or vendor. The Bidder will take such action with respect to any subcontract or purchase order as the administering agency may direct as a means of enforcing such provisions, including sanctions for noncompliance; Provided, however, that in the event Bidder becomes involved in, or is threatened with, litigation with a subcontractor or vendor as a result of such direction by the administering agency, the Bidder may request the United States to enter into such litigation to protect the interests of the United States.*

see attached EKPC additions page 1

- c. *Certificate of Nonsegregated Facilities. The Bidder certifies that it does not maintain or provide for its employees any segregated facilities at any of its establishments, and that it does not permit its employees to perform their services at any location, under its control, where segregated facilities are maintained. The Bidder certifies further that it will not maintain or provide for its employees any segregated facilities at any of its establishments, and that it will not permit its employees to perform their services at any location, under its control, where segregated facilities are maintained. The Bidder agrees that a breach of this certification is a violation of the Equal Opportunity Clause in this Contract. As used in this certification, the term "segregated facilities" means any waiting rooms, work areas, restrooms and washrooms, restaurants and other eating areas, timeclocks, locker rooms and other storage or dressing areas, parking lots, drinking fountains, recreation or entertainment areas, transportation, and housing facilities provided for employees which are segregated by explicit directive or are in fact segregated on the basis of race, color, religion, or national origin, because of habit, local custom, or otherwise. The Bidder agrees that (except where it has obtained identical certifications from proposed subcontractors for specific time periods) it will obtain identical certifications from proposed subcontractors prior to the award of subcontracts exceeding \$10,000 which are not exempt from the provisions of the Equal Opportunity Clause, and that it will retain such certifications in its files.*

Section 6. Successors and Assigns. *Each and all of the covenants and agreements herein contained shall extend to and be binding upon the successors and assigns of the parties hereto. The Owner and Bidder acknowledge that this Contract is assigned to the Government, acting through the Administrator, for security purposes under the Owner's mortgage and security instrument.*

Section 7. Independent Contractor. *The Bidder shall perform the work as an independent contractor, not as a subcontractor, agent, or employee of the Owner. Upon acceptance of this Proposal, the successful Bidder shall be the Contractor and all references in the Proposal to the Bidder shall apply to the Contractor.*

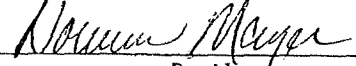
Section 8. Approval by the Administrator: This contract does _____, does not X, require approval of the Administrator. No acceptance of a Proposal for a contract upon which approval of the Administrator is required shall become effective until the contract has been approved by the Administrator; provided that no obligation shall arise hereunder unless such approval is given within one-hundred twenty (120) days after the date set for the opening of the proposals. The acceptance of a Proposal for a contract upon which approval of the Administrator is not required shall become effective the date of acceptance by the Owner.

ABB Utility Sales and
Engineering Services

ATTEST:

Secretary

Dated _____

Bidder


President
7508 New LaGrange Road, Suite 5
Louisville, KY 40222

Address

The Proposal must be signed with the full name of the Bidder. If the Bidder is a partnership, the Proposal must be signed in the partnership name by a partner. If the Bidder is a corporation, the Proposal must be signed in the corporate name by a duly authorized officer and the corporate seal affixed and attested by the Secretary of the Corporation.

ACCEPTANCE

Subject to the approval of the Administrator, if approval of the Administrator is required, the Owner hereby accepts the foregoing Proposal of the Bidder, Utility Sales and Engineering Services, LLC. for the following Equipment:

4160 / 480 Volt Pad Mount Transformer

for a total contract price of \$ 7,194⁰⁰ and ninety four (seven thousand one hundred dollars)

By Raymond Gull Owner
President

Secretary

May 3, 2006
Date of Contract

EKPC Additions, Page 9 dated March 7, 2005

The Following Additional General Conditions Shall be Added to This Contract RUS Form 198:

Page 9, Article VI, Section 5, the following paragraph will be added as (8)

- "(8) When this order and contract refer to manufactured goods or to work or services, Seller warrants and agrees that it has complied and will comply with (1) Fair Labor Standards Act; (2) Social Security and Workman's Compensation Laws, if work is done on Purchaser's premises; and (3) all other applicable Federal, State and local laws, codes and regulations. It is the policy of Purchaser to provide equal opportunities in employment without regard to race, color, religion, sex, age, or national origin and to employ and advance qualified disabled veterans, handicapped or disabled persons and Vietnam era veterans. Purchaser complies with the requirements placed on government contractors and subcontractors by Executive Order 11246, Section 402 of the Vietnam Era Veterans Readjustment Assistance Act of 1974 and Section 503 of the Rehabilitation Act of 1973, and it is agreed that as a Subcontractor, vendor, or supplier, Seller will also comply with the Executive Order, laws, and applicable rules and regulations. Seller agrees to indemnify Purchaser and save Purchaser harmless if Seller fails to comply with the foregoing, and in the event of such failure Purchaser may, in addition, cancel this order and contract. Seller invoices for work or materials covered hereby shall state that Seller has complied with the requirements of the Fair Labor Standards Act of 1938 as amended."

U.S. Department of Agriculture
Rural Utilities Service

*Certification Regarding Debarment, Suspension, and Other Responsibility
Matters – Primary Covered Transactions*

This certification is required by the regulations implementing Executive Order 12549, Debarment and Suspension, 7 CFR Part 3017, Section 3017.510, Participants' Responsibilities. The regulations were published as Part IV of the January 30, 1989, Federal Register (pages 4722-4733). Copies of the regulations may be obtained by contacting the Department of Agriculture agency offering the proposed transaction.

- (1) The prospective primary participant certifies to the best of its knowledge and belief, that it and its principals:
- (a) are not presently debarred, suspended, proposed for Debarment, declared ineligible, or voluntarily excluded from covered transactions by any Federal department or agency;
 - (b) have not within a 3-year period preceding this proposal been convicted of or had a civil judgment rendered against them for commission of fraud or a criminal offense in connection with obtaining, attempting to obtain, or performing a public (Federal, State, or local) transaction or contract under a public transaction; violation of Federal or State antitrust statutes or commission of embezzlement, theft, forgery, bribery, falsification or destruction of records, making false statements, or receiving stolen property;
 - (c) are not presently indicted for or otherwise criminally or civilly charged by a governmental entity (Federal, State, or local) with commission of any of the offenses enumerated in paragraph (1)(b) of this certification; and
 - (d) have not within a 3-year period preceding this application/proposal had one or more public transactions (Federal, State, or local) terminated for cause or default.
- (2) Where the prospective primary participant is unable to certify to any of the statements in this certification, such prospective participant shall attach an explanation to this proposal.

ABB, INC
Organization Name

Norman Mayer 5-1-2006
Authorized Representative's Signature Date

NORMAN MAYER
Name Typed or Printed

(This is not an official Government form. It has been prepared to assist and expedite the application process and is only intended for use in the Rural Broadband Access Loan and Loan Guarantee Program.)

U.S. Department of Agriculture
Rural Utilities Service

*Certification Regarding Lobbying for Contracts, Grants,
Loans, and Cooperative Agreements*

The undersigned certifies, to the best of his or her knowledge and belief, that:

- (1) No Federal appropriated funds have been paid or will be paid, by or on behalf of the undersigned, to any person for influencing or attempting to influence an officer or employee of any agency, a Member of Congress, an officer or employee of Congress, or an employee of a Member of Congress in connection with the awarding of any Federal contract, the making of any Federal grant or loan, the entering into of any cooperative agreement, and the extension, continuation, renewal, amendment, or modification of any Federal contract, grant, loan, or cooperative agreement.
- (2) If any funds other than Federal appropriated funds have been paid or will be paid to any person for influencing or attempting to influence an officer or employee of any agency, a Member of Congress, an officer or employee of Congress, or an employee of a Member of Congress in connection with this Federal contract, grant, loan, or cooperative agreement, the undersigned shall complete and submit Standard Form-LLL, "Disclosure Form to Report Lobbying," in accordance with its instructions. (Copies of this form may be obtained from RUS.)
- (3) The undersigned shall require that the language of this certification be included in the award documents for all subawards at all tiers (including subcontracts, subgrants, and contracts under grants, loans, and cooperative agreements) and that all subrecipients shall certify and disclose accordingly.

This certification is a material representation of fact upon which reliance was placed when this transaction was made or entered into. Submission of this certification is a prerequisite for making or entering into this transaction imposed by section 1352, title 31, U.S. Code. Any person who fails to file the required certification shall be subject to a civil penalty of not less than \$10,000 and not more than \$100,000 for each such failure.

ABB, Inc.
Organization Name

Norman Mayer 5-1-2006
Authorized Representative's Signature Date

NORMAN MAYER
Name Typed or Printed

(This is not an official Government form. It has been prepared to assist and expedite the application process and is only intended for use in the Rural Broadband Access Loan and Loan Guarantee Program.)

Three-Phase Pad-Mounted Transformer Specification Sheet

Description:

The Transformer shall be a three phase, live-front, Pad-mounted, weatherproof device. The Transformer shall be Delta-Wye configured with the low voltage neutral being a fully insulated X0 bushing with a removable ground strap. The Transformer shall be designed for step down service and shall meet or exceed all applicable ANSI, NEMA, IEEE standards, and NEC® and CEA specifications.

The Construction Core shall be a high efficiency rectangular wound core with low excitation current, low losses, and quiet performances. The Transformer Coils shall be aluminum, made compact, rigid, mechanically strong, and electrically balanced with impedances in accordance with ANSI C57.12.26.

The Insulating Fluid shall be standard electrical grade mineral insulating oil. The Transformer shall include a liquid level gauge.

The Transformer Tank shall be formed of precision cut cold-rolled steel with a bolted cover for tank access. Tank bases shall be constructed to permit rolling in any direction perpendicular to a tank wall. Tanks shall be pressure tested to withstand 7 psig while sustaining no permanent distortion. Interior tank walls shall be light gray in color to enhance visibility of internal components under oil.

Transformer Terminal Cabinet shall be 20" deep and shall include safety features such as an interlocked low-voltage compartment door with a three-point latching mechanism. Cabinet doors shall be flush-fit with concealed latches and heavy-duty stainless steel hinges. Cabinet doors shall be secured by a captive silicon bronze pentahead bolt. Other cabinet features shall be stainless steel ground pads and mounting studs, as well as lightning arrester mounting provisions, and high-voltage warning signs.

The Transformer Finish shall include a three-step electrodeposited and oven-hardened epoxy primer (E-coat), as well as a polyester powder coat and a urethane final coat. Color shall be manufacturer's standard ANSI green.

Other Transformer features shall be a one-inch drain valve with sampling device in both the low-voltage and high-voltage compartments, a pressure vacuum gauge with an automatic pressure relief device, a one-inch upper fill plug, lifting lugs, a dial type thermometer, and electrical grade wet-process porcelain bushings.

Tests to be performed on the Transformer shall include:

- Insulation Power Factor
- Ratio, Polarity, and Phase Relation
- Resistance
- Routine Impulse Tests
- Applied Potential
- Induced Potential
- Loss Test
- Leak Test
- Temperature Rise
- Audible Sound Level
- Lightning Impulse

Electrical Ratings:

Transformer Rating (kVA):	500kVA
Percent Impedance Voltage:	1.5-7.0 %
Low-Voltage Rating:	480Y/277
Low-Voltage Nominal Insulation Rating (Volts):	1000V
Low-Voltage Winding Minimum BIL (kV):	60kV
High-Voltage Rating (Volts):	4160V
High-Voltage Nominal Insulation Rating (Phase-to-Ground/Phase-to-Phase):	8.3/14.4kV
High-Voltage Winding Nominal BIL (kV):	95kV
60-Hz Dry 1 min Withstand:	34kV
De-energized No-Load Tap Changer:	2-2½% FCBN and 2-2½% FCAN

Terminal Connections:

HV Terminals:	Eyebolt Bushings
LV Terminals:	NEMA 4 Hole Pads
Grounding:	NEMA 2 Hole Pads

Approved Manufacturers:

ABB Power T&D Company
Carte
Cooper Power Systems
Vermont Transformers Corp.

**EQUIPMENT BID SHEET
4,160 – 480V PADMOUNTED TRANSFORMER**

PHYSICAL DATA:

Dimensions: _____ L X _____ W X _____ H

Weight: _____ Lbs

Gallons of Oil: _____ Gal

ELECTRICAL DATA:

Impedance: _____ % Z1, _____ %Z0

Guaranteed No Load Losses (Core): _____ W

Guaranteed Load Losses (Windings): _____ W

(Note: Losses will be evaluated at a cost of \$1,000/KW for Core and \$300/kW for Winding. Manufacturer is encouraged to make alternate bids based upon losses.)

PRICING QUOTATION:

Price for Transformer: \$ _____

Shipping to Pendleton County Landfill site (Falmouth, KY): \$ _____

Total Price (Transformer plus Shipping): \$ _____

MISCELLANEOUS INFORMATION:

Anticipated ship date: _____ Days A.R.O.

Standard Warranty Period: _____ after _____

Pricing for Extended Warranty (18 months after delivery): \$ _____

CLARIFICATIONS & EXCEPTIONS:

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USES, LLC

UTILITY SALES
& ENGINEERING SERVICES, LLC

7508 New Lagrange Road
Suite 5
Louisville, KY 40222

sales@usesllc.com

502-412-2838
Fax 502-412-2839

FAX

To: Ralph Tyree	From: Norm Mayer
Fax: 859-744-6008	Pages: 13 Including Cover Sheet
Phone: 859-744-4812	Date: March 31, 2006
Re: Bid Submittal	cc:

Ralph,

Please see our quotation for one (1) 4160-480V, 500 KVA ABB pad mounted transformer. This quote is for your Pendleton County Landfill Gas-to- Energy Plant.

If you have any questions, please feel free to contact me at (502) 412-2838 or at normmayer@usesllc.com

Thanks,

Norm Mayer



03-27-2006

<p>To:</p> <p>Bonnie Lubniewski T&D Products, Inc. 650 E. Diehl Road Suite 107 Napersville, IL 60563 (United States)</p> <p>Phone: 630-245-9130 Fax: 630-245-9135 Email: T&DPRODUCTS</p>	<p>From:</p> <p>John McInerney ABB 500 West Highway 94 Jefferson City, MO 65101-5032 (United States)</p> <p>Email: john.r.mcinerney@us.abb.com</p>
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Neg: ABBJCE3855 Rev: 0 T&D Products, Inc. - Meade Electric

Specification or data changes may result in changes to quoted prices and/or delivery date.

Additional Notes:
Exception to CEA standards. CEA is a dead front standard for Canada. Quoted as live front per spec. Not quoted per any Canadian standard.
Interior tank wall are not painted gray.
Insulation power factor test adder is \$500
Temperature rise test adder is \$1000
Sound test adder is \$1000.
Shipping is to a US destination only. Shipping to Canada not included.

Quote : 3 Phase, 60 Hz, 65 °C AWR, 30 °C Avg Amb, Radial feed, Mineral Oil-Filled MTR Padmount Transformer
Color : Green (Munsell 7GY 3.29/1.5)
HV : 4160 Delta, 60 kV BIL, taps +2 -2 2.5%
LV : 480Y/277
LV Neutral : X0 bushing with ground strap

Features

- 18" deep cabinet
- Penta-head cabinet handle bolt
- HV porcelain live front bushings (live front) x 3
- Single eyebolt HV terminals (live front) x 3
- ANSI C57.12.22 Fig 1 & 2 HV bushing pattern (minimum)
- Threaded stud LV bushings with 4-hole NEMA spade terminals x 4
- ANSI C57.12.26 Fig 3&4a minimum stgrd LV bushing pattern
- Pressure relief valve
- Liquid level gauge
- Dial type thermometer
- Pressure vacuum gauge
- 1" drain valve and sampler located in LV compartment
- 1" drain valve with sampler located in HV compartment
- NEMA TP-1 Efficiency
- NEMA sound level

ITEM	QTY	KVA	EACH (USD)	NL @ 20	LL @ 85	Z	Shipment	Total (lbs)
1	1	500	\$7194	891	5085	2.38	16-18 Weeks	3797

Fluid (gal)
163



Quoted loss values are guaranteed maximum values.

Payment terms : Paid in 30 days
Conditions of Sale : Standard I & C
Freight Code : Point of Shipment Prepaid IL, (United States)
Warranty : 12 months after commissioning or 18 months after delivery, whichever occurs first

Disclaimer Notes

Quick drawings: On as needed basis and priced accordingly.

Quoted shipment is based upon order "released" at the factory and receipt of approval drawings.

FOB destination to 48 contiguous states only is an adder of 2% net

Elbows for 200A wells and inserts are only available for cable up to 250MCM.

Elbow connectors, stand-offs, insulated bushing type parking stands, insulated protective caps, secondary terminating lugs, grounding lugs, padlocks, hot-sticks, special nameplates, special warning signs, fault indicators and wrenches are not supplied by the ABB Jefferson City factory.

Nameplates are laser etched anodized aluminum.

Adder for customer witness test is \$1000 per day. Customer's intentions for witnessing testing must be known at order entry.

Instruction books, order status, order drawings and inventory reports are available online at <http://www.abbdd.com>

Quote Validity:

Quote valid for 60 days unless stated otherwise on quote.

Price Validity:

On Firm Orders: Prices are valid for 60 days after receipt of order.

On Approval Orders: Prices are valid for 60 days after initial mailing date of approval drawings. Orders not released for manufacture within 60 days of the initial drawing date are subject to adjustment of pricing. Orders on hold pending drawing approval beyond 60th day of initial drawing date are subject to price adjustment every 60 days.

Lead Times:

Lead times (ex-works shipments) are subject to change based on availability of production space and/or non-stock materials. Please contact your ABB representative to confirm the lead time at order entry.

Fuel Surcharge:

Due to the high cost of diesel fuel, the price includes a transportation surcharge. Price includes a charge of \$0.01 per mile for every \$0.05 charge for diesel fuel over \$1.50 per gallon. The surcharge is calculated using the latest government statistics published as U.S. Retail On-Highway Diesel Price (<http://www.eia.doe.gov>).

Best regards,
ABB

John McInerney
Sales Engineer

EKPC

Pendleton County Landfill Gas-to-Energy Project

EQUIPMENT BID SHEET
4,160 - 480V PADMOUNTED TRANSFORMER

PHYSICAL DATA:

Dimensions: 63.8" L X 56.5" W X 52" H *DIMENSIONS ARE APPROXIMATES*

Weight: 3900 Lbs

Gallons of Oil: 175 Gal

ELECTRICAL DATA:

Impedance: 2.38 % Z1, _____ % Z0

Guaranteed No Load Losses (Core): 891 W

Guaranteed Load Losses (Windings): 5085 W

(Note: Losses will be evaluated at a cost of \$1,000/KW for Core and \$300/kW for Winding. Manufacturer is encouraged to make alternate bids based upon losses.)

PRICING QUOTATION:

Price for Transformer: \$ 7194.00

Shipping to Pendleton County Landfill site (Falmouth, KY): \$ INCLUDED

Total Price (Transformer plus Shipping): \$ 7194.00

MISCELLANEOUS INFORMATION:

Anticipated ship date: 16-18 ^{WEEKS} Days A.R.O.

Standard Warranty Period: 18 months after SHIPMENT

Pricing for Extended Warranty (18 months after delivery): \$ N/A

CLARIFICATIONS & EXCEPTIONS:

PROPOSAL

TO:

EAST KENTUCKY POWER COOPERATIVE

(hereinafter called the "Owner").

ARTICLE I - GENERAL

Section 1. Offer to Furnish and Deliver. The undersigned (hereinafter called the "Bidder") hereby proposes to furnish and deliver the equipment (hereinafter called the "Equipment") described in the Plans, Specifications, and Construction Drawings for the following prices:

Item: 500 KVA PAD MOUNTED TRANSFORMER Price: \$719400

Item: Price:

The prices of Equipment set forth herein shall include the cost of delivery to:

EKPC, 4775 LEXINGTON ROAD, WINCHESTER, KY 40392

The prices set forth herein do not include any sums which are or may be payable by the Bidder on account of taxes imposed by any taxing authority upon the sale, purchase or use of the Equipment. If any such tax is applicable to the sale, purchase or use of the Equipment hereunder, the amount thereof shall be added to the purchase price and paid by the Owner.

Section 2. Materials and Equipment. The Bidder agrees to furnish and use in the construction of the project under this Proposal, in the event the Proposal is accepted, only such "fully accepted," "conditionally accepted," and "technically accepted" materials and equipment which have been accepted by RUS as indicated in the current RUS Informational Publication 202-1, "List of Materials Acceptable for Use on Systems of RUS Classification Borrowers," including revisions adopted prior to the Bid Opening. The use of "conditionally accepted" or "technically accepted" materials and equipment requires prior comment by the Owner or Engineer.

The Bidder will purchase all materials and equipment outright and not subject to any conditional sales agreements, bailment, lease or other agreement reserving unto the seller any right, title or interest therein. All such materials and equipment shall be new.

Section 3. Description of Contract. The Notice and Instructions to Bidders, Plans, Specifications, and Construction Drawings, which by this reference are incorporated herein, together with the Proposal and Acceptance constitutes the Contract. The Plans, Specifications, and Construction Drawings, including maps, special drawings, and approved modifications in standard specifications are attached hereto and identified as follows:

Section 4. Due Diligence. The Bidder has made a careful examination of the Plans, Specifications, and Construction Drawings attached hereto, and has become informed as to the location and nature of the proposed construction, the transportation facilities, the kind and character of soil and terrain to be encountered, and the kind of facilities required before and during the construction of the project, and

has become acquainted with the labor conditions, federal, state, and local laws, rules, and regulations applicable to its performance.

Section 1. Warranty of Good Faith. The Bidder warrants that this Proposal is made in good faith and without collusion or connection with any person or persons bidding for the same work.

ARTICLE II--DELIVERY AND WARRANTY

Section 1. Delivery. The Bidder shall deliver the Equipment:

within 16 to 18 ^{WEEKS} days after receipt of the written order or orders of the Owner,
not later than 16 to 18 ^{WEEKS} ARO . 20 .

The time for delivery shall be extended for the period of any reasonable delay due exclusively to causes beyond the control and without the fault of the Bidder, including, but not limited to, acts of God, fires, strikes, and floods.

Section 2. Defective Materials and Workmanship.

- a. All Equipment furnished hereunder shall be subject to the inspection, tests, and approval of the Owner and the Engineer, and the Bidder shall furnish all information required concerning the nature or source of any Equipment and provide adequate facilities for testing and inspecting the Equipment at the place of the Bidder.
- b. The Equipment furnished hereunder shall become the property of the Owner upon delivery, provided, however, that the Owner or the Engineer, within one year after initial operation of the Equipment, or within the period for which the Equipment is guaranteed, whichever is longer, may reject any Equipment which does not comply with the Specifications attached hereto and made a part hereof or with the guarantees, if any, of the Bidder and the manufacturer. Upon any such rejection, the Bidder shall repair or replace such defective Equipment within a reasonable time after notice in writing from the Owner. If any such defective materials, equipment, or workmanship so rejected or repaired is found to be defective within one year after the completion of the replacement or repair, the Bidder shall replace or remedy such defective materials, equipment, or workmanship. In the event of failure by the Bidder so to do, the Owner may make such replacement and the cost and expense thereof shall be paid by and recoverable from the Bidder.
- c. All manufacturers' guarantees of Equipment, if any, shall be transferred and assigned to the Owner upon delivery of any Equipment and before final payment is made for such Equipment. Such guarantees shall be in addition to those required of the Bidder by other provisions of this Contract.

ARTICLE III--PAYMENT

Section 1. Payments to Bidder.

- a. Upon the shipment of any Equipment hereunder, the Bidder shall submit to the Owner a detailed statement of the Equipment shipped. The Owner shall, upon receipt of the Equipment, pay the Bidder ninety percent (90%) of the contract price of the Equipment. When the Equipment has been installed, placed in satisfactory operation, tested and accepted by the Owner, the Owner shall make final payment therefor to the Bidder; provided, however, such final payment shall be made not later than 30 DAYS days after delivery of the Equipment, unless such acceptance by the Owner shall be withheld because of the fault of the Bidder.

- b. No payment shall be due while the Bidder is in default in respect of any of the provisions of this Contract and the Owner may withhold from the Bidder the amount of any claim by a third party against either the Bidder or the Owner based upon an alleged failure of the Bidder to perform the work hereunder in accordance with the provisions of this Contract.

ARTICLE IV—PARTICULAR UNDERTAKINGS OF THE BIDDER

The provisions of this Article IV apply to any work performed by the Bidder at the project site.

Section 1. Protection to Persons and Property. The Bidder shall at all times take all reasonable precautions for the safety of employees on the project and of the public, and shall comply with all applicable provisions of federal, state, and local laws, rules, and regulations and building and construction codes, in addition to the safety rules and procedures of the Owner.

The following provisions shall not limit the generality of the above requirements:

- a. The Bidder shall at no time and under no circumstances cause or permit any employee of the Bidder to perform any work upon energized lines, or upon poles carrying energized lines, unless otherwise specified in the Notice and Instructions to Bidders.
- b. The Bidder shall transport and store all material in facilities and vehicles which are designed to protect the material from damage. The Bidder shall ensure that all vehicles, trailers, and other equipment used comply with all applicable licensing, traffic, and highway requirements.
- c. The Bidder shall conduct its operations to cause the least possible obstruction of public highways.
- d. The Bidder shall make good and fully repair all injuries and damages to the project or any portion thereof under the control of the Bidder by reason of any act of God or other casualty or cause whether or not the same shall have occurred by reason of the Bidder's negligence.
 - (i) To the maximum extent permitted by law, Bidder shall defend, indemnify, and hold harmless Owner and Owner's directors, officers, and employees from all claims, causes of action, losses, liabilities, and expenses (including reasonable attorney's fees) for personal loss, injury, or death to persons (including but not limited to Bidder's employees) and loss, damage to or destruction of Owner's property or the property of any other person or entity (including but not limited to Bidder's property) in any manner arising out of or connected with the Contract, or the materials or equipment supplied or services performed by Bidder, its subcontractors and suppliers of any tier. But nothing herein shall be construed as making Bidder liable for any injury, death, loss, damage, or destruction caused by the sole negligence of Owner.
 - (ii) To the maximum extent permitted by law, Bidder shall defend, indemnify, and hold harmless Owner and Owner's directors, officers, and employees from all liens and claims filed or asserted against Owner, its directors, officers, and employees, or Owner's property or facilities, for services performed or materials or equipment furnished by Bidder, its subcontractors and suppliers of any tier, and from all losses, demands, and causes of action arising out of any such lien or claim. Bidder shall promptly discharge or release any such lien or claim by bonding, payment, or otherwise and shall notify Owner promptly when it has done so. If Bidder does not secure such lien or claim to be discharged or released by payment, bonding, or otherwise, Owner shall have the right (but shall not be obligated) to pay all sums necessary to obtain any such discharge or release and to deduct all amounts so paid from the amount due Bidder.
 - (iii) Bidder shall provide to Owner's satisfaction evidence of Bidder's ability to comply with the indemnification provisions of subparagraphs i and ii above, which evidence may include but may not be limited to a bond or liability insurance policy obtained for this purpose through a licensed surety or insurance company.

- e. Upon violation by the Bidder of any of the provisions of this section, after written notice of such violation given to the Bidder by the Engineer or the Owner, the Bidder shall immediately correct such violation. Upon failure of the Bidder to do so the Owner may correct such violation at the Bidder's expense. Provided, however, that the Owner may, if it deems it necessary or advisable, correct such violation at the Bidder's expense without such prior notice to the Bidder.

Section 2. Insurance. The Bidder shall take out and maintain throughout the period of its operations at the project the following types and minimum amounts of insurance:

- a. Workers' compensation and employers' liability insurance, as required by law, covering all its employees who perform any of the obligations of the Bidder under the contract. If any employer or employee is not subject to the workers' compensation laws of the governing state, then insurance shall be obtained voluntarily to extend to the employer and employee coverage to the same extent as though the employer or employee were subject to the workers' compensation laws.
- b. Public liability insurance covering all operations under the contract shall have limits for bodily injury or death of not less than \$1 million each occurrence, limits for property damage of not less than \$1 million each occurrence, and \$1 million aggregate for accidents during the policy period. A single limit of \$1 million of bodily injury and property damage is acceptable. This required insurance may be in a policy or policies of insurance, primary and excess including the umbrella or catastrophe form.
- c. Automobile liability insurance on all motor vehicles used in connection with the contract, whether owned, non-owned, or hired, shall have limits for bodily injury or death of not less than \$1 million per person and \$1 million each occurrence, and property damage limits of \$1 million for each occurrence. A single limit of \$1 million of bodily injury and property damage is acceptable. This required insurance may be in a policy or policies of insurance, primary and excess including the umbrella or catastrophe form.

The Owner shall have the right at any time to require public liability insurance and property damage liability insurance greater than those required in subsection "b" and "c" of this Section. In any such event, the additional premium or premiums payable solely as the result of such additional insurance shall be added to the Contract price.

The Owner shall be named as Additional Insured on all policies of insurance required in subsections "b" and "c" of this Section.

The policies of insurance shall be in such form and issued by such insurer as shall be satisfactory to the Owner. The Bidder shall furnish the Owner a certificate evidencing compliance with the foregoing requirements which shall provide not less than (30) days prior written notice to the Owner of any cancellation or material change in the insurance.

ARTICLE V - REMEDIES

Section 1. Liquidated Damages. The time of the delivery of the Equipment is of the essence of the Contract. Should the Bidder neglect, refuse or fail to deliver the Equipment within the time hereto agreed upon, after giving effect to extensions of time, if any, herein provided, then, in that event and in view of the difficulty of estimating with exactness damages caused by such delay, the Owner shall have the right to deduct from and retain out of such monies which may be then due, or which may become due and

payable to the Bidder the sum of _____ dollars (_____) per day for each and every day that such delivery is delayed beyond the specified time, as liquidated damages and not as a penalty; if the amount due and to become due from the Owner to the Bidder is insufficient to pay in full any such liquidated damages, the Bidder shall pay to the Owner the amount necessary to effect such payment in full. Provided, however, that the Owner shall promptly notify the Bidder in writing of the manner in which the amount retained, deducted or claimed as liquidated damages was computed.

Section 2. *Cumulative Remedies.* Every right or remedy herein conferred upon or reserved to the Owner or the Government or the Administrator shall be cumulative, shall be in addition to every right and remedy now or hereafter existing at law or in equity or by statute and the pursuit of any right or remedy shall not be construed as an election: Provided, however, that the provisions of Section 1 of this article shall be the exclusive measure of damages for failure by the Bidder to deliver the Equipment within the time herein agreed upon.

ARTICLE VI-MISCELLANEOUS

Section 1. Definitions.

- a. The term "Administrator" shall mean the Administrator of the Rural Utilities Service of the United States of America and his or her duly authorized representative or any other person in whom or authority in which may be vested the duties and functions which the Administrator is now authorized by law to perform.
- b. The term "Engineer" shall mean the Engineer employed by the Owner, to provide engineering services for the project and said Engineer's duly authorized assistants and representatives.

Section 2. *Materials and Supplies.* In the performance of this contract there shall be furnished only such manufactured articles, materials, and supplies as have been mined or produced in the United States or in any eligible country, and only such manufactured articles, materials, and supplies as have been manufactured in the United States or in any eligible country substantially all from articles, materials, or supplies mined, produced or manufactured, as the case may be, in the United States or in any eligible country; provided that either articles, materials, or supplies may be used to the extent and to the extent that the Administrator shall expressly in writing authorize such use pursuant to the provisions of the Rural Electrification Act of 1938, being Title IV of Public Resolution No. 122, 75th Congress, approved June 21, 1938. For the purposes of this section, an "eligible country" is any country that applies with respect to the United States an agreement ensuring reciprocal access for United States products and services and supplies to the markets of that country, as determined by the United States Trade Representative. The Bidder agrees to submit to the Owner such certificates with respect to compliance with the foregoing provision as the Administrator from time to time may require.

Section 3. *Patent Infringement.* The Bidder shall hold harmless and indemnify the Owner from any and all claims, suits and proceedings for the infringement of any patent or patents covering Equipment purchased hereunder.

Section 4. *Compliance with Laws.* The Bidder shall comply with all federal, state, and local laws, rules, and regulations applicable to its performance under the contract and the construction of the project. The Bidder acknowledges that it is familiar with the Rural Electrification Act of 1936, as amended, the Anti Kick-Back Act of 1966 (41 U.S.C. 51 et seq), and 18 U.S.C. §§ 386, 387, 641, 661, 874, 1091, and 1366, as amended.

The Bidder represents that to the extent required by Executive Orders 12569 (3 CFR, 1983-1988 Comp., p. 139) and 12689 (3 CFR, 1989 Comp., p. 233), Debarment and Suspension, and 7 CFR part 3017, it has submitted to the Owner a duly executed certification in the form prescribed in 7 CFR part 3017.

The Bidder represents that, to the extent required, it has complied with the requirements of Pub. L. 101-121, Section 319, 103 Stat. 701, 750-765 (31 U.S.C. 1352), entitled "Limitation on use of appropriated funds to influence certain Federal contracting and financial transactions," and any rules and regulations issued pursuant thereto.

Section 5. Equal Opportunity Provisions.

a. Bidder's Representations.

The Bidder represents that:

It has , does not have , 100 or more employees, and if it has, that it has , has not furnished the Equal Employment Opportunity-Employers Information Report EEO-1, Standard Form 100, required of employers with 100 or more employees pursuant to Executive Order 11246 of September 24, 1965, and Title VII of the Civil Rights Act of 1964.

The Bidder agrees that it will obtain, prior to the award of any subcontract for more than \$10,000 hereunder to a subcontractor with 100 or more employees, a statement, signed by the proposed subcontractor, that the proposed subcontractor has filed a current report on Standard Form 100.

The Bidder agrees that if it has 100 or more employees and has not submitted a report on Standard Form 100 for the current reporting year and that if this Contract will amount to more than \$10,000, the Bidder will file such report, as required by law, and notify the Owner in writing of such filing prior to the Owner's acceptance of this Proposal.

b. Equal Opportunity Clause. During the performance of this Contract, the Bidder agrees as follows:

- (1) The Bidder will not discriminate against any employees or applicants for employment because of race, color, religion, sex or national origin. The Bidder will take affirmative action to ensure that applicants are employed, and that employees are treated during employment without regard to their race, color, religion, sex or national origin. Such action shall include, but not be limited to, the following: Employment, upgrading, demotions or transfer; recruitment or recruitment advertising; layoff or termination; rates of pay or other forms of compensation; and selection of training, including apprenticeship. The Bidder agrees to post in conspicuous places, visible to employees and applicants for employment, notices to be provided setting forth the provisions of this Equal Opportunity Clause.
- (2) The Bidder will, in all solicitations or advertisements for employees placed by or on behalf of the Bidder, state that all qualified applicants will receive consideration for employment without regard to race, color, religion, sex or national origin.
- (3) The Bidder will send to each labor union or representative of workers, with which it has a collective bargaining agreement or other contract or understanding, a notice to be provided advising the said labor union or workers' representative of the Bidder's commitments under this section, and shall post copies of the notice in conspicuous places available to employees and applicants for employment.
- (4) The Bidder will comply with all provisions of Executive Order 11246 of September 24, 1965, and the rules, regulations and relevant orders of the Secretary of Labor.
- (5) The Bidder will furnish all information and reports required by Executive Order 11246 of September 24, 1965, and by rules, regulations, and orders of the Secretary of Labor, or pursuant thereto, and will permit access to its books, records, and accounts by the administering agency and the Secretary of Labor for purposes of investigation to ascertain compliance with such rules, regulations, and orders.
- (6) In the event of the Bidder's noncompliance with the Equal Opportunity Clause of this Contract or with any of the said rules, regulations, or orders, this Contract may be canceled, terminated, or suspended in whole or in part, and the Bidder may be declared ineligible for further Government contracts or federally assisted construction contracts in accordance with procedures authorized in Executive Order 11246 of September 24, 1965, and such other sanctions may be imposed and remedies invoked as provided in Executive Order 11246 of

September 24, 1965, or by rule, regulation, or order of the Secretary of Labor, or as provided by law.

(7) The Bidder will include this Equal Opportunity Clause in every subcontract or purchase order unless exempted by the rules, regulations, or order of the Secretary of Labor issued pursuant to Section 204 of Executive Order 11246 of September 24, 1965, so that such provisions will be binding upon each subcontractor or vendor. The Bidder will take such action with respect to any subcontract or purchase order as the administering agency may direct as a means of enforcing such provisions, including sanctions for noncompliance; Provided, however, that in the event Bidder becomes involved in, or is threatened with, litigation with a subcontractor or vendor as a result of such direction by the administering agency, the Bidder may request the United States to enter into such litigation to protect the interests of the United States.

see attached EEOC additions page 1

c. **Certificate of Nonsegregated Facilities.** The Bidder certifies that it does not maintain or provide for its employees any segregated facilities at any of its establishments, and that it does not permit its employees to perform their services at any location, under its control, where segregated facilities are maintained. The Bidder certifies further that it will not maintain or provide for its employees any segregated facilities at any of its establishments, and that it will not permit its employees to perform their services at any location, under its control, where segregated facilities are maintained. The Bidder agrees that a breach of this certification is a violation of the Equal Opportunity Clause in this Contract. As used in this certification, the term "segregated facilities" means any waiting rooms, work areas, restrooms and washrooms, restaurants and other eating areas, timeclocks, locker rooms and other storage or dressing areas, parking lots, drinking fountains, recreation or entertainment areas, transportation, and housing facilities provided for employees which are segregated by explicit directive or are in fact segregated on the basis of race, color, religion, or national origin, because of habit, local custom, or otherwise. The Bidder agrees that (except where it has obtained identical certifications from proposed subcontractors for specific time periods) it will obtain identical certifications from proposed subcontractors prior to the award of subcontracts exceeding \$10,000 which are not exempt from the provisions of the Equal Opportunity Clause, and that it will retain such certifications in its files.

Section 6. Successors and Assigns. Each and all of the covenants and agreements herein contained shall extend to and be binding upon the successors and assigns of the parties hereto. The Owner and Bidder acknowledge that this Contract is assigned to the Government, acting through the Administrator, for security purposes under the Owner's mortgage and security instrument.

Section 7. Independent Contractor. The Bidder shall perform the work as an independent contractor, not as a subcontractor, agent, or employee of the Owner. Upon acceptance of this Proposal, the successful Bidder shall be the Contractor and all references in the Proposal to the Bidder shall apply to the Contractor.

RUS FORM 198 (Rev. 4-64)

Section 8. Approved by the Administrator: This contract does _____, does not X, require approval of the Administrator. No acceptance of a Proposal for a contract upon which approval of the Administrator is required shall become effective until the contract has been approved by the Administrator; provided that no obligation shall arise hereunder unless such approval is given within one-hundred twenty (120) days after the date set for the opening of the proposals. The acceptance of a Proposal for a contract upon which approval of the Administrator is not required shall become effective the date of acceptance by the Owner.

ATTEST:

Secretary

Date

ABB
UTILITY SALES & ENGINEERING SERVICES
Bidder

M. Wayne Mayall
President MEMBER MANAGER

7508 NEW LAGRANGE ROAD, SUITES
Address

LOUISVILLE, KY 40222

The Proposal must be signed with the full name of the Bidder. If the Bidder is a partnership, the Proposal must be signed in the partnership name by a partner. If the Bidder is a corporation, the Proposal must be signed in the corporate name by a duly authorized officer and the corporate seal affixed and attested by the Secretary of the Corporation.

EKPC Additions, Page 9 dated March 7, 2005

The Following Additional General Conditions Shall be Added to This Contract RJS Form 198:

Page 9, Article VI, Section 5, the following paragraph will be added as (B)

(B) When this order and contract refer to manufactured goods or to work or services, Seller warrants and agrees that it has complied and will comply with (1) Fair Labor Standards Act; (2) Social Security and Workman's Compensation Laws, if work is done on Purchaser's premises; and (3) all other applicable Federal, State and local laws, codes and regulations. It is the policy of Purchaser to provide equal opportunities in employment without regard to race, color, religion, sex, age, or national origin and to employ and advance qualified disabled veterans, handicapped or disabled persons and Vietnam era veterans. Purchaser complies with the requirements placed on government contractors and subcontractors by Executive Order 11246, Section 402 of the Vietnam Era Veterans Readjustment Assistance Act of 1974 and Section 503 of the Rehabilitation Act of 1973, and it is agreed that as a Subcontractor, vendor, or supplier, Seller will also comply with the Executive Order, laws, and applicable rules and regulations. Seller agrees to indemnify Purchaser and save Purchaser harmless if Seller fails to comply with the foregoing, and in the event of such failure Purchaser may, in addition, cancel this order and contract. Seller invoices for work or materials covered hereby shall state that Seller has complied with the requirements of the Fair Labor Standards Act of 1938 as amended.



PROPOSAL

TO:

East Kentucky Power Cooperative, Inc.

(hereinafter called the "Owner").

ARTICLE I--GENERAL

Section 1. Offer to Furnish and Deliver. *The undersigned (hereinafter called the "Bidder") hereby proposes to furnish and deliver the equipment (hereinafter called the "Equipment") described in the Plans, Specifications, and Construction Drawings for the following prices:*

Item: 4160 Volt Switchgear/ Price: \$312,781.00

Controls

Item: _____ Price: _____

The prices of Equipment set forth herein shall include the cost of delivery to:

Pendleton County Landfill, 1374 Bryan Griffin Road, Butler, KY 41006

The prices set forth herein do not include any sums which are or may be payable by the Bidder on account of taxes imposed by any taxing authority upon the sale, purchase or use of the Equipment. If any such tax is applicable to the sale, purchase or use of the Equipment hereunder, the amount thereof shall be added to the purchase price and paid by the Owner.

Section 2. Materials and Equipment. *The Bidder agrees to furnish and use in the construction of the project under this Proposal, in the event the Proposal is accepted, only such "fully accepted," "conditionally accepted," and "technically accepted" materials and equipment which have been accepted by RUS as indicated in the current RUS Informational Publication 202-1, "List of Materials Acceptable for Use on Systems of RUS Electrification Borrowers," including revisions adopted prior to the Bid Opening. The use of "conditionally accepted" or "technically accepted" materials and equipment requires prior consent by the Owner or Engineer.*

The Bidder will purchase all materials and equipment outright and not subject to any conditional sales agreements, bailment, lease or other agreement reserving unto the seller any right, title or interest therein. All such materials and equipment shall be new.

Section 3. Description of Contract. *The Notice and Instructions to Bidders, Plans, Specifications, and Construction Drawings, which by this reference are incorporated herein, together with the Proposal and Acceptance constitute the Contract. The Plans, Specifications, and Construction Drawings, including maps, special drawings, and approved modifications in standard specifications are attached hereto and identified as follows:*

Same as for Pearl Hollow Landfill, Hardin County, Kentucky;

Clarifications dated 4/19/05, EKPC Switchgear/Control Specifications,

Notice and Instructions to Bidders, and Enercon Proposal dated January 26, 2006.

Section 4. Due Diligence. *The Bidder has made a careful examination of the Plans, Specifications, and Construction Drawings attached hereto, and has become informed as to the location and nature of the proposed construction, the transportation facilities, the kind and character of soil and terrain to be encountered, and the kind of facilities required before and during the construction of the project, and*

has become acquainted with the labor conditions, federal, state, and local laws, rules, and regulations applicable to its performance.

Section 5. Warranty of Good Faith. *The Bidder warrants that this Proposal is made in good faith and without collusion or connection with any person or persons bidding for the same work.*

ARTICLE II--DELIVERY AND WARRANTY

Section 1. Delivery. *The Bidder shall deliver the Equipment:*

_____ within _____ days after receipt of the written order or orders of the Owner.

not later than September 30, 2006.

The time for delivery shall be extended for the period of any reasonable delay due exclusively to causes beyond the control and without the fault of the Bidder, including, but not limited to, acts of God, fires, strikes, and floods.

Section 2. Defective Materials and Workmanship.

- a. *All Equipment furnished hereunder shall be subject to the inspection, tests, and approval of the Owner and the Engineer, and the Bidder shall furnish all information required concerning the nature or source of any Equipment and provide adequate facilities for testing and inspecting the Equipment at the plant of the Bidder.*
- b. *The Equipment furnished hereunder shall become the property of the Owner upon delivery, provided, however, that the Owner or the Engineer, within one year after initial operation of the Equipment, or within the period for which the Equipment is guaranteed, whichever is longer, may reject any Equipment which does not comply with the Specifications attached hereto and made a part hereof or with the guarantees, if any, of the Bidder and the manufacturer. Upon any such rejection, the Bidder shall repair or replace such defective Equipment within a reasonable time after notice in writing from the Owner. If any such defective materials, equipment, or workmanship so replaced or repaired is found to be defective within one year after the completion of the replacement or repair, the Bidder shall replace or remedy such defective materials, equipment, or workmanship. In the event of failure by the Bidder so to do, the Owner may make such replacement and the cost and expense thereof shall be paid by and recoverable from the Bidder.*
- c. *All manufacturers' guarantees of Equipment, if any, shall be transferred and assigned to the Owner upon delivery of any Equipment and before final payment is made for such Equipment. Such guarantees shall be in addition to those required of the Bidder by other provisions of this Contract.*

ARTICLE III--PAYMENT

Section 1. Payments to Bidder.

- a. *Upon the shipment of any Equipment hereunder, the Bidder shall submit to the Owner a detailed statement of the Equipment shipped. The Owner shall, upon receipt of the Equipment, pay the Bidder ninety percent (90%) of the contract price of the Equipment. When the Equipment has been installed, placed in satisfactory operation, tested and accepted by the Owner, the Owner shall make final payments therefor to the Bidder; provided, however, such final payment*

shall be made not later than ninety (90) days after delivery of the Equipment, unless such acceptance by the Owner shall be withheld because of the fault of the Bidder.

or site commissioning, whichever should come first,

- b. *No payment shall be due while the Bidder is in default in respect of any of the provisions of this Contract and the Owner may withhold from the Bidder the amount of any claim by a third party against either the Bidder or the Owner based upon an alleged failure of the Bidder to perform the work hereunder in accordance with the provisions of this Contract.*

ARTICLE IV--PARTICULAR UNDERTAKINGS OF THE BIDDER

The provisions of this Article IV apply to any work performed by the Bidder at the project site.

Section 1. Protection to Persons and Property. *The Bidder shall at all times take all reasonable precautions for the safety of employees on the project and of the public, and shall comply with all applicable provisions of federal, state, and local laws, rules, and regulations and building and construction codes, in addition to the safety rules and procedures of the Owner.*

The following provisions shall not limit the generality of the above requirements:

- a. *The Bidder shall at no time and under no circumstances cause or permit any employee of the Bidder to perform any work upon energized lines, or upon poles carrying energized lines, unless otherwise specified in the Notice and Instructions to Bidders.*
- b. *The Bidder shall transport and store all material in facilities and vehicles which are designed to protect the material from damage. The Bidder shall ensure that all vehicles, trailers, and other equipment used comply with all applicable licensing, traffic, and highway requirements.*
- c. *The Bidder shall conduct its operations to cause the least possible obstruction of public highways.*
- d. *The Bidder shall make good and fully repair all injuries and damages to the project or any portion thereof under the control of the Bidder by reason of any act of God or other casualty or cause whether or not the same shall have occurred by reason of the Bidder's negligence.*
 - (i) *To the maximum extent permitted by law, Bidder shall defend, indemnify, and hold harmless Owner and Owner's directors, officers, and employees from all claims, causes of action, losses, liabilities, and expenses (including reasonable attorney's fees) for personal loss, injury, or death to persons (including but not limited to Bidder's employees) and loss, damage to or destruction of Owner's property or the property of any other person or entity (including but not limited to Bidder's property) in any manner arising out of or connected with the Contract, or the materials or equipment supplied or services performed by Bidder, its subcontractors and suppliers of any tier. But nothing herein shall be construed as making Bidder liable for any injury, death, loss, damage, or destruction caused by the sole negligence of Owner.*
 - (ii) *To the maximum extent permitted by law, Bidder shall defend, indemnify, and hold harmless Owner and Owner's directors, officers, and employees from all liens and claims filed or asserted against Owner, its directors, officers, and employees, or Owner's property or facilities, for services performed or materials or equipment furnished by Bidder, its subcontractors and suppliers of any tier, and from all losses, demands, and causes of action arising out of any such lien or claim. Bidder shall promptly discharge or remove any such lien or claim by bonding, payment, or otherwise and shall notify Owner promptly when it has done so. If Bidder does not cause such lien or claim to be discharged or released by payment, bonding, or otherwise, Owner shall have the right (but shall not be obligated) to pay all sums necessary to obtain any such discharge or release and to deduct all amounts so paid from the amount due Bidder.*
 - (iii) *Bidder shall provide to Owner's satisfaction evidence of Bidder's ability to comply with the indemnification provisions of subparagraphs i and ii above, which evidence may include but may not be limited to a bond or liability insurance policy obtained for this purpose through a licensed surety or insurance company.*

- e. Upon violation by the Bidder of any of the provisions of this section, after written notice of such violation given to the Bidder by the Engineer or the Owner, the Bidder shall immediately correct such violation. Upon failure of the Bidder so to do the Owner may correct such violation at the Bidder's expense: Provided, however, that the Owner may, if it deems it necessary or advisable, correct such violation at the Bidder's expense without such prior notice to the Bidder.

Section 2. Insurance. The Bidder shall take out and maintain throughout the period of its operations at the project site the following types and minimum amounts of insurance:

- a. Workers' compensation and employers' liability insurance, as required by law, covering all its employees who perform any of the obligations of the Bidder under the contract. If any employer or employee is not subject to the workers' compensation laws of the governing state, then insurance shall be obtained voluntarily to extend to the employer and employee coverage to the same extent as though the employer or employee were subject to the workers' compensation laws.
- b. Public liability insurance covering all operations under the contract shall have limits for bodily injury or death of not less than \$1 million each occurrence, limits for property damage of not less than \$1 million each occurrence, and \$1 million aggregate for accidents during the policy period. A single limit of \$1 million of bodily injury and property damage is acceptable. This required insurance may be in a policy or policies of insurance, primary and excess including the umbrella or catastrophe form.
- c. Automobile liability insurance on all motor vehicles used in connection with the contract, whether owned, nonowned, or hired, shall have limits for bodily injury or death of not less than \$1 million per person and \$1 million each occurrence, and property damage limits of \$1 million for each occurrence. A single limit of \$1 million of bodily injury and property damage is acceptable. This required insurance may be in a policy or policies of insurance, primary and excess including the umbrella or catastrophe form.

The Owner shall have the right at any time to require public liability insurance and property damage liability insurance greater than those required in subsection "b" and "c" of this Section. In any such event, the additional premium or premiums payable solely as the result of such additional insurance shall be added to the Contract price.

The Owner shall be named as Additional Insured on all policies of insurance required in subsections "b" and "c" of this Section.

The policies of insurance shall be in such form and issued by such insurer as shall be satisfactory to the Owner. The Bidder shall furnish the Owner a certificate evidencing compliance with the foregoing requirements which shall provide not less than (30) days prior written notice to the Owner of any cancellation or material change in the insurance.

ARTICLE V--REMEDIES

Section 1. Liquidated Damages. The time of the delivery of the Equipment is of the essence of the Contract. Should the Bidder neglect, refuse or fail to deliver the Equipment within the time herein agreed upon, after giving effect to extensions of time, if any, herein provided, then, in that event and in view of the difficulty of estimating with exactness damages caused by such delay, the Owner shall have the right to deduct from and retain out of such moneys which may be then due, or which may become due and

payable to the Bidder the sum of N/A dollars () per day for each and every day that such delivery is delayed beyond the specified time, as liquidated damages and not as a penalty; if the amount due and to become due from the Owner to the Bidder is insufficient to pay in full any such liquidated damages, the Bidder shall pay to the Owner the amount necessary to effect such payment in full: Provided, however, that the Owner shall promptly notify the Bidder in writing of the manner in which the amount retained, deducted or claimed as liquidated damages was computed.

Section 2. Cumulative Remedies. *Every right or remedy herein conferred upon or reserved to the Owner or the Government or the Administrator shall be cumulative, shall be in addition to every right and remedy now or hereafter existing at law or in equity or by statute and the pursuit of any right or remedy shall not be construed as an election. Provided, however, that the provisions of Section 1 of this Article shall be the exclusive measure of damages for failure by the Bidder to deliver the Equipment within the time herein agreed upon.*

ARTICLE VI--MISCELLANEOUS

Section 1. Definitions.

- a. *The term "Administrator" shall mean the Administrator of the Rural Utilities Service of the United States of America and his or her duly authorized representative or any other person in whom or authority in which may be vested the duties and functions which the Administrator is now authorized by law to perform.*
- b. *The term "Engineer" shall mean the Engineer employed by the Owner, to provide engineering services for the project and said Engineer's duly authorized assistants and representatives.*

Section 2. Materials and Supplies. *In the performance of this contract there shall be furnished only such unmanufactured articles, materials, and supplies as have been mined or produced in the United States or in any eligible country, and only such manufactured articles, materials, and supplies as have been manufactured in the United States or in any eligible country substantially all from articles, materials, or supplies mined, produced or manufactured, as the case may be, in the United States or in any eligible country; provided that other articles, materials, or supplies may be used in the event and to the extent that the Administrator shall expressly in writing authorize such use pursuant to the provisions of the Rural Electrification Act of 1938, being Title IV of Public Resolution No. 122, 75th Congress, approved June 21, 1938. For the purposes of this section, an "eligible country" is any country that applies with respect to the United States an agreement ensuring reciprocal access for United States products and services and supplies to the markets of that country, as determined by the United States Trade Representative. The Bidder agrees to submit to the Owner such certificates with respect to compliance with the foregoing provision as the Administrator from time to time may require.*

Section 3. Patent Infringement. *The Bidder shall hold harmless and indemnify the Owner from any and all claims, suits and proceedings for the infringement of any patent or patents covering Equipment purchased hereunder.*

Section 4. Compliance with Laws. *The Bidder shall comply with all federal, state, and local laws, rules, and regulations applicable to its performance under the contract and the construction of the project. The Bidder acknowledges that it is familiar with the Rural Electrification Act of 1936, as amended, the Anti Kick-Back Act of 1986 (41 U.S.C. 51 et seq), and 18 U.S.C. §§ 286, 287, 641, 661, 874, 1001, and 1366, as amended.*

The Bidder represents that to the extent required by Executive Orders 12549 (3 CFR, 1985-1988 Comp., p. 189) and 12689 (3 CFR, 1989 Comp., p. 235), Debarment and Suspension, and 7 CFR part 3017, it has submitted to the Owner a duly executed certification in the form prescribed in 7 CFR part 3017.

The Bidder represents that, to the extent required, it has complied with the requirements of Pub. L. 101-121, Section 319, 103 Stat. 701, 750-765 (31 U.S.C. 1352), entitled "Limitation on use of appropriated funds to influence certain Federal contracting and financial transactions," and any rules and regulations issued pursuant thereto.

Section 5. Equal Opportunity Provisions.

a. *Bidder's Representations.*

The Bidder represents that:

It has , does not have , 100 or more employees, and if it has, that it has , has not furnished the Equal Employment Opportunity-Employers Information Report EEO-1, Standard Form 100, required of employers with 100 or more employees pursuant to Executive Order 11246 of September 24, 1965, and Title VII of the Civil Rights Act of 1964.

The Bidder agrees that it will obtain, prior to the award of any subcontract for more than \$10,000 hereunder to a subcontractor with 100 or more employees, a statement, signed by the proposed subcontractor, that the proposed subcontractor has filed a current report on Standard Form 100.

The Bidder agrees that if it has 100 or more employees and has not submitted a report on Standard Form 100 for the current reporting year and that if this Contract will amount to more than \$10,000, the Bidder will file such report, as required by law, and notify the Owner in writing of such filing prior to the Owner's acceptance of this Proposal.

b. *Equal Opportunity Clause.* During the performance of this Contract, the Bidder agrees as follows:

- (1) The Bidder will not discriminate against any employee or applicant for employment because of race, color, religion, sex or national origin. The Bidder will take affirmative action to ensure that applicants are employed, and that employees are treated during employment without regard to their race, color, religion, sex or national origin. Such action shall include, but not be limited to, the following: Employment, upgrading, demotions or transfer; recruitment or recruitment advertising; layoff or termination; rates of pay or other forms of compensation; and selection of training, including apprenticeship. The Bidder agrees to post in conspicuous places, available to employees and applicants for employment, notices to be provided setting forth the provisions of this Equal Opportunity Clause.
- (2) The Bidder will, in all solicitations or advertisements for employees placed by or on behalf of the Bidder, state that all qualified applicants will receive consideration for employment without regard to race, color, religion, sex or national origin.
- (3) The Bidder will send to each labor union or representative of workers, with which it has a collective bargaining agreement or other contract or understanding, a notice to be provided advising the said labor union or workers' representative of the Bidder's commitments under this section, and shall post copies of the notice in conspicuous places available to employees and applicants for employment.
- (4) The Bidder will comply with all provisions of Executive Order 11246 of September 24, 1965, and the rules, regulations and relevant orders of the Secretary of Labor.
- (5) The Bidder will furnish all information and reports required by Executive Order 11246 of September 24, 1965, and by rules, regulations, and orders of the Secretary of Labor, or pursuant thereto, and will permit access to its books, records, and accounts by the administering agency and the Secretary of Labor for purposes of investigation to ascertain compliance with such rules, regulations, and orders.
- (6) In the event of the Bidder's noncompliance with the Equal Opportunity Clause of this Contract or with any of the said rules, regulations, or orders, this Contract may be canceled, terminated, or suspended in whole or in part, and the Bidder may be declared ineligible for further Government contracts or federally assisted construction contracts in accordance with procedures authorized in Executive Order 11246 of September 24, 1965, and such other sanctions may be imposed and remedies invoked as provided in Executive Order 11246 of

September 24, 1965, or by rule, regulation, or order of the Secretary of Labor, or as provided by law.

(7) *The Bidder will include this Equal Opportunity Clause in every subcontract or purchase order unless exempted by the rules, regulations, or order of the Secretary of Labor issued pursuant to Section 204 of Executive Order 11246 of September 24, 1965, so that such provisions will be binding upon each subcontractor or vendor. The Bidder will take such action with respect to any subcontract or purchase order as the administering agency may direct as a means of enforcing such provisions, including sanctions for noncompliance; Provided, however, that in the event Bidder becomes involved in, or is threatened with, litigation with a subcontractor or vendor as a result of such direction by the administering agency, the Bidder may request the United States to enter into such litigation to protect the interests of the United States.*

see attached EKPC additions page 1

c. *Certificate of Nonsegregated Facilities. The Bidder certifies that it does not maintain or provide for its employees any segregated facilities at any of its establishments, and that it does not permit its employees to perform their services at any location, under its control, where segregated facilities are maintained. The Bidder certifies further that it will not maintain or provide for its employees any segregated facilities at any of its establishments, and that it will not permit its employees to perform their services at any location, under its control, where segregated facilities are maintained. The Bidder agrees that a breach of this certification is a violation of the Equal Opportunity Clause in this Contract. As used in this certification, the term "segregated facilities" means any waiting rooms, work areas, restrooms and washrooms, restaurants and other eating areas, timeclocks, locker rooms and other storage or dressing areas, parking lots, drinking fountains, recreation or entertainment areas, transportation, and housing facilities provided for employees which are segregated by explicit directive or are in fact segregated on the basis of race, color, religion, or national origin, because of habit, local custom, or otherwise. The Bidder agrees that (except where it has obtained identical certifications from proposed subcontractors for specific time periods) it will obtain identical certifications from proposed subcontractors prior to the award of subcontracts exceeding \$10,000 which are not exempt from the provisions of the Equal Opportunity Clause, and that it will retain such certifications in its files.*

Section 6. Successors and Assigns. *Each and all of the covenants and agreements herein contained shall extend to and be binding upon the successors and assigns of the parties hereto. The Owner and Bidder acknowledge that this Contract is assigned to the Government, acting through the Administrator, for security purposes under the Owner's mortgage and security instrument.*

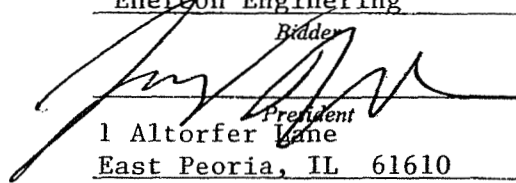
Section 7. Independent Contractor. *The Bidder shall perform the work as an independent contractor, not as a subcontractor, agent, or employee of the Owner. Upon acceptance of this Proposal, the successful Bidder shall be the Contractor and all references in the Proposal to the Bidder shall apply to the Contractor.*

Section 8. Approval by the Administrator: This contract does _____, does not X, require approval of the Administrator. No acceptance of a Proposal for a contract upon which approval of the Administrator is required shall become effective until the contract has been approved by the Administrator, provided that no obligation shall arise hereunder unless such approval is given within one-hundred twenty (120) days after the date set for the opening of the proposals. The acceptance of a Proposal for a contract upon which approval of the Administrator is not required shall become effective the date of acceptance by the Owner.

ATTEST:

Secretary

Dated _____

Enercon Engineering
Bidder

President
1 Altorfer Lane
East Peoria, IL 61610
Address

The Proposal must be signed with the full name of the Bidder. If the Bidder is a partnership, the Proposal must be signed in the partnership name by a partner. If the Bidder is a corporation, the Proposal must be signed in the corporate name by a duly authorized officer and the corporate seal affixed and attested by the Secretary of the Corporation.

ACCEPTANCE

Subject to the approval of the Administrator, if approval of the Administrator is required, the Owner hereby accepts the foregoing Proposal of the Bidder, Enercon Engineering

_____ for the following Equipment:

4160 Volt Switchgear, Controls and Shipping to the Pendleton County

Landfill, Butler, Kentucky

_____ for a total contract price of \$ 312,781.00 (Three Hundred Twelve Thousand Seven Hundred Eight-One dollars.)

East Kentucky Power Cooperative, Inc.

Owner

By

Raym. Palk
President & CEO

Secretary

April 25, 2006
Date of Contract

EKPC Additions, Page 9 dated March 7, 2005

The Following Additional General Conditions Shall be Added to This Contract RUS Form 198:

Page 9, Article VI, Section 5, the following paragraph will be added as (8)

- "(8) When this order and contract refer to manufactured goods or to work or services, Seller warrants and agrees that it has complied and will comply with (1) Fair Labor Standards Act; (2) Social Security and Workman's Compensation Laws, if work is done on Purchaser's premises; and (3) all other applicable Federal, State and local laws, codes and regulations. It is the policy of Purchaser to provide equal opportunities in employment without regard to race, color, religion, sex, age, or national origin and to employ and advance qualified disabled veterans, handicapped or disabled persons and Vietnam era veterans. Purchaser complies with the requirements placed on government contractors and subcontractors by Executive Order 11246, Section 402 of the Vietnam Era Veterans Readjustment Assistance Act of 1974 and Section 503 of the Rehabilitation Act of 1973, and it is agreed that as a Subcontractor, vendor, or supplier, Seller will also comply with the Executive Order, laws, and applicable rules and regulations. Seller agrees to indemnify Purchaser and save Purchaser harmless if Seller fails to comply with the foregoing, and in the event of such failure Purchaser may, in addition, cancel this order and contract. Seller invoices for work or materials covered hereby shall state that Seller has complied with the requirements of the Fair Labor Standards Act of 1938 as amended."

U.S. Department of Agriculture
Rural Utilities Service

*Certification Regarding Debarment, Suspension, and Other Responsibility
Matters – Primary Covered Transactions*

This certification is required by the regulations implementing Executive Order 12549, Debarment and Suspension, 7 CFR Part 3017, Section 3017.510, Participants' Responsibilities. The regulations were published as Part IV of the January 30, 1989, Federal Register (pages 4722-4733). Copies of the regulations may be obtained by contacting the Department of Agriculture agency offering the proposed transaction.

- (1) The prospective primary participant certifies to the best of its knowledge and belief, that it and its principals:
- (a) are not presently debarred, suspended, proposed for Debarment, declared ineligible, or voluntarily excluded from covered transactions by any Federal department or agency;
 - (b) have not within a 3-year period preceding this proposal been convicted of or had a civil judgment rendered against them for commission of fraud or a criminal offense in connection with obtaining, attempting to obtain, or performing a public (Federal, State, or local) transaction or contract under a public transaction; violation of Federal or State antitrust statutes or commission of embezzlement, theft, forgery, bribery, falsification or destruction of records, making false statements, or receiving stolen property;
 - (c) are not presently indicted for or otherwise criminally or civilly charged by a governmental entity (Federal, State, or local) with commission of any of the offenses enumerated in paragraph (1)(b) of this certification; and
 - (d) have not within a 3-year period preceding this application/proposal had one or more public transactions (Federal, State, or local) terminated for cause or default.
- (2) Where the prospective primary participant is unable to certify to any of the statements in this certification, such prospective participant shall attach an explanation to this proposal.

Enercon Engineering
Organization Name

Danny P. Davis 4/20/06
Authorized Representative's Signature Date

DANNY P. DAVIS
Name Typed or Printed

(This is not an official Government form. It has been prepared to assist and expedite the application process and is only intended for use in the Rural Broadband Access Loan and Loan Guarantee Program.)

U.S. Department of Agriculture
Rural Utilities Service

*Certification Regarding Lobbying for Contracts, Grants,
Loans, and Cooperative Agreements*

The undersigned certifies, to the best of his or her knowledge and belief, that:

- (1) No Federal appropriated funds have been paid or will be paid, by or on behalf of the undersigned, to any person for influencing or attempting to influence an officer or employee of any agency, a Member of Congress, an officer or employee of Congress, or an employee of a Member of Congress in connection with the awarding of any Federal contract, the making of any Federal grant or loan, the entering into of any cooperative agreement, and the extension, continuation, renewal, amendment, or modification of any Federal contract, grant, loan, or cooperative agreement.
- (2) If any funds other than Federal appropriated funds have been paid or will be paid to any person for influencing or attempting to influence an officer or employee of any agency, a Member of Congress, an officer or employee of Congress, or an employee of a Member of Congress in connection with this Federal contract, grant, loan, or cooperative agreement, the undersigned shall complete and submit Standard Form-LLL, "Disclosure Form to Report Lobbying," in accordance with its instructions. (Copies of this form may be obtained from RUS.)
- (3) The undersigned shall require that the language of this certification be included in the award documents for all subawards at all tiers (including subcontracts, subgrants, and contracts under grants, loans, and cooperative agreements) and that all subrecipients shall certify and disclose accordingly.

This certification is a material representation of fact upon which reliance was placed when this transaction was made or entered into. Submission of this certification is a prerequisite for making or entering into this transaction imposed by section 1352, title 31, U.S. Code. Any person who fails to file the required certification shall be subject to a civil penalty of not less than \$10,000 and not more than \$100,000 for each such failure.

Enercon Engineering
Organization Name

Danny P. Davis 4/20/06
Authorized Representative's Signature Date

DANNY P. DAVIS
Name Typed or Printed

(This is not an official Government form. It has been prepared to assist and expedite the application process and is only intended for use in the Rural Broadband Access Loan and Loan Guarantee Program.)



9550 W. 55th Street • Suite A • McCook, IL 60525 • (708) 588-2500

March 15, 2005

Mr. Dan Davis
Enercon Engineering
No. 1 Altorfer Lane
East Peoria, IL 61611

RE: East Kentucky Power Cooperative Landfill Gas Energy Projects
Switchgear Equipment Bid Solicitation

Dear Mr. Davis:

The Meade Electric Company is issuing equipment bid solicitations for the East Kentucky Power Cooperative Landfill Gas Energy Projects at the Pearl Hollow Landfill, Hardin County, KY.

The following documentation should be utilized in the preparation of your bid:

- Specification sheets
- Equipment bid sheet
- Single Line Diagram RE5-E3

Please note that your bids should include the attached bid sheet, a list of any exceptions and clarifications, and any product descriptive literature that you believe is necessary to fully define your offering.

Bids are due by 2:00 p.m. March 30, 2005, and should be submitted to:

Ralph Tyree
East Kentucky Power Cooperative
4775 East Lexington Road
Winchester, KY 40391
Telephone: 859-744-4812
Fax: 859-744-6008

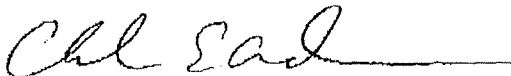
A copy of your proposal should be sent to my attention at the address indicated on this letterhead. Submission of bids by facsimile is acceptable. East Kentucky Power Cooperative will conduct a private bid opening and reserves the right to reject any and all bids.

Pearl Hollow
Switchgear Equipment
Page Two

Equipment delivery is being requested within approximately 150 days of receipt of order, which is anticipated to be released on or before April 15, 2005. Pricing should include delivery F.O.B. job site, and additional pricing information should be provided for extended warranty and start-up services. Contract terms will be RUS standard.

If you have any technical questions, please contact me in writing via fax at 708-588-2501 or via e-mail at canderson@meadcelectric.com

Sincerely,



Charles E. Anderson
Vice President

cc: R. Tyree
Enclosures

MEADE
ELECTRIC COMPANY, INC.

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Hardin County Landfill
Gas-to-Electric Plant

**LANDFILL GAS-TO-ELECTRIC PROJECT
ENGINE-GENERATOR SWITCHGEAR & CONTROLS
4.16KV - 3 PHASE - 60 HERTZ SERVICE**

I. System Introduction:

1. The project involves the installation of five (5) Caterpillar 3516 landfill gas engines driving Caterpillar 4.16kv permanent magnet excited, 6 lead, wye connected generators --each engine-generator set prime power rated 800kw, 0.80 power factor, 3 phase, 60 hertz, 4160 volts with output of 139 amperes. The engine-generator sets shall be paralleled with the local utility source and provide power as "sell-back" to the utility grid.
2. The station generator sets shall be connected to 4.16 KV metal-clad switchgear providing power to station auxiliary loads via a 4.16 KV-480V step-down transformer, with the balance of power exported to the utility grid via a 3 phase main power transformer which steps up the generated voltage to the utility high line voltage of 12.47 KV. The 4.16 KV switchgear shall include a utility tie breaker (52-T), which shall be closed by initiation of a station operator.
3. Before any of the station engine-generator sets can be started, the station fuel gas compressor system must be operative to provide the fuel supply to the engines. With the high voltage line interconnect device closed, closing of the utility tie breaker (52-T) provides 4.16 KV to the station bus, which then provides the required power for operation of the station gas compressor system via a fusible load-break switch and the now energized station auxiliary step-down transformer. The station engine-generator sets shall then be started by the station operator and paralleled to the live station 4.16 KV bus under control of synchronizing relay circuits. To provide power to the utility grid system, the station operator shall use the load control circuits to load each engine-generator set up to its KW rating. The station power from the engine-generator sets shall be "exported" to the utility grid via the closed utility tie breaker (52-T) and the closed 12.47 KV utility line interconnect device (52-U).

II. Line-up Construction:

1. The 4.16 KV station switchboard lineup shall be NEMA 1 metal enclosed for indoor service with internal steel barriers forming high / low voltage compartments, steel barriers between adjacent cubicles, steel barriers separating the main 3 phase bus bars from field cable connections to the breaker stabs, open bottom rear areas for field cable entrance with approximately 26 inches (660.4 mm) of clear vertical space available to the breaker stabs, screw secured and split rear sheets with lift off handles,

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hinged front doors with handles, removable top lifting facilities and comprised of the following cubicles, factory bolted together to form the switchboard lineup (facing front of lineup and left to right):

- 1 - Station Master Cubicle
- 1 - Utility Tie Breaker Cubicle (52-T).
- 5 - Engine-generator set Control / Breaker Cubicles (52-G) --- designated Gen #1, Gen #2, Gen #3, Gen #4 and Gen #5.
- 1 - Fusible Load Break Switch Cubicle.

2. The 4.16 KV switchgear lineup approximate overall dimensions and equipment location to be as follows:

- 1 - Station Master Cubicle --- with one (1) front accessible draw-out potential transformer tray (2X PT off the bus) plus space in rear of cubicle for three (3) draw-out ground detection PT's and for 3X station class arrestors with 3 pole capacitor.
- 1 - Utility Tie Breaker Cubicle --- with one (1) front accessible draw-out potential transformer tray (2X PT's off utility incoming line bus bars).
- 5 - Engine-generator set Control / Breaker Cubicles --- each with draw-out PT's (2) in rear of cubicle tapped off of breaker bus bars).
- 1 - Fusible Load Break Switch Cubicle

Overall dimensions, approximately 95 inches high by 86.25 inches deep by 288 inches (24 feet wide).

3. The lineup shall be shipped in a minimum of (2) sections with bus splice plates, wire harness inter-ties and hardware for installation contractor to field re-assemble plus removable top lifting facilities for ease of handling.

III. Protection & Control Systems:

1. A multi-function utility source protective relay shall be provided by others as part of the 12.47 KV utility line interconnect device (52-U). Three (3) potential transformers (7200-120V) shall be provided by others, on the high side of the step-up transformer for relaying and be connected wye/wye grounded. When power fails or voltage function or frequency disturbance occurs on the utility line, the event shall be detected by relay functions 27/59 for under/over-voltage plus device 81-0/U for over/under-frequency. The multi-function relay protection shall also provide, 3 phase overcurrent (50/51 functions), directional overcurrent (67 function), and 3 phase transformer differential protection (87T function). A current transformer (ratio 100/5A), as part of the step-up transformer and installed in the transformer primary wye ground bushing, shall provide secondary current for use with transformer ground fault overcurrent (50N/51N functions) as part of the multi-

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- function relay. Activating of any of the relay functions shall energize the lockout relay, 86-T device, located in the 4.16kV switchgear, to cause tripping of the 4.16 KV utility tie breaker (52-T) and trip signal to remote 12.47 KV utility interconnect device (52-U).
2. The station 3 phase step-up transformer shall include monitoring devices for high temperature (26Q), low oil level (71 device) with output contacts to signal fault windows as part of the station annunciation, plus separate output contacts to energize the lock-out relay 86-T device to cause tripping of the 4.16 KV utility tie (52-T) and the 12.47 KV utility interconnect device.
 3. Once the 4.16 KV utility tie breaker (52-T) has been closed, it shall remain closed. Should the utility tie breaker be opened intentionally or tripped open by action of a fault circuit, then the following shall occur:
 - (a) Opening of the tie breaker shall disconnect engine-generator set cubicle load control circuits, plus interconnect the governor modules for isochronous load share operation.
 - (b) Synchronizing circuits, as part of the 4.16 KV tie breaker (52-T) cubicle, shall allow manual initiated reclosing of the tie breaker provided the utility side of the tie breaker is live and conditions for paralleling are within acceptable tolerances.
 - (c) Closing of the tie breaker shall disconnect the governor modules and complete the circuits to activate the soft load controls --- load on each engine-generator set shall be determined by the last setting of the load control.
 - (d) An auxiliary circuit shall be provided and activated when the tie breaker (52-T) trips open. The circuit shall cause two (2) pre-selected running engine-generator sets to be removed from service. The on-line engine-generator sets shall remain in service to power the station auxiliary loads.
 4. The control system shall be designed to keep the running engine-generator sets on the bus whenever the utility tie breaker (52-T) opens with load control circuits disconnected and governor modules interconnected for auto load share functions. The utility tie breaker circuits shall be designed for manually initiated reclosure under control of a speed matching synchronizing relay circuit which shall provide adjustment signals to the engine governor modules for speed and / or phase angle differences.
 5. The control system shall incorporate an auto load control circuit to accomplish "soft loading" of the engine-generator sets. Opening of the utility tie breaker shall disconnect the load control circuit and reset the load control to the minimum setting. When the tie breaker recloses, under control of automatic speed matching

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synchronizing circuits --- the auto load control circuits shall activate to "soft load" the on-bus engine-generator sets up to their last individual settings with an upper limit being the full load for each engine-generator set. The operator shall have the option to manually reduce load on each engine-generator set individually and shall be able to manually increase the load on each engine-generator set up to the upper limit setting. The load control circuits shall include an adjustable ramp time for "soft loading". With the utility tie breaker closed and should an individual engine-generator set breaker be opened, the load control for that engine-generator set shall reset to its minimum setting so that when the breaker is reclosed, "soft loading" shall occur.

The auto load control circuits shall be accessible via a touch screen for a station operator to field change the percent of load on each engine-generator set to adjust the ramp time of all engine-generator sets and to assign on-line engine-generator sets should 52-T trip open.

The control system shall include circuits to monitor the KW load on each engine-generator set and to provide adjustment signals to the individual Woodward governor modules to hold the load capacity setting of the auto load control circuits.

6. Each 4.16 KV engine-generator set control cubicle shall be furnished with a generator automatic voltage regulator (furnished by engine manufacturer), a load share governor module (furnished by engine manufacturer) and an automatic power factor controller and a multi-function protective relay. The relay functions shall protect the generator against unbalanced current (46 function), instantaneous and time delay overcurrent (50/51 function), reverse power (32 function), reverse reactive current for leading VARs (32 RV) or loss of excitation (40 function), and faults that cause a flow of differential currents through the generator windings (87 function). Neutral grounding of each generator shall be achieved through a grounding resistor plus an overcurrent ground fault relay (51G) function. The protective relay functions shall activate the engine-generator set cubicle lock-out relay, 86-G device, to cause tripping of the engine-generator set 4.16 KV circuit breaker 52-G and engine-generator set shutdown.

IV. Cubicles, Power & Control Components:

1. The following components shall be located in the Station Master Cubicle:
 - 1 - Station automatic load control system to function as described in Section II, paragraph 5 --- energized when tie breaker (52-T) closed and activated to automatically soft load each engine-generator set to a preset KW power rating after the respective engine-generator set breaker closes onto the 4.16 KV bus --- control system shall also automatically soft unload each engine-generator set and

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open the engine-generator set circuit breaker when a engine-generator set is manually removed from service --- load control system shall be field adjustable for power output settings and for elapsed time to load / unload --- control system shall also monitor KW load on the engine-generator sets and provide adjustment signals to the governor modules to hold the load capacity settings --- automatic load control system shall be designed for a five (5) engine-generator set station and shall utilize programmable logic controller (PLC) with a touch screen display module, BEPROM, plus following indicating lamp windows:

- 1 - Low memory battery voltage lamp, alarm
- 1 - Processor failure lamp, alarm

Illumination of the processor failure window shall activate the individual manual load control in each engine-generator set cubicle with load level determined by the last setting of the manual potentiometer.

- 1 - Best battery diode system for common 24 VDC station circuits, with 30 ampere fuse in each engine-generator set cubicle and for 4.16 KV breaker 24 VDC shunt trip coils.
- 1 - Best battery diode system, 10 ampere / 24 VDC, and fused, wired to separate terminal and for customer's use.
- 1 - DC to DC regulated supply to provide 24 VDC power to the PLC should fluctuation of engine battery sources occur.
- 1 - Common auxiliary circuit with output contact to trip the utility tie breaker (52-T), trip the engine-generator set breakers (52-G's) and shutdown the engine-generator sets --- should the following station fault occur which shall be annunciated by an assigned fault window:
 - (1) Fire system operation - Control Room.
- 1 - Common auxiliary circuit with output contacts to trip the engine-generator set breakers (52-G's) and shutdown the engine-generator sets --- should any of the following station faults occur which are annunciated by an assigned fault window:
 - (1) High-high methane detection.
 - (2) Fuel Gas Blower failure.
 - (3) High-high oxygen in Landfill Gas.
 - (4) Fire system operation - Engine or Compressor Room.
- 1 - Station annunciation display with thirty (30) alarm points for both warning and shutdown functions --- except as noted, points activated by customer furnished

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normally open, voltage free contacts that close on fault with terminal boards points for field connections --- displays as follows:

1. Generator #1 summary alarm - activated by engine control relay contact.
2. Generator #1 shutdown - activated by engine-generator set cubicle 86 device.
3. Generator #2 summary alarm - activated by engine control relay contact.
4. Generator #2 shutdown - activated by engine-generator set cubicle 86 device.
5. Generator #3 summary alarm - activated by engine control relay contact.
6. Generator #3 shutdown - activated by engine-generator set cubicle 86 device.
7. Generator #4 summary alarm - activated by engine control relay circuits.
8. Generator #4 shutdown - activated by engine-generator set cubicle 86 device.
9. Generator #5 summary alarm - activated by engine control relay circuits.
10. Generator #5 shutdown - activated by engine-generator set cubicle 86 device.
11. Fuel Gas Blower failure - shutdown.
12. Air compressor low air pressure - alarm.
13. Tie breaker (52-T) trip-activated by tie cubicle 86-T device.
14. Main power transformer high oil temperature (26-Q) --- activated by contacts in remote customer's transformer.
15. Main power transformer low oil level (71) --- activated by contacts in remote customer's transformer.
16. Fire detection system operation - shutdown.
17. Fire detection system trouble - alarm.
18. High-high methane detection - shutdown.
19. Landfill fuel gas high-high oxygen - shutdown.
20. High methane detection - alarm.
21. Landfill fuel gas high oxygen - alarm --- plus circuits to disable individual engine-generator set "low KW output shutdown".
22. Methane detector sensor failure - alarm.
23. Oxygen detector sensor failure - alarm.
24. Security system operation - alarm.
25. Low 24 VDC battery source --- activated by control system low battery voltage monitor - alarm.
26. Utility trip --- activated by utility input signal closure contact.
27. Condensate tank high level - alarm.
28. Bus potential ground fault, activated by 59G device - alarm.
29. Spare.
30. Spare.

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Annunciation faults to be provided with one (1) spare normally open contact per point for remote requirements, plus sound the station alarm horn and to include lamp test push button, acknowledge push button to change flashing display to steady and silence horn plus reset push button to reset steady display once the external fault function has been corrected.

1 - Station display with three (3) display points for analog input functions --- activated by customer furnished 4-20mA transducer signals --- displays as follows:

1. Landfill Gas Vacuum.
2. Landfill Gas Flow.
3. Landfill Gas BTU Value.

1 - Station alarm horn, activated by signal contact from window annunciation circuits --- Federal manufacturer or equal.

1 - Control circuit activated by customer's "fire suppression system operation" --- with normal closed contact, 10 ampere rated at 120 VAC, for customer's use.

3 - Lighting arrestors (station class), 4.5 KV with one 3 pole capacitor and cable connected off the 4.16 KV bus.

2 - Bus potential transformer, fused disconnect type, draw-out tray mounted with primary connected off the 4.16kv bus --- for bus metering and synchronizing circuits.

1 - Ground bus bar, bare copper (silver plated).

1 - Mounting of Caterpillar furnished CCM --- customer shall provide data link (shielded) wire interconnects from each engine-generator set "EMCP II Plus" mounted panel.

1 - Utility Source Protection Multi-Function Relay for overcurrent (50/51) and transformer differential (87T) protection --- Schweitzer Model SEL-03875Y2X532X1X1 Current Differential Relay, fixed panel mount design, SEL protocol --- protection as follows (programmed as operational):

- 3 phase instantaneous / time overcurrent (50/51) functions monitored off 4.16 KV current transformers.
- 3 phase instantaneous / time overcurrent (50/51) functions monitored off 12.47 KV current transformers (remote mounted).
- 3 phase transformer current differential protection (87T) with protective zone determined by the 4.16 KV and 12.47KV current transformer locations.

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1 - Utility Relay Communications Module for use with the Schweitzer multi-function relays SEL protocol, a Schweitzer SEL-203033X20XE0M0 communications converter shall be provided with sufficient input ports -- output to be ModBus and DNP protocol.

Breaker position indications to be wired to the Multi-Function relay for data transmittal and for 4.16 KV tie breaker (52-T) plus remote 12.47 KV utility interconnect device (52-U).

Pick-up of any multi-function relay protective function shall activate lock-out relay, 86T, in the tie breaker cubicle, to cause tripping of the 4.16 KV tie breaker (52T) and the 12.47 KV utility interconnect device (52-U).

3 - Test switches, type FT, shall be provided for current and potential transformer secondary connections to the multi-function relays (Schweitzer relays) --- 2 poles for each current circuit, 1 pole for each potential circuit phase and neutral, and 1 pole for each trip circuit --- one (1) common current test plug and one (1) common potential test plug.

1 - Bus Ground Protection Scheme --- the following potential bus ground fault detection components shall be provided (functional when engine-generator sets off line and utility source only feeding the station auxiliary loads):

3 - Potential transformers, draw-out tray mounted, fused primary only and primary connected grounded wye off the 3 phase main bus.

1 - Ground fault potential relay, ABB model 410E1195-HF, as 59G device and for alarm purposes.

1 - Remote Control Switch, with positions indications (open / closed) of the 12.47 KV utility interconnect device (52-U), consisting of two (2) indicating lamps shall be activated by customer's auxiliary switch contacts plus a control switch with position of trip / lockout, close.

1 - Station "Auto-Dialer" function, 8 channel minimum, with battery back-up and local alarm contact. The Auto-Dialer is to be factory mounted in the Station Master Cubicle.

Space to be allocated in the Station Master Cubicle to accommodate a utility company furnished transfer trip device --- utility company to field install and wire the device with rack size approximately 19" W by 10" high by 14.5" deep.

2. The Tie Breaker Cubicle shall contain the following components:

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- 1 - Utility vacuum tie breaker (52-T), draw-out type, 3 pole, electric operated off utility potential with 5 cycle stored energy close mechanism, auxiliary switch contacts, 24 VDC shunt trip coil, breaker rated 1200 ampere continuous, 250 MVA nominal interrupting capacity (237 MVA / 33 KA at 4.16kv) --- rear bus stubs off breaker with 4 hole lug pattern for field cables (lugs, stress cones not included).
 - 1 - Breaker control switch with positions open / close, plus position indicating lamps (24 VDC).
 - 1 - Breaker control circuit, fused, to provide utility potential for breaker AC charging mechanism.
 - 2 - Potential transformers, fuse disconnect type, mounted on draw-out tray for metering / relays / power for breaker (52-T) charge mechanism and connected off utility side of utility tie breaker (52-T).
 - 3 - Current transformers, fixed mounted for metering relays, ratio 800/5 amperes and located on bus side of 52-T
 - 1 - Lockout relay, hand reset, 86-T device activated by protective relays or by input contact or contacts that close on fault --- output contacts off 86-T device trips 4.16 KV tie breaker (52-T), the 12.47 KV utility interconnect device, and spare output contact for customer's use plus contact to signal station annunciation.
- Note: 86T device to accept input contact signal from customer's remote device for tripping 4.16 KV tie (52-T) and 12.47 KV (52-U) utility interconnect device.
- 1 - Set of 3 phase, 3 wire main bus plus bus bar risers off the tie breaker to the main bus --- bus bar to be silver plated copper, insulated with insulated boots at joints --- bus rated 1200 amperes.
 - 1 - Ground bus bar, silver-plated copper, non-insulated, 1/4 inch (6.35 mm) by 2 inch (50.8 mm).
 - 1 - Synchronizing relay (Woodward SPM-A with 1/8 second match-up timer) to monitor voltage, frequency, phase angle of utility source compared to the engine-generator set main bus and provides automatic speed and / or phase angle correction signals to the engine-generator set cubicle governor modules --- with close signal provided to the utility breaker when conditions for parallel are correct --- circuit designed for tie breaker closing if utility side of tie breaker live and engine-generator set bus dead or if utility side live and engine-generator set bus live (tie breaker closing to be prevented if utility dead and engine-generator set bus live or if utility dead and engine-generator set bus dead) -- could be located in Master Cubicle.

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1 - Auxiliary circuit, energized when tie breaker open with control system to disconnect generator load controls, VAR/Power Factor controllers and interconnect the governor modules --- engine-generator sets to operate as "load share" and not "base load" --- located in Master Cubicle.

1 - Set of metering as follows:

1 - Digital Instrumentation Package, microprocessor based, Power Measurement #P7330-A6B0-B0A0-K0A, to continuously display voltage and amperes with phase selector to read voltage of each phase to phase and amperes in each of the three phases plus power function display with function selector to show 3 phase KW, 3 phase KVARs, KW demand, power factor, frequency and accumulative 3 phase kilowatt hours "export" to the utility grid and accumulative 3 phase kilowatt-hours "imported from the utility grid.

3. Each Engine-generator set Control/Breaker Cubicle shall contain the following components:

1 - Set of metering functions as follows:

1 - Metering display of generator voltage and amperes with phase selector to read voltage of each phase to phase and amperes in each of the three phases plus, power function display with function selector to show 3 phase KW, 3 phase KVARs, KW demand, power factor, frequency and accumulative 3 phase kilowatt-hours.

1 - Watt transducer signal, 3 phase, 3 wire for use in the load control system.

1 - Elapsed time meter, to indicate operating time in hours / minutes.

1 - Watt-transducer signal, 4 to 20 ma output, to be field wired, by others, for future engine air / fuel ratio controller.

2 - Alarm points for "low load" KW (to cause engine-generator set shutdown except if system "high oxygen" window activated then alarm only), and "high load" KW output (alarm only).

1 - VAR / Power Factor controller, Basler SCP-250 or equal, to function in conjunction with the generator auto voltage regulator when paralleled with the utility source.

1 - Mounting of automatic voltage regulator, (Caterpillar model DVR), furnished by generator manufacturer --- sensing for 120 volt input to regulator from metering potential transformers.

1 - Current transformer for use with the auto voltage regulator.

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- 1 - Mounting of Woodward electronic load share parallel governor module furnished by engine manufacturer, (Woodward 2301D).
- 1 - Manual speed adjust device for use with the electronic governor module (raise / lower switch).
- 1 - Manual voltage adjust device for use with the voltage regulator (raise / lower switch).
- 3 - Current transformers for use with generator differential protection --- shipped loose for mounting in generator neutrals (requires 6 lead generator with all 3 neutral cables brought out) --- current transformers ratio 200/5 amperes.
- 1 - Current transformer for use with the ground overcurrent relay --- ratio 100/5 amperes --- shipped loose for mounting in generator neutral ground cable.
- 1 - Lockout relay, hand reset, 86G device --- activated by programmed outputs of the Multi-Function Relay, and shall cause tripping of generator main circuit breaker plus engine-generator set shutdown --- spare contact of 86 device to signal annunciation.
- 3 - Auxiliary relay circuits, energized when engine runs, with contacts to signal the radiator fan motor starter, to disconnect the generator space heater and to signal crank case vent fan motor --- contacts 10 ampere rated at 120 VAC or 24 VDC --- contacts to signal radiator fan motor be be off generator available circuit.
- 1 - Generator vacuum circuit breaker, draw-out, 3 pole, electric operated off the engine-generator set potential with 5 cycle stored energy close mechanism, auxiliary switch contacts, 24 VDC shunt trip coil, breaker rated 1200 ampere continuous, 250 MVA nominal interrupting capacity (237 MVA/33 KA at 4.16 KV) rear stabs on breaker with 4 hole lug pattern for generator field cables (lugs, stress cones not included).
- 1 - Breaker control circuit, fused, to provide generator potential to breaker AC charging mechanism.
- 1 - Breaker control switch with position indicating lamps, open / close.
- 1 - Generator available circuit, to determine when engine-generator set up to 90 percent of nominal voltage before synchronizing circuits energized.

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- 1 - Set of 3 phase, 3 wire main bus plus bus bar risers off generator breaker to the main bus --- bus bar, silver plated copper and insulated --- main bus rated 1200 amperes.
- 1 - Ground bus bar --- minimum 1/4 inch by 2 inch bare copper.
- 3 - Current transformers, fixed mounted, ratio 200/5 amperes for metering, relays and governor system and located on bus side of generator circuit breaker.
- 2 - Potential transformers, fuse protected, draw-out tray mounted for metering, relays, governor system, sensing to generator automatic voltage regulator and power to breaker (52G) charge mechanism.
- 1 - Set of spare, normally open, voltage free contacts, 10 ampere rated at 120 VAC for following remote signals:
 - (1) Engine shutdown, breaker tripped --- contacts off device 86 --- for annunciation and remote signal purposes.
 - (2) Engine alarm only faults --- common signal contact for annunciation and customer's use.
- 1 - Emergency stop push button, twist-to-rest --- causes engine-generator set shutdown and tripping of generator breaker with lamp illumination --- lamp illumination window to also be activated should plant personnel engage the emergency stop switch on the local engine-generator set "EMCP-II Plus" panel.

Engine will be provided with a pre-lube pump, activated when plant personnel initiate starting with actual cranking signal off "EMCP-II-Plus" logic when oil pressure established. Pre-lube pump circuit to be Caterpillar standard 24 VDC ordered with engine-generator set, and all control logic (initiating / disconnect) integral to the "EMCP-II Plus" panel.

- 1 - Generator multi-function relay --- Beckwith model M3425 generator relay, fixed panel mount, ModBus protocol (interconnected to 2030 communication converter in Master Cubicle) ---to include the following programmed functions:
 - (a) Protective Relay Functions:
 - Three (3) phase voltage restraint time overcurrent (51V function) plus instantaneous overcurrent (50 function).
 - Three (3) phase negative phase sequence overcurrent (46 function).
 - Three (3) phase generator differential protection (87G function)
 - Ground overcurrent (50N/51N) functions --- off separate current transformer in generator neutral ground cable

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- Reverse power (32 function)
- Loss of excitation (40 function)

Activation of any programmed protective relay function to trip the generator current breaker and shutdown the engine-generator set.

(b) Control Functions:

- Synchronizing check feature --- to permit closing of the generator breaker when conditions for paralleling are within pre-set tolerance and if not within tolerance, plant personnel to manually adjust speed and/or voltage --- circuits shall permit a generator breaker to close to a "dead bus".

(c) 2 - Test switches, type FT, shall be provided for current and potential transformer secondary connections to the Beckwith multi-function relay --- 2 poles for each current circuit, 1 pole for each potential circuit phase and neutral, and 1 pole for trip circuit.

(d) Generator breaker position indications to be wired to the multi-function relay for data transmittal.

1 - Engine Control Interface for use with Caterpillar engine utilizing a Caterpillar furnished "Local Engine Mounted Panel" microprocessor based design EMCP-II Plus, the following components shall also be provided in each Engine-generator set Control/Breaker Cubicle:

- 1 - Engine control switch circuits to interface with the "Engine Local Panel" devices and to permit starting/stopping of the engine from the "Engine-generator set Control/Breaker Cubicle" or from the "Engine Local Panel".

Engine control switch shall have positions of manual-run/stop-cooldown/off-reset and requires that the "Local Engine Panel" engine selector switch be in its "auto-remote" position.

In "manual-run" position, engine shall start when a separate pushbutton activated (after pre-lube pump pressure build up) and attain operating speed/voltage --- to place the engine-generator set on the bus, plant personnel shall turn the synchronizing switch to its "on" position and use the breaker control switch to close the generator breaker with the permissive synchronizing circuits operative. In "stop-cooldown" position, engine-generator set auto-load control circuit shall soft upload the unit and the generator breaker shall be signaled to trip open plus the engine shall shutdown after the cooldown run period has timed out. In "off-reset" position, Engine-generator set Control/Breaker Cubicle fault shutdown circuits shall reset or a running engine shall shutdown (after cooldown period) with its generator breaker signaled to

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trip open. Should a running engine shutdown due to a monitored fault detected by the "Engine Local Panel" EMCP-II Plus, a common engine fault shutdown lamp shall illuminate and the circuit shall seal-in with seal-in circuit reset when engine controls switch is placed in "off-reset" position provided plant personnel first resets the "Local Engine Panel" fault shutdown circuit.

- 1 - Engine cooldown timer circuit, requires generator breaker to be closed and operative when cubicle engine control switch placed in "stop/cooldown" --- circuit external to EMCP-II Plus module & requires EMCP11 Plus internal cooldown timer to be set at its zero point.
- 1 - Fuse, 10 ampere, from battery positive and for use with 24 VDC control power circuit.
- 1 - Mounting of an interface module (designated C.I.M.), provided by the engine supplier, for interconnection with the "Local Engine Panel" --- to provide output contact signals for use in the control system logic circuit and to activate following fault lamp displays:
 - (a) "Local Engine Panel" selector switch not in its remote "auto" position --- circuit shall activate control system logic to trip the generator main circuit breaker, if closed, or to block open generator main circuit breaker from being closed.
 - (b) Individual fault displays --- when illuminated, shall cause engine shutdown via the EMCP-II Plus devices and control system shall cause tripping of a closed generator main breaker:
 - 1 - Low engine oil pressure shutdown.
 - 1 - Overcrank (fail to start) shutdown.
 - 1 - Overspeed shutdown.
 - 1 - Diagnostic shutdown.
 - 1 - High lube oil temperature.
 - (c) Individual warning fault lamps --- when illuminated, via EMCP-II Plus devices, shall be for alarm only purposes:
 - 1 - Low lube oil pressure, alarm.
 - 1 - Low lube oil temperature, alarm.
- 1 - Set of additional engine fault circuits, which when activated, shall seal-in and external to the EMCP-II Plus devices:
 - (d) To cause engine-generator set shutdown and reset when the cubicle engine control switch turned to "off/reset" position:

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- 1 - Low lube oil level --- activated by single wire, grounding type engine switch contact.
 - 1 - Low water pressure --- activated by pressure switch in water flow line with adjustable time delay, 0 to 45 seconds.
 - 1 - Radiator fan, high vibration with adjustable time delay --- activated by switch contact in radiator.
 - 1 - High engine coolant (water) temperature shutdown --- contact signal from engine switch contact.
 - 1 - Air/Fuel ratio shutdown --- contact signal from engine device.
- (e) As warning faults, for alarm only purposes, with separate reset pushbutton:
- (1) High inlet air temperature, between aftercooler and engine --- contact signal from engine switch contact.
 - (2) Low water level, after cooler surge tank --- contact signal from radiator device.
 - (3) Low water level in main radiator surge tank --- contact signal from radiator device.
 - (4) Low battery voltage with 24 VDC monitor wired off individual generator battery.
 - (5) Low coolant temperature --- contact signal from engine switch contact.
 - (6) Battery charger malfunction, alarm --- activated by contact in battery charger.
- 1 - Lamp test push-button for all 24 VDC indicating lamps and breaker position lamps.
 - 1 - Engine fault shutdown relay (ENFR) with 2 spare contacts plus interconnection of ENFR contacts to terminal points in the Station Master Cubicle.
4. One (1) Station Load Break Switch Cubicle --- to provide 4.16 KV, 3 phase bus power to a remote station services 3 phase transformer to step-down the bus voltage to 277/480 volts --- cubicle to contain the following:
- 1 - Manually operated, 3 pole, fixed stationary mounted, load break switch, and shall include 3 current limiting fuses with blown fuse pop-up indicators --- switch shall be rated 600 amperes, 4.16 KV and fuses shall be 100E rated.
 - 1 - Interlock arrangement so that load break switch must be in off position before cubicle front access door can be opened.

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- 1 - Set of 3 phase, 3 wire interconnects off load break switch to the switch board main bus bars.
- 1 - Set of bus stabs on load break switch, fused side for the field cables to the customer's remote 3 phase auxiliary step-down phase transformer (lugs, stress cones not included).
- 1 - Viewing window in cubicle door.
- 1 - Set of clips, on outside of door, for storage of switch operating handle.

The load break switch shall be Westinghouse Type WFS, with spring operated, over-toggle mechanism, or equal.

V. Loose Shipped Equipment:

1. Generator Capacitors --- for field installation, a 3 pole capacitor shall be provided in a NEMA 1 enclosed cabinet for each engine-generator set, to be field cable interconnected to the respective generator phase leads. Each 3 pole capacitor RMS line to line 4.16 KV, maximum line to line of 5.47 KV. Each cabinet will be installed on the associated generator --- customer to provide his own cut-outs for his field cable connection to the generator phase leads. Each cabinet to be approximately 30 inches high by 24 inches wide by 13 inches deep.
2. Generator Neutral Grounding Resistors --- 200 amperes 10 second rating at 760 degree C rise, 2400 volts line to neutral --- in separate screened safety enclosure, approximately 32 inches high by 36 inches by 32 inches --- to be field located at the generator and generator neutral cable to be brought to grounding resistor --- grounding resistor can be located outside of building --- and shall be provided with internal supports for the resistor. One (1) grounding resistor shall be provided for each engine-generator set.
3. Instruction Manuals -- four (4) manuals to be provided in soft covered binders. Each manual to include a general description of operation (not contact to contact), standard manufacturer's catalogs of all major components plus a set of B-size drawings --- outlines, AC/DC schematics, bill of material listing all components by quantity, legend, manufacturer, with part numbers plus AC/DC wiring diagrams and interconnect drawings.
4. 5 KV Vacuum Circuit Breaker Accessories shall be provided as follows:
 - 1 - Portable lifter.
 - 1 - Maintenance tool.
 - 1 - Levering-in crank.
 - 1 - Test jumper.

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5. Spare Parts --- spare parts shall be provided, consisting of:

- 3 - Boxes of low voltage fuses, (10 per box).
- 1 - Box of breaker position, alarm, and/or annunciator bulbs (min. 10 per box).
- 3 - 5 KV, 100E, fuses for Load Break Switch.
- 6 - 5 KV fuses for potential transformers.

VI. Miscellaneous Items:

1. Submittal drawings --- four (4) sets of submittal drawings shall be provided for customer's review and approval. Drawings shall consist of a one-line diagram, outlines showing switchboard layout with door components plus views showing cable entrance/exit area, AC/DC schematics, and a bill of material listing all components by manufacturer.
2. Switchgear factory testing --- the switchboard lineup and control system shall be factory tested prior to shipping to be sure all systems and components are operationally correct per the engineering designs.
3. Field Commissioning Services --- a switchgear/control system service technician shall be on site to assist during commissioning of the engine-generator sets and to provide basic operation instructions to the station personnel. An engine technician shall also be on site with the switchgear technician. Prior to arrival of the switchgear technician, the engine technician shall have started and run each engine-generator set individually and verified operation of the engine-generator set alarm/safety circuits. The cost for one (1) service technician with one (1) site visit and up to 4 weekdays on site to be included as part of the Engine-generator set Switchgear/Control System.
4. Warranty --- Equipment manufactured by the seller is warranted to be free from defects in material or workmanship under normal use, service, and indoor storage, for eighteen (18) months after date of shipment from seller's plant or twelve (12) months from date of customer's installation --- which ever occurs first --- subject to the following provisions. This warranty is limited to repair, replacement or issuing of credit, as seller may elect, and at seller's manufacturing plant, of such parts as shall appear to seller, upon inspection, to have been defective in material or workmanship, but does not include any installation, labor or transportation costs. This warranty does not apply to normal maintenance or normal replacement of serviceable items.

Replacement parts shall be warranted for six (6) months from date of shipment, subject to the terms and conditions as stated above for manufacture equipment.

The seller shall in no event be liable for any special or consequential charges for replacing or installation of warranty parts.

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**EQUIPMENT BID SHEET
4160V GENERATOR SWITCHGEAR**

PHYSICAL DATA:

Dimensions: _____ L X _____ W X _____ H

Weight: _____ Lbs

Number of Shipping Splits: _____

ELECTRICAL DATA:

Main Bus Rating: Material = _____, _____ A Continuous, _____ A Withstand

Section Bus Rating: Material = _____, _____ A Continuous, _____ A Withstand

Breakers: Type = _____, _____ A Continuous, _____ A Interrupting

Feeder Switch: Type = _____, _____ A Continuous, _____ A Interrupting

PRICING QUOTATION:

Price for Switchgear: \$ _____

Shipping to Pearl Hollow Landfill site (Elizabethtown, KY): \$ _____

Total Price = Switchgear plus Shipping: \$ _____

MISCELLANEOUS INFORMATION:

Anticipated shop drawing date: _____ Days A.R.O.

Anticipated ship date: _____ Days A.R.O.

Standard Warranty Period: _____ after _____

Pricing for Extended Warranty (18 months after delivery): \$ _____

Pricing for additional Start-up and/or Troubleshooting Services: \$ _____ / Day
(Includes Labor, Equipment, Travel, Tools, and Vehicle Expenses)

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Jan 26 2006

East Kentucky Power Cooperative
4775 East Lexington Road
Winchester, Kentucky 40391

Enercon Quotation number 06DPD0170

Attention: Mr. Ralph Tyree

Subject: East Kentucky Power Cooperative
Gas Energy Project
Switchgear Equipment Bid Solicitation

Dear Mr. Tyree:

We are enclosing a *duplicate of the original* completed "Equipment Bid Sheet" along with our Specification Conformance and Clarification document. This is to be considered our offer to supply an *exact duplicate* of the Hardin County switch gear Enercon built for you in 2005 just like the last order, no exceptions taken to the specification requirements and our clarifications (PLC/Touch screens, etc.) have been technically discussed with Mr. Charles Anderson to avoid any possible conflict.

The switchgear logic will interface with the Caterpillar G-3516 EMCP II Plus controls, per the specifications.

This identical offer includes the same Square D 5kV equipment used the last time

The price has been reduced The current total including freight is \$312,781.00.

Thank you for the opportunity to offer our products for this project. We look forward to being of service to your group.

Sincerely,



Dan Davis

Cc: Mr. Charles E. Anderson
Meade Electric Company Inc.
9550 W. 55th Street, Suite A
McCook, Illinois 60525

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**LANDFILL GAS-TO-ELECTRIC PROJECT
ENGINE-GENERATOR SWITCHGEAR & CONTROLS
4.16KV-3PHASE- 60 HERTZ SERVICE**

I. System Introduction:

1. The project involves the installation of five (5) Caterpillar 3516 landfill gas engines driving Caterpillar 4.16kv permanent magnet excited, 6 lead, wye connected generators--each engine-generator set prime rated 800kw, 0.80 power factor, 3-phase, 60 hertz, 4160 volts with output of 139 amperes. The engine-generator sets shall be paralleled with the local utility source and provided power as "sell-back" to the utility grid.
2. The station generator sets shall be connected to the 4.16 KV metal-clad switchgear providing power to station auxiliary loads via a 4.16 KV-4480V step-down transformer, with the balance of power exported to the utility grid via a 3phase main power transformer which steps up the generated voltage to the utility high line voltage of 12.47 KV. The 4.16 KV switchgear shall include a utility tie breaker (52-T), which shall be closed by initiation of a station operator.
3. Before any of the station engine-generator sets can be started, the station fuel gas compressor system must be operative to provide the fuel supply to the engines. With the high voltage line interconnect device closed, closing of the utility tie breaker (52-T) provides 4.16 KV to the station bus, which then provides the required power for operation of the station gas compressor system via a fusible load-break switch and the now energized station auxiliary step-down transformer. The station engine-generator sets shall then be started by the station operator and paralleled to the live station 4.16 KV bus under control of synchronizing relay circuits. To provide power to the utility grid system, the station operator shall use the load control circuits to load each engine-generator set up to its KW rating. The station power from the engine-generator sets shall be "exported" to the utility grid via the closed utility tie breaker (52-T) and the closed 12.47 KV utility line interconnect device (52-U).

II. Line-up Construction:

1. The 4.16 KV station switchboard lineup shall be NEMA 1 metal enclosed for indoor service with internal steel barriers forming high / low voltage compartments, steel barriers between adjacent cubicles, steel barriers separating the main 3 phase bus bars from field cable connections to the breaker stabs, open bottom rear areas for field cable entrance with approximately 26 inches (660.4 mm) of clear vertical space available to the breaker stabs, screw secured and split rear sheets with lift off handles, hinged front doors with handles, removable top lifting facilities and comprised of the following

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cubicles, factory bolted together to form the switchboard lineup (facing front of lineup and left to right):

- 1- Station Master Cubicle.
 - 1- Utility Tie breaker Cubicle (52-T)
 - 5- Engine-generator set Control / Breaker Cubicles (52-G) ---- designated Gen #1, Gen #2, Gen #3, Gen #4, and Gen #5.
 - 1- Fusible Load Break Switch Cubicle.
2. The 4.16 KV switchgear lineup approximate overall dimensions and equipment location to be as follows:
- 1- Station master Cubicle --- with one (1) front accessible draw-out potential transformer tray (2X PT off the bus) plus space in rear of cubicle for three (3) draw-out ground detection PT's and for 3X station class arrestors with 3 pole capacitor
 - 1- Utility Tie Breaker Cubicle --- with one (1) front accessible draw-out potential transformer tray (2X PT's off utility incoming line bus bars).
 - 5- Engine-generator set Control / Breaker Cubicles --- each with draw-out PT's (2) in rear of cubicle tapped off of breaker bus bars).
 - 1- Fusible load Break Switch Cubicle.
- Overall dimensions, approximately 95 inches high by 86.25 inches deep by 288 inches (24 feet wide)
3. The lineup shall be shipped in a minimum of (2) sections with bus splice plates, wire harness inter-ties and hardware for installation contractor to field re-assemble plus removable top lifting facilities for ease of handling.

III. Protection & Control Systems:

- 1. A multi- function utility source protective relay shall be provided relay shall be provided by others as part of the 12.47 KV utility line interconnect device (52-U). Three potential transformers (7200-120V) shall be provided by others, on the high side of the step-up transformer for relaying and be connected wye/wye grounded. When power fails or voltage function or frequency disturbance occurs on the utility line, the event shall be detected by relay functions 27/59 for under / over- voltage plus device 81-O/U for over / under – frequency. The multi- function relay protection shall also provide, 3 phase overcurrent (50/51 functions), directional overcurrent (67 function), and 3 phase transformer differential protection (87T function). A current transformer (ratio 100/5A), as part of the step-up transformer and installed in the transformer primary wye ground bushing, shall provide secondary current for use with transformer ground fault overcurrent (50N/51N functions) as part of the multi-function relay. Activating of any of the relay functions shall energize the lockout relay, 86-T device, located in the 4.16kV switchgear, to cause tripping of the 4016 KV utility tie breaker (52-T) and trip signal to remote 12.47 KV utility interconnect device (52-U).

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utility tie breaker closed and should an individual engine-generator set breaker be opened, the load control for that engine-generator set shall reset to it's minimum setting so that the breaker is reclosed, "soft loading" shall occur.

The auto load control circuits shall be accessible via a touch screen for a station operator to field change the percent of load on each engine-generator set to adjust the ramp time of all engine-generator sets to assign on-line engine-generator sets should 52-T trip open.

The control system shall include circuits to monitor the KW load on each engine-generator set and to provide adjustment signals to the individual Woodward governor modules to hold the load capacity setting of the load control circuits.

6. Each 4.16 KV engine-generator set control cubicle shall be furnished with a generator automatic voltage regulator (furnished by engine manufacturer), a load share governor module (furnished by engine manufacturer) and an automatic power factor controller and a multi-function protective relay. The relay functions shall protect the generator against unbalanced current (46 function), instantaneous and time delay overcurrent (50/51 function), reverse power (32 function), reverse reactive current for leading VARs (32 RV) or loss of excitation (40 function), and faults that cause a flow of differential currents through the generator windings (87 function). (Neutral grounding of each generator shall be achieved through a grounding resistor plus an overcurrent ground fault relay (51G) function. The protective relay functions shall activate the engine-generator set cubicle lock-out relay, 86-G device, to cause tripping of the engine-generator set 4.16KV circuit breaker 52-G and engine-generator set shutdown).

IV. Cubicles, Power & Control Components:

1. The following components shall be located in the Station master Cubicle:
 - 1- Station automatic load control system to function as described in Section II, paragraph % --- energized when tie breaker (52-T) closed and activated to automatically soft load each engine-generator set to a preset KW power rating after the respective engine-generator set breaker closes onto the 4.16 KV bus --- control system shall also automatically soft unload each engine-generator set and open the engine-generator set is manually removed from service --- load control system shall be field adjustable for power output settings and for elapsed time to load /unload --- control system shall also monitor KW load on the engine-generator sets and provide adjustment signals to the governor modules to hold the load capacity settings --- automatic load control system shall be designed for a five (5) engine-generator set station and shall utilize programmable logic controller (PLC) with a touch screen display module, EEPROM, plus following indicating lamp windows:
 - 1- Low memory battery voltage lamp alarm.
 - 1- Processor failure lamp, alarm.

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Illumination of the processor failure window shall activate the individual manual load control in each engine-generator set cubicle with load level determined by the last setting of the manual potentiometer.

- 1- Best battery diode system for common 24 VDC station circuits, with 30 ampere fuse in each engine-generator set cubicle and for 4.16 KV breaker 24 VDC s hunt trip coils.
- 1- Best battery diode system, 10ampere/24VDC, and fused, wired to separate terminal and for customer's use.
- 1- DC to Dc regulated supply to provide 24 VDC power to the PLC should fluctuation of engine battery sources occur.
- 1- Common auxiliary circuit with output contact to trip the utility tie breaker (52-T), trip the engine-generator set breakers (52-G's) and shutdown the engine-generator sets --- should the following station fault occur which shall be annunciated by an assigned fault window:
 - (1) Fire system operation- Control Room.
- 1- Common auxiliary circuit with output contacts to trip the engine-generator set breakers (52-G's) and shutdown the engine-generator sets --- should any of the following station faults occur which are annunciated by an assigned fault window.
 - (1) High – high methane detection.
 - (2) Fuel Gas Blower failure.
 - (3) High-high oxygen in Landfill Gas.
 - (4) Fire system operation- Engine or Compressor Room.
- 1- Station annunciation display with thirty (30) alarm points for both warning and shutdown functions --- except as noted, points activated by customer furnished normally open, voltage free contacts that close on fault with terminal points for field connections --- displays as follows:
 - 1. Generator #1 summary alarm- activated by engine control relay contact.
 - 2. Generator #1 shutdown- activated by engine-generator set cubicle 86 device.
 - 3. Generator #2 summary alarm – activated by engine control relay contact.
 - 4. Generator #2 shutdown- activated by engine-generator set cubicle 86 device.
 - 5. Generator #3 summary alarm – activated by engine control relay contact.
 - 6. Generator #3 shutdown – activated by engine-generator set cubicle 86 device.

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7. Generator #4 summary alarm -- activated by engine control relay circuits.
8. Generator #4 shutdown- activated by engine- generator set cubicle 86 device.
9. Generator #5 summary alarm- activate by engine control relay circuits.
10. Generator #5 shutdown- activated by engine-generator set cubicle 86 device.
11. Fuel Gas Blower failure- shutdown.
12. Air compressor low air pressure- alarm.
13. Tie breaker (52-T) trip-activated by tie cubicle 86-T device.
14. Main power transformer high oil temperature (26-Q) --- activated by contacts in remote customer's transformer.
15. Main power transformer low oil level (71) --- activated by contacts in remote customer's transformer.
16. Fire detection system operation-shutdown.
17. Fire detection system trouble- alarm.
18. High-high methane detection -- shutdown.
19. Landfill fuel gas high-high oxygen -- shutdown.
20. High methane detection -- alarm.
21. Landfill fuel gas high oxygen- alarm --- plus circuits to disable individual engine-generator set "low KW output shutdown".
22. Methane detector sensor failure-alarm.
23. Oxygen detector sensor failure-alarm.
24. Security system operation-alarm.
25. Low 24 VDC battery source --- activated by control system low battery voltage monitor -- alarm.
26. Utility trip--- activated by utility input signal closure contact.
27. Condensate tank level- alarm.
28. Bus potential ground fault, activated by 59G device- alarm.
29. Spare
30. Spare

Annunciation faults to be provided with one (1) spare normally open contact per point for remote requirements, plus sound the station alarm horn and to include lamp test push button, acknowledge push button to change flashing display to steady and silence horn plus reset push button to reset steady display once the external fault function has been corrected.

- 1- Station display with three (3) display points for analog input functions --- activated by customer furnished 4-20mA transducer signals --- displays as follows:
 1. Landfill Gas Vacuum.
 2. Landfill Gas Flow
 3. Landfill Gas BTU Value.

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- 1- Station alarm horn, activated by signal contact from window annunciation circuits --- Federal manufacturer or equal.

- 1- Control circuit activated by customer's "fire suppression system operation" --- with normal closed contact, 10 ampere rated at 120 VAC, for customer's use.

- 3- Lighting arrestors (station class), 4.5 KV with one pole capacitor and cable connected off the 4.16 KV bus.

- 2- Bus potential transformer, fused disconnect type, draw-out tray mounted with primary connected off the 4.16 KV bus --- for metering and synchronizing circuits.

- 1- Ground bus bar, bare copper (silver plated).

- 1- Mounting of Caterpillar furnished CCM ---customer shall provide data link (shielded) wire interconnects from each engine-generator set "EMCP II Plus" mounted panel.

- 1- Utility Source Protection Multi-Function Relay for overcurrent (50/51) and transformer differential (87T) protection --- Schweitzer Model SEL-03875Y2X532X1X1Current Differential Relay, fixed mount design, SEL protocol --- protection as follows (programmed as operational).
 - 3 Phase instantaneous/time overcurrent (50/51) functions monitored off 4.16 KV current transformers.
 - 3 phase instantaneous/time overcurrent (50/51) functions monitored off 12.47 KV current transformers (remote mounted).
 - 3 phase transformer current differential protection (87T) with protective zone determined by the 4.16 KV and 12.47 KV current transformer locations.

- 1- Utility Relay Communications Module for use with the Schweitzer multi-function relays SEL protocol, a Schweitzer SEL-20033X20XE0M0 communications converter shall be provided with sufficient input ports --- output to be ModBus and DNP protocol.

Breaker position indications to be wired to the Multi-Function relay for data transmittal and for 416 KV tie breaker (52-T) plus remote 12.47 KV utility interconnect device (52-U).

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Pick-up of any multi-function shall activate lock-out relay, 86T, in the tie breaker cubicle, to cause tripping of the 4.16 KV tie breaker (52-T) and the 1.47 KV utility interconnect device (52-U).

- 3- Test Switches, type FT, shall be provided for current and potential transformer secondary connections to the multi-function relays (Schweitzer relays) ---2 poles for each current circuit, 1 pole for each potential circuit phase and neutral, and 1 pole for each trip circuit --- one (1) common current test plug and one (1) common potential test plug.
- 1- Bus Ground protection Scheme --- the following potential bus ground fault detection components shall be provided (functional when engine-generator sets off line and utility source only feeding the station auxiliary loads):
 - 3- Potential transformers, drawout tray mounted, fused primary only and primary connected grounded wye off the 3 phase main bus
 - 1- Ground fault potential relay, ABB model 410E1195-HF as 59G device and for alarm purposes.
- 1- Remote Control Switch, with positions indications (open/closed) of the 12.47 KV utility interconnect device (52-U), consisting of two (2) indicating lamps shall activate by customer's auxiliary switch contacts plus a control switch with position of trip/lockout, close.
- 1- Station "Auto-Dialer" function, 8 channel minimum, with battery back-up and local alarm contact. The Auto-Dialer is to be factory mounted in the Station Master Cubicle.

Space to be allocated in the Station Master Cubicle to accommodate a utility company furnished transfer trip device --- utility company to field install and wire the device with rack size approximately 19 inches wide by 10 inches high by 14.5 inches deep.

2. The Tie Breaker Cubicle shall contain the following components:

- 1- Utility vacuum tie breaker (52-T), draw-out type, 3 pole, electric operated off utility potential with 5 cycle stored energy close mechanism, auxiliary switch contacts, 24 VDC shunt trip coil, breaker rated 1200 ampere continuous, 250 MVA nominal interrupting capacity (237 MVA/ 33 KA at 4.16 KV) --- rear bus stabs off breaker with 4 hole lug pattern for field cables (lugs, stress cones not included).

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- 1- Breaker control switch with positions open/close, plus position indicating lamps (24 VDC).
- 1- Breaker control circuit, fused, to provide utility potential for breaker AC charging mechanism.
- 2- Potential transformers, fuse disconnect type, mounted on draw-out tray for metering/relays/power for breaker (52-T) charge mechanism and connected off utility side of utility tie breaker (52-T).
- 3- Current transformers, fixed mounted for metering relays, ratio 800/5 amperes and located on bus side of 52-T.
- 1- Lockout relay, hand reset, 86-T device activated by protective relays or by in out contact or contacts that close on fault --- output contacts off 86-T device trips 4.16 KV tie breaker (52-T), the 12.47 KV utility interconnect device, and spare output contact for customer's use plus contact to signal annunciation.

NOTE: 86T device to accept input contact signal from customer's remote device for tripping 4.16 KV tie (52-T) and 12.47 KV (52-U) utility interconnect device.

- 1- Set of 3 phase, 3 wire main bus plus bus bar risers off the tie breaker to the main bus --- bus bar to be silver plated copper, insulated with insulated boots at joints --- bus rated 1200 amperes.
- 1- Ground bus bar, silver plated copper, non-insulated, ¼ inch (6.35mm) by 2 inch (50.8mm).
- 1- Synchronizing relay (Woodward SPM-A with 1/8 second match-up timer) to monitor voltage, frequency, phase angle of utility source compared to the engine-generator set cubicle governor modules --- with close signal provided to the utility breaker when conditions for parallel are correct--- circuit designed for the tie breaker closing if utility side of tie breaker live and engine-generator set bus dead or if utility side live and engine-generator set bus live (tie breaker closing to be prevented if utility dead and engine-generator set bus live or if utility dead and engine-generator set bus dead) --- could be located in Master Cubicle.
- 1- Auxiliary circuit, energized when tie breaker open with control system to disconnect generator load controls, VAR/Power Factor controllers and interconnect the governor modules --- engine-generator sets to operate as "load share" and not "base load" --- located in Master Cubicle.
- 1- Set of metering as follows:

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- 1- Digital Instrumentation Package, microprocessor based, Power Measurement #P7330- A6B0-B0A0-K0A, to continuously display voltage and amperes with phase selector to read voltage of each phase and amperes in each of the three phases plus power function display with function selector to show 3 phase KW 3 phase KVARs, KW demand, power factor, frequency and accumulative 3 phase kilowatt

hours "export" to the utility grid and accumulative 3 phase kilowatt-hours "imported" from the utility grid.

3. Each Engine-generator set Control/Breaker Cubicle shall contain the following components:

- 1- Set of metering functions as follows.
 - 1- Metering display of generator voltage and amperes with phase selector to read voltage of each phase to phase and amperes in each of the three Phases plus, power function display with function selector to show 3 phase KW, 3 phase KVARs, KW demand, power factor, frequency and accumulative 3 phase kilowatt-hours.
 - 1- Watt transducer signal, 4 to 20 ma output, to be field wired, by others, for future engine air/fuel ratio controller.
 - 1- Elapsed time meter, to indicate operating time in hours/minutes.
 - 1- Watt-transducer signal, 4 to 20 ma output, to be field wired, by others, for future engine air/fuel ratio controller.
- 2- Alarm points for "low load" KW (to cause engine-generator set shutdown except if system "high oxygen" window activated then alarm only), and "high load" KW output (alarm only).
- 1- VAR/Power Factor controller, Basler SCP-250 or equal, to function in conjunction with the generator auto voltage regulator when paralleled with the utility source.
- 1- Mounting of automatic voltage regulator, (Caterpillar model DVR), furnished by generator manufacturer--- sensing for 120 volt input to regulator from metering potential transformers.
- 1- Current transformer for use with the auto voltage regulator.
- 1- Mounting Woodward electronic load share parallel governor module furnished by engine manufacturer, (Woodward 2301D).
- 1- Manual speed adjust device for use with the electronic governor module (raise/lower switch).

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- 1- Manual voltage adjust device for use with the voltage regulator (raise/lower switch).
- 3- Current transformers for use with generator differential protection --- shipped loose for mounting in generator neutrals (requires 6 lead generator with all 3 cables brought out) --- current transformers ratio 200/5 amperes.
- 1- Current transformer for use with the ground overcurrent relay ---ratio 100/5 amperes --- shipped loose for mounting in generator neutral ground cable.
- 1- Lock-out relay, hand reset, 86G device --- activated by programmed outputs of the Multi-Function Relay, and shall cause tripping of generator main circuit breaker plus engine-generator set shutdown --- spare contact of 86 device to signal annunciation.
- 1- Auxiliary relay circuits, energized when engine runs, with contacts to signal the radiator fan motor starter, to disconnect the generator pace heater and to signal crank case vent fan motor --- contacts 10 ampere rated at 120 VAC or 24 VDC -- contacts to signal radiator fan motor be off generator available circuit.
- 1- Generator vacuum circuit breaker, draw-out, 3 pole, electric operated off the engine-generator set potential with 5 cycle stored energy close mechanism, auxiliary switch contacts, 24 VDC shunt trip coil, breaker rated 1200 ampere continuous, 250 MVA nominal interrupting capacity (237MVA/33KA at 4.16KV) rear stabs on breaker with 4 hole lug pattern for generator field cables (lugs, stress cones not included).
- 1- Breaker control circuit, fused, to provide generator potential to breaker AC charging mechanism.
- 1- Breaker control switch with position indicating lamps, open/close.
- 1- Generator available circuit, to determine when engine-generator set up to 90 percent of nominal voltage before synchronizing circuits energized.
- 1- Set of 3 phase, 3 wire main bus plus bar risers off generator breaker to the main bus --- bus bar, silver plated copper and insulated -- main bus rated 1200 amperes.
- 1- Ground bus bar --- minimum ¼ inch by 2 inch bare copper.
- 3- Current transformers fixed mounted, ratio 200/5 amperes for metering, relays and governor system and located on the bus side of generator circuit breaker.

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- 2- Potential transformers, fuse protected, draw-out tray mounted for metering, relays, governor system, sensing to generator automatic voltage regulator and power to breaker (52G) charge mechanism.
- 1- Set of spare, normally open, voltage free contacts, 10 ampere rated at 120 VAC for following remote signals:
 - (1) Engine shutdown, breaker tripped --- contacts off device 86 --- for annunciation and remote signal purposes.
 - (2) Engine alarm only faults --- common signal contact for annunciation and customer's use.
- 1- Emergency stop button, twist-to-rest --- causes engine-generator set shutdown and tripping of generator breaker with lamp illumination --- lamp illumination window to also be activated should plant personnel engage the emergency stop switch on the local engine-generator set "EMCP-II Plus" panel.

Engine will be provided with a pre-lube pump, activated when plant personnel initiate starting with actual craning signal off "EMCP II-Plus" logic when oil pressure established. Pre-lube pump circuit to be Caterpillar standard 24 VDC ordered with engine-generator set, and all control logic (initiating/disconnect) integral to the "EMCP-II Plus" panel

- 1- Generator multi-function relay --- Beckwith model M3425 generator relay, fixed panel mount, ModBus protocol (interconnected to 2030 communication converter in Master Cubicle) --- to include the following programmed functions:
 - (a) Protective Relay Functions:
 - Three (3) phase voltage restraint time (51V function) plus instantaneous overcurrent (50 function).
 - Three (3) phase negative phase sequence overcurrent (46 function).
 - Three (3) phase generator differential protection (87G function).
 - Ground overcurrent (50N/51N) functions --- off separate current transformer in generator neutral ground cable.
 - Reverse power (32 function).
 - Loss of excitation (40 function).

Activation of any programmed protective relay function to trip the generator current and shutdown the engine-generator set.

- (b) Control Functions:
 - Synchronizing check feature --- to permit closing of the generator breaker when conditions for paralleling are within pre-set tolerance and if not within tolerance, plant personnel to manually adjust speed and/or voltage --- circuits shall permit a generator breaker to close to a "dead bus".

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Hardin County landfill
Gas-to-Electric Plant

- (c) 2-Test switches, type FT shall be provided for current and potential transformer secondary connections to the Beckwith multi-function relay --- 2 poles for each current, 1 pole for each potential circuit phase and neutral, and 1 pole for trip circuit.
- (d) Generator breaker position indications to be wired to the multi-function relay for data transmittal.

- 1- Engine Control Interface for use with Caterpillar engine utilizing a Caterpillar furnished "Local Engine Mounted Panel" microprocessor based design EMCP- II Plus, the following components shall also be provided in each engine-generator set Control/Breaker Cubicle:
- 1- Engine control switch circuits to interface with the "Engine Local Panel" devices and to permit starting/stopping of the engine from the "Engine-generator set Control/Breaker Cubicle" or from the "Engine Local Panel".

Engine control switch shall have positions of manual-run/stop-cooldown/off-reset and requires that the "Local Engine panel" engine selector switch be in its "auto-remote" position.

In "manual-run" position, engine shall start when a separate pushbutton activated (after pre-lube pump pressure build up) and attain operating speed/voltage --- to place the engine-generator set on the bus, plant personnel shall turn the synchronizing switch to its "on" position and use the breaker control switch to close the generator breaker with the permissive synchronizing circuits operative. In "stop-cooldown" position, engine-generator set auto-load control circuit shall soft upload the unit and the generator breaker shall be signaled to trip open plus the engine shall shutdown after the cooldown run period has timed out. In "off-reset" position, Engine-generator set Control/Breaker Cubicle fault shutdown circuits shall reset or a running engine shall shutdown (after cooldown period) with its generator breaker signaled to trip open. Should a running engine shutdown due to a monitored fault detected by the "Engine Local Panel" EMCP-II Plus, a common engine fault shutdown lamp illuminate and the circuit shall seal-in with seal illuminate and the circuit shall seal-in with seal-in circuit reset when engine control switch is placed in "off-reset" position provided plant personnel first resets the "Local Engine Panel" fault shutdown circuit.

- 1- Engine cooldown timer circuit, requires generator breaker to be closed and operative when cubicle engine control switch placed in "stop/cooldown" --- circuit external to EMCP-II Plus module and requires EMCP II Plus internal cooldown timer to be set at its zero point.

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- 1- Fuse, 10 ampere, from battery positive and for use with 24VDC Control power circuit.

- 1- Mounting of an interface module (designated C.IM), provided by the engine supplier for interconnection with the "local Engine Panel" --- to provide signals for use in the control system logic circuit and to activate following fault lamp displays:
 - (a) "Local Engine panel" selector switch not in its remote "auto" position --- circuit shall activate control system logic to trip the generator main circuit breaker, if closed, or to block open generator main circuit breaker from being closed.
 - (b) Individual fault displays -- when illuminated, shall cause engine shutdown via the EMCP-II Plus devices and control system shall cause tripping of a closed generator main breaker:
 - 1- Low engine oil pressure shutdown.
 - 1- Overcrank (fail to start) shutdown
 - 1- Overspeed shutdown.
 - 1- Diagnostic shutdown
 - 1- High lube oil temperature
 - (c) Individual warning fault lamps--- when illuminated, via EMCP-II Plus devices, shall be for alarm only purposes:
 - 1- Low lube oil pressure, alarm.
 - 1- Low oil temperature, alarm.

- 1- Set of additional engine fault circuits, which when activated, shall seal-in and external to the EMCP-II devices:
 - (d) To cause engine-generator set shutdown and reset when the cubicle engine control switch turned to "off/reset" position:
 - 1- Low lube oil level --- activated by single wire, grounding type engine switch contact.
 - 1- Low water pressure --- activated by pressure switch in water flow line adjustable time delay, 0 to 45 seconds.
 - 1- Radiator fan, high vibration with adjustable time delay --- activated by switch contact in radiator.
 - 1- High engine coolant (water) temperature shutdown--- contact signal from engine switch contact.
 - 1- Air/Fuel ratio shutdown --- contact signal from engine device.
 - (e) As warning faults, for alarm only purposes, with separate reset pushbutton:

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- (1) High inlet air temperature, between aftercooler and engine --- signal from engine switch contact
- (2) Low water level, after cooler surge tank --- contact signal from radiator device
- (3) Low water level in main radiator surge tank --- contact signal from radiator device.

- (4) Low battery voltage with 24 VDC monitor wired off individual generator battery.
- (5) Low coolant temperature --- contact signal from engine switch contact.
- (6) Battery charger malfunction, alarm --- activated by contact in battery charger.

- 1- Lamp test push-button for all 24 VDC indicating lamps and breaker position lamps.

- 1- Engine fault shutdown relay (ENFR) with 2 spare contacts plus interconnection of ENFR contacts to terminal points in the Station Master Cubicle

- 4. One (1) Station Load Break Switch Cubicle --- to provide 4.16 KV, 3 phase bus power to a remote station services 3 phase transformer to step-down the bus voltage to 277/480 volts --- cubicle to contain the following:
 - 1- Manually operated, 3 pole, fixed stationary mounted, load break switch, and shall include 3 current limiting fuses with blown fuse pop-up indicators --- switch shall be rated 600 amperes, 4.16 KV and fuses shall be 100E rated.
 - 1- Interlock arrangement so that load break switch must be in off position before cubicle front access can be opened.
 - 1- Set of 3 phase, 3 wire interconnects off load break switch to the switch board main bus bars.
 - 1- Set of bus stabs on load break switch, fused side for the field cables to the customer's remote 3 phase auxiliary step-down phase transformer (lugs, stress cones not included).
 - 1- Viewing window in cubicle door.
 - 1- Set of clips, on outside of door, for storage of switch operating handle.

The load break switch shall be Westinghouse Type WFS, with spring operated, over-toggle mechanism, or equal.

V. Loose shipped equipment:

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Gas-to-Electric Plant

1. Generator Capacitors --- for field installation, a 3 pole capacitor shall be provided in a NEMA 1 enclosed cabinet for each engine-generator set, to be field cable interconnected to the respective generator phase leads. Each 3 pole capacitor RMS line to line 4.16 KV, maximum line to line of 5.47 KV. Each cabinet will be installed on the associated generator --- customer to provide his own cut-outs for his field cable connection to the generator phase leads. Each cabinet to be approximately 30 inches high by 24 inches wide by 13 deep.

2. Generator Neutral grounding Resistors --- 200 amperes 10 second rating 760 degree C rise, 2400 volts line to neutral --- in separate screened safety enclosure, approximately 32 inches high by 36 inches by 32 inches --- to be field located at the generator and generator neutral cable to be brought to grounding resistor --- grounding resistor can be located outside of building --- and shall be provided with internal supports for the resistor. One (1) grounding resistor shall be provided for each engine-generator set.

3. Instruction manuals- four (4) manuals to be provided in soft covered binders. Each manual to include a general description of operation (not contact to contact), standard manufacturer's catalog of all major components plus a set of B-size drawings --- outlines, AC/DC schematics, bill of material listing all components by quality, legend, manufacturer, with part numbers plus AC/DC wiring diagrams and interconnect drawings.

4. 5 KV Vacuum Circuit breaker Accessories shall be provided as follows:
 - 1- Portable lifter.
 - 1- Maintenance tool.
 - 1- Levering-in crank.
 - 1- Test jumper.

5. Spare parts --- spare parts shall be provided, consisting of the following:
 - 3- Boxes of low voltage fuses, (10 per box).
 - 1- Box of breaker position, alarm, and/or annunciator bulbs (min. 10 per box).
 - 3- 5 KV, 100E, fuses for Load Break Switch.
 - 6- 5 KV fuses for potential transformers.

VI. Miscellaneous Items:

1. Submittal drawings --- four (4) sets of submittal drawings shall be provided for customer's review and approval. Drawings shall consist of a one-line diagram, outlines showing switchboard layout with door components plus views showing cable entrance/exit area, AC/DC schematics, and a bill of material listing all components by manufacturer.

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Gas-to-Electric Plant

2. Switchgear factory testing --- the switchgear lineup and control system shall be factory tested prior to shipping to be sure all systems and components are operationally correct per the engineering designs.

3. Field commissioning Services --- a switchgear/control system service technician shall be on site to assist during commissioning of the engine-generator sets and to provide basic operation instructions to the station personnel. An engine technician shall also be on site with the switchgear technician. Prior to arrival of the switchgear technician, the engine technician shall have started and run each engine-generator set individually and verified operation of the engine-generator set alarm/safety circuits. The cost for one (1) service technician with one (1) site visit and up to 4 weekdays on site to be included as part of the Engine-generator set switchgear/Control System.

4. Warranty --- Equipment manufactured by the seller is warranted to be free from defects in material or workmanship under normal use, service, and indoor storage, for eighteen (18) months after date of shipment from seller's plant or twelve (12) months from date of customer's installation --- which ever occurs first --- subject to the following provisions. The warranty is limited to repair, replacement or issuing of credit, as seller may elect, and at seller's manufacturing plant, of such parts as shall appear to seller, upon inspection, to have been defective in material or workmanship, but does not include any installation, labor or transportation costs. This warranty does not apply to normal maintenance or normal replacement of serviceable items.

Replacement parts shall be warranted for six (6) months from date of shipment, subject to the terms and conditions as stated above for manufacture equipment.

The seller shall in no event be liable for any special or consequential charges for replacing or installing of warranty parts.

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Gas-to-Electric Plant

**EQUIPMENT BID SHEET
4160V GENERATOR SWITCHGEAR**

ELECTRICAL DATA:

PRICING QUOTATION:

Price for Switchgear:	\$ 310,981.00
Shipping to Pearl Hollow Landfill site (Elizabethtown, KY.):	\$ 1,800.00
Total Price=Switchgear plus shipping:	\$ 312,781.00

MISCELLANEOUS INFORMATION:

Anticipated shop drawing date: 15 to 20 days from A.R.O

Anticipated ship date: To be determined but should be 140 to 160 days from receipt of drawing approval.

Standard Warranty period: 18 months after shipment

Pricing for Extended Warranty (18 months after delivery): \$ no charge

Pricing for additional Start-up and/or Troubleshooting Services: \$1,000.00 / Day minimum
three days due to travel

(Includes labor, Equipment, Travel, Tools, and Vehicle Expenses)

Equipment Bid Sheet

Equipment Bid Sheet

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Hardin County landfill
Gas-to-Electric Plant



No. 1 Altorfer Lane • East Peoria, IL 61611
Phone: 309-694-1418 • Fax: 309-694-3703
Email: bsmall@enercon-eng.com

April 19, 2005

TO: Mr. Ken Lutes – East Kentucky Power Cooperative
C.C. Mr. Charles Anderson – Meade Electric
Mr. Rick Allison – Enercon Engineering, Inc
Mr. Dan Davis – Enercon Engineering, Inc

SUBJECT: Hardin County Landfill Gas-to-Energy Project

Dear Ken;

During your 13 April visit to the NiGas facility in Troy Grove, with Chuck Anderson, our Rick Allison agreed to a few modifications/additions to the Operator Input Module (OIM touch screen) for the Hardin County Project at no cost.

The enclosed presentation is submitted as a supplement to our bid document and provides an overview of the discussions.

Ken, hopefully we have covered all items. Please advise if any additional clarifications are needed.

Thank you for verbally advising us of the forthcoming purchase order. We look forward to being of service to you and your people.

Regards,

Bob Small

P.S. Our Dan Davis is out of town and I am his back up.



Specifications Conformance and Clarifications

Supplement to the bid documents based on discussions with Mr. Ken Lutes of East Kentucky Power Cooperative and Mr. Charles Anderson of Meade Electric during a 13 April visit to a NiGas facility.

- 5.4 Metering displays on Genset and System touch screens to include the standard digital metering readouts, plus a secondary metering screen (each touch screen) with bar graph displays of voltage (each phase), current (each phase), frequency, kilowatts and power factor.
- 5.5 Addition of a configuration screen (password accessible at supervisor level) to allow all system alarms to be programmed to any of eight (8) digital outputs to the station auto dialer for remote notification of alarm conditions. This would be in lieu of discrete relay contacts that previously served this function via hardwiring programming.
- 5.6 Structure the control and operator input screens to facilitate the familiarity of operations from existing sites to this site. This would entail, as much as possible, using legends and operating sequences along with location of and access to control and adjustment screens. A visit to the existing sites would be required with access to the existing screens.
 - 5.6.1 Preliminary OIM screen displays to be submitted with approval documents for review and prior to any existing site visits.
 - 5.6.2 Program costs of minor changes in PLC/OIM software to be absorbed by Enercon during the design/approval stages of the project. Major changes and/or field changes once the equipment is installed and operational to be reviewed with East Kentucky Power Cooperative before being instituted.
- 5.7 Enercon service personnel to provide training to East Kentucky Power Cooperative operating personnel during the site field commissioning visit.
- 5.8 East Kentucky Power Cooperative personnel would be welcomed at our facility during the factory testing and our staff would provide operation data of the PLC's/touch screen functions.

**East Kentucky
Power Cooperative,
Inc.**

**Hardin County
Landfill Gas Project**

Equipment Contract

U.S. Department of Agriculture
Rural Utilities Service

EQUIPMENT CONTRACT

NOTICE AND INSTRUCTIONS TO BIDDERS

- 1. Sealed proposals for the furnishing and delivering f.o.b. 3 - Caterpillar Landfill Gas Engine/Generator Systems**
East Kentucky Power Cooperative, Inc. Hardin County
of equipment for the rural electric project of Landfill Gas to Electric Generating Facility
RUS designation Ky 59 Fayette, (hereinafter called the "Owner") will be received by the Owner on or before _____ o'clock _____ M., _____, 20____, at its office at 4775 Lexington Road, Winchester, KY at which time and place the proposals will be _____ publicly opened and read.

X privately opened. The Owner, subsequent to the bid opening, may elect to conduct clarifying discussions with the bidder to resolve any questions related to the substance of the bidder's proposal and to arrive at a final price for a responsive bid.

Any proposals received subsequent to the time specified will be promptly returned to the Bidder unopened.
- 2. Obtaining Documents.** The Plans, Specifications, and Construction Drawings, together with all necessary forms and other documents for bidders may be obtained from the Owner, or from the Engineer Meade Electric Company, Inc. at the latter's office at 9550 W. 55th Street, Suite A, McCook, Illinois upon the payment of \$ Not Applicable, which payment will not be subject to refund. The Plans, Specifications, and Construction Drawings may be examined at the office of the Owner or at the office of the Engineer.
- 3. Manner of Submitting Proposals.** Proposals and all supporting instruments must be submitted on the forms furnished by the Owner and must be delivered in a sealed envelope addressed to the Owner. The name and address of the Bidder and the date and hour of the opening of bids must appear on the envelope in which the Proposal is submitted. Proposals must be completed in ink or typewritten. No alterations or interlineations will be permitted, unless made before submission, and initialed and dated. The successful Bidder will be required to execute two additional counterparts of the Proposal.
- 4. Due Diligence.** Prior to the submission of the Proposal, the Bidder shall make and shall be deemed to have made a careful examination of the Plans, Specifications, Construction Drawings, and form of Proposal, and shall review the location and nature of the proposed construction, the transportation facilities, the kind and character of soil and terrain to be encountered, the kind of facilities required before and during the construction of the project, general local conditions, environmental and historic preservation considerations, and all other matters that may affect the cost and time of completion of the work. Bidder will be required to comply with all federal, state, and local laws, rules, and regulations applicable to its performance, including those pertaining to the licensing of contractors, and the Anti Kick-Back Act of 1986 (41 U.S.C. 51 et seq).
- 5. Proposals will be accepted only from those prequalified bidders invited by the Owner to submit a proposal.**
- 6. The Time for Delivery of the Equipment is of the essence of the Contract and shall be as specified by the Engineer in the Proposal.**

7. **Evaluation Factors.** *In estimating the lowest cost to the Owner as one of the factors in deciding the award of the Contract, the Owner will consider, in addition to the price quoted in the Proposals, the following:*

Performance specifications of Engine/Generator Sets

8. **Debarment Certification.** *The Bidder must provide to the Owner a suspension and debarment certificate in the form attached hereto.*

9. **Contract is Entire Agreement.** *The Contract to be effected by the acceptance of the Proposal shall be deemed to include the entire agreement between the parties thereto, and the Bidder shall not claim any modifications thereof resulting from any representation or promise made at any time by any officer, agent or employee of the Owner or by any other person.*

10. **Minor Irregularities.** *The Owner reserves the right to waive minor irregularities or minor errors in any Proposal, if it appears to the Owner that such irregularities or errors were made through inadvertence. Any such irregularities or errors so waived must be corrected on the Proposal in which they occur prior to the acceptance thereof by the Owner.*

11. **Bid Rejection.** *The Owner reserves the right to reject any or all Proposals.*

12. **Definition of Terms.** *The terms "Administrator" and "Engineer" as used throughout this Contract shall be as defined in Article VI, Section 1, of the Proposal.*

East Kentucky Power Cooperative, Inc.

Owner

By Ray M. Palk

President & Chief Executive Officer

Title

March 21, 2005

Date

PROPOSAL

TO:

East Kentucky Power Cooperative, Inc.

(hereinafter called the "Owner").

ARTICLE I--GENERAL

Section 1. Offer to Furnish and Deliver. *The undersigned (hereinafter called the "Bidder") hereby proposes to furnish and deliver the equipment (hereinafter called the "Equipment") described in the Plans, Specifications, and Construction Drawings for the following prices:*

and Equipment Contract Summary

Item: _____ Price: 1,112,017.00

Item: _____ Price: _____

The prices of Equipment set forth herein shall include the cost of delivery to:

Hardin County Landfill Gas to Electric Generating Facility

The prices set forth herein do not include any sums which are or may be payable by the Bidder on account of taxes imposed by any taxing authority upon the sale, purchase or use of the Equipment. If any such tax is applicable to the sale, purchase or use of the Equipment hereunder, the amount thereof shall be added to the purchase price and paid by the Owner.

Section 2. Materials and Equipment. *The Bidder agrees to furnish and use in the construction of the project under this Proposal, in the event the Proposal is accepted, only such "fully accepted," "conditionally accepted," and "technically accepted" materials and equipment which have been accepted by RUS as indicated in the current RUS Informational Publication 202-1, "List of Materials Acceptable for Use on Systems of RUS Electrification Borrowers," including revisions adopted prior to the Bid Opening. The use of "conditionally accepted" or "technically accepted" materials and equipment requires prior consent by the Owner or Engineer.*

The Bidder will purchase all materials and equipment outright and not subject to any conditional sales agreements, bailment, lease or other agreement reserving unto the seller any right, title or interest therein. All such materials and equipment shall be new.

Section 3. Description of Contract. *The Notice and Instructions to Bidders, Plans, Specifications, and Construction Drawings, which by this reference are incorporated herein, together with the Proposal and Acceptance constitute the Contract. The Plans, Specifications, and Construction Drawings, including maps, special drawings, and approved modifications in standard specifications are attached hereto and identified as follows:*

Section 4. Due Diligence. *The Bidder has made a careful examination of the Plans, Specifications, and Construction Drawings attached hereto, and has become informed as to the location and nature of the proposed construction, the transportation facilities, the kind and character of soil and terrain to be encountered, and the kind of facilities required before and during the construction of the project, and*

has become acquainted with the labor conditions, federal, state, and local laws, rules, and regulations applicable to its performance.

Section 5. Warranty of Good Faith. *The Bidder warrants that this Proposal is made in good faith and without collusion or connection with any person or persons bidding for the same work.*

ARTICLE II--DELIVERY AND WARRANTY

Section 1. Delivery. *The Bidder shall deliver the Equipment:*

_____ within _____ days after receipt of the written order or orders of the Owner.

X not later than September 20, 2005.

The time for delivery shall be extended for the period of any reasonable delay due exclusively to causes beyond the control and without the fault of the Bidder, including, but not limited to, acts of God, fires, strikes, and floods.

Section 2. Defective Materials and Workmanship.

- a. *All Equipment furnished hereunder shall be subject to the inspection, tests, and approval of the Owner and the Engineer, and the Bidder shall furnish all information required concerning the nature or source of any Equipment and provide adequate facilities for testing and inspecting the Equipment at the plant of the Bidder.*
- b. *The Equipment furnished hereunder shall become the property of the Owner upon delivery, provided, however, that the Owner or the Engineer, within one year after initial operation of the Equipment, or within the period for which the Equipment is guaranteed, whichever is longer, may reject any Equipment which does not comply with the Specifications attached hereto and made a part hereof or with the guarantees, if any, of the Bidder and the manufacturer. Upon any such rejection, the Bidder shall repair or replace such defective Equipment within a reasonable time after notice in writing from the Owner. If any such defective materials, equipment, or workmanship so replaced or repaired is found to be defective within one year after the completion of the replacement or repair, the Bidder shall replace or remedy such defective materials, equipment, or workmanship. In the event of failure by the Bidder so to do, the Owner may make such replacement and the cost and expense thereof shall be paid by and recoverable from the Bidder.*
- c. *All manufacturers' guarantees of Equipment, if any, shall be transferred and assigned to the Owner upon delivery of any Equipment and before final payment is made for such Equipment. Such guarantees shall be in addition to those required of the Bidder by other provisions of this Contract.*

ARTICLE III--PAYMENT

Section 1. Payments to Bidder.

- a. *Upon the shipment of any Equipment hereunder, the Bidder shall submit to the Owner a detailed statement of the Equipment shipped. The Owner shall, upon receipt of the Equipment, pay the Bidder ninety percent (90%) of the contract price of the ~~Equipment~~. When the Equipment has been installed, placed in satisfactory operation, tested and accepted by the Owner, the Owner shall make final payments therefor to the Bidder; provided, however, such final payment ~~30~~ days later, Owner shall release an additional 5% of the ret age shall be made not later than ninety days after delivery of the Equipment, unless such acceptance by the Owner shall be withheld because of the fault of the Bidder.*

- b. *No payment shall be due while the Bidder is in default in respect of any of the provisions of this Contract and the Owner may withhold from the Bidder the amount of any claim by a third party against either the Bidder or the Owner based upon an alleged failure of the Bidder to perform the work hereunder in accordance with the provisions of this Contract.*

ARTICLE IV--PARTICULAR UNDERTAKINGS OF THE BIDDER

The provisions of this Article IV apply to any work performed by the Bidder at the project site.

Section 1. Protection to Persons and Property. *The Bidder shall at all times take all reasonable precautions for the safety of employees on the project and of the public, and shall comply with all applicable provisions of federal, state, and local laws, rules, and regulations and building and construction codes, in addition to the safety rules and procedures of the Owner.*

The following provisions shall not limit the generality of the above requirements:

- a. *The Bidder shall at no time and under no circumstances cause or permit any employee of the Bidder to perform any work upon energized lines, or upon poles carrying energized lines, unless otherwise specified in the Notice and Instructions to Bidders.*
- b. *The Bidder shall transport and store all material in facilities and vehicles which are designed to protect the material from damage. The Bidder shall ensure that all vehicles, trailers, and other equipment used comply with all applicable licensing, traffic, and highway requirements.*
- c. *The Bidder shall conduct its operations to cause the least possible obstruction of public highways*
- d. *The Bidder shall make good and fully repair all injuries and damages to the project or any portion thereof under the control of the Bidder by reason of any act of God or other casualty or cause whether or not the same shall have occurred by reason of the Bidder's negligence.*
- (i) *To the maximum extent permitted by law, Bidder shall defend, indemnify, and hold harmless Owner and Owner's directors, officers, and employees from all claims, causes of action, losses, liabilities, and expenses (including reasonable attorney's fees) for personal loss, injury, or death to persons (including but not limited to Bidder's employees) and loss, damage to or destruction of Owner's property or the property of any other person or entity (including but not limited to Bidder's property) in any manner arising out of or connected with the Contract, or the materials or equipment supplied or services performed by Bidder, its subcontractors and suppliers of any tier. But nothing herein shall be construed as making Bidder liable for any injury, death, loss, damage, or destruction caused by the sole negligence of Owner.*
- (ii) *To the maximum extent permitted by law, Bidder shall defend, indemnify, and hold harmless Owner and Owner's directors, officers, and employees from all liens and claims filed or asserted against Owner, its directors, officers, and employees, or Owner's property or facilities, for services performed or materials or equipment furnished by Bidder, its subcontractors and suppliers of any tier, and from all losses, demands, and causes of action arising out of any such lien or claim. Bidder shall promptly discharge or remove any such lien or claim by bonding, payment, or otherwise and shall notify Owner promptly when it has done so. If Bidder does not cause such lien or claim to be discharged or released by payment, bonding, or otherwise, Owner shall have the right (but shall not be obligated) to pay all sums necessary to obtain any such discharge or release and to deduct all amounts so paid from the amount due Bidder.*
- (iii) *Bidder shall provide to Owner's satisfaction evidence of Bidder's ability to comply with the indemnification provisions of subparagraphs i and ii above, which evidence may include but may not be limited to a bond or liability insurance policy obtained for this purpose through a licensed surety or insurance company.*

- e. Upon violation by the Bidder of any of the provisions of this section, after written notice of such violation given to the Bidder by the Engineer or the Owner, the Bidder shall immediately correct such violation. Upon failure of the Bidder so to do the Owner may correct such violation at the Bidder's expense: Provided, however, that the Owner may, if it deems it necessary or advisable, correct such violation at the Bidder's expense without such prior notice to the Bidder.

Section 2. Insurance. *The Bidder shall take out and maintain throughout the period of its operations at the project site the following types and minimum amounts of insurance:*

- a. *Workers' compensation and employers' liability insurance, as required by law, covering all its employees who perform any of the obligations of the Bidder under the contract. If any employer or employee is not subject to the workers' compensation laws of the governing state, then insurance shall be obtained voluntarily to extend to the employer and employee coverage to the same extent as though the employer or employee were subject to the workers' compensation laws.*
- b. *Public liability insurance covering all operations under the contract shall have limits for bodily injury or death of not less than \$1 million each occurrence, limits for property damage of not less than \$1 million each occurrence, and \$1 million aggregate for accidents during the policy period. A single limit of \$1 million of bodily injury and property damage is acceptable. This required insurance may be in a policy or policies of insurance, primary and excess including the umbrella or catastrophe form.*
- c. *Automobile liability insurance on all motor vehicles used in connection with the contract, whether owned, nonowned, or hired, shall have limits for bodily injury or death of not less than \$1 million per person and \$1 million each occurrence, and property damage limits of \$1 million for each occurrence. A single limit of \$1 million of bodily injury and property damage is acceptable. This required insurance may be in a policy or policies of insurance, primary and excess including the umbrella or catastrophe form.*

The Owner shall have the right at any time to require public liability insurance and property damage liability insurance greater than those required in subsection "b" and "c" of this Section. In any such event, the additional premium or premiums payable solely as the result of such additional insurance shall be added to the Contract price.

The Owner shall be named as Additional Insured on all policies of insurance required in subsections "b" and "c" of this Section.

The policies of insurance shall be in such form and issued by such insurer as shall be satisfactory to the Owner. The Bidder shall furnish the Owner a certificate evidencing compliance with the foregoing requirements which shall provide not less than (30) days prior written notice to the Owner of any cancellation or material change in the insurance.

ARTICLE V--REMEDIES

Section 1. Liquidated Damages. *The time of the delivery of the Equipment is of the essence of the Contract. Should the Bidder neglect, refuse or fail to deliver the Equipment within the time herein agreed upon, after giving effect to extensions of time, if any, herein provided, then, in that event and in view of the difficulty of estimating with exactness damages caused by such delay, the Owner shall have the right to deduct from and retain out of such moneys which may be then due, or which may become due and*

payable to the Bidder the sum of Not Applicable dollars (_____) per day for each and every day that such delivery is delayed beyond the specified time, as liquidated damages and not as a penalty; if the amount due and to become due from the Owner to the Bidder is insufficient to pay in full any such liquidated damages, the Bidder shall pay to the Owner the amount necessary to effect such payment in full: Provided, however, that the Owner shall promptly notify the Bidder in writing of the manner in which the amount retained, deducted or claimed as liquidated damages was computed.

Section 2. Cumulative Remedies. *Every right or remedy herein conferred upon or reserved to the Owner or the Government or the Administrator shall be cumulative, shall be in addition to every right and remedy now or hereafter existing at law or in equity or by statute and the pursuit of any right or remedy shall not be construed as an election: Provided, however, that the provisions of Section 1 of this Article shall be the exclusive measure of damages for failure by the Bidder to deliver the Equipment within the time herein agreed upon.*

ARTICLE VI--MISCELLANEOUS

Section 1. Definitions.

- a. *The term "Administrator" shall mean the Administrator of the Rural Utilities Service of the United States of America and his or her duly authorized representative or any other person in whom or authority in which may be vested the duties and functions which the Administrator is now authorized by law to perform.*
- b. *The term "Engineer" shall mean the Engineer employed by the Owner, to provide engineering services for the project and said Engineer's duly authorized assistants and representatives.*

Section 2. Materials and Supplies. *In the performance of this contract there shall be furnished only such unmanufactured articles, materials, and supplies as have been mined or produced in the United States or in any eligible country, and only such manufactured articles, materials, and supplies as have been manufactured in the United States or in any eligible country substantially all from articles, materials, or supplies mined, produced or manufactured, as the case may be, in the United States or in any eligible country; provided that other articles, materials, or supplies may be used in the event and to the extent that the Administrator shall expressly in writing authorize such use pursuant to the provisions of the Rural Electrification Act of 1938, being Title IV of Public Resolution No 122, 75th Congress, approved June 21, 1938. For the purposes of this section, an "eligible country" is any country that applies with respect to the United States an agreement ensuring reciprocal access for United States products and services and suppliers to the markets of that country, as determined by the United States Trade Representative. The Bidder agrees to submit to the Owner such certificates with respect to compliance with the foregoing provision as the Administrator from time to time may require.*

Section 3. Patent Infringement. *The Bidder shall hold harmless and indemnify the Owner from any and all claims, suits and proceedings for the infringement of any patent or patents covering Equipment purchased hereunder.*

Section 4. Compliance with Laws. *The Bidder shall comply with all federal, state, and local laws, rules, and regulations applicable to its performance under the contract and the construction of the project. The Bidder acknowledges that it is familiar with the Rural Electrification Act of 1936, as amended, the Anti Kick-Back Act of 1986 (41 U.S.C. 51 et seq), and 18 U.S.C. §§ 286, 287, 641, 661, 874, 1001, and 1366, as amended.*

The Bidder represents that to the extent required by Executive Orders 12549 (3 CFR, 1985-1988 Comp., p. 189) and 12689 (3 CFR, 1989 Comp., p. 235), Debarment and Suspension, and 7 CFR part 3017, it has submitted to the Owner a duly executed certification in the form prescribed in 7 CFR part 3017.

The Bidder represents that, to the extent required, it has complied with the requirements of Pub. L. 101-121, Section 319, 103 Stat. 701, 750-765 (31 U.S.C. 1352), entitled "Limitation on use of appropriated funds to influence certain Federal contracting and financial transactions," and any rules and regulations issued pursuant thereto.

Section 5. Equal Opportunity Provisions.

a. *Bidder's Representations.*

The Bidder represents that:

It has , does not have , 100 or more employees, and if it has, that it has , has not . furnished the Equal Employment Opportunity-Employers Information Report EEO-1, Standard Form 100, required of employers with 100 or more employees pursuant to Executive Order 11246 of September 24, 1965, and Title VII of the Civil Rights Act of 1964.

The Bidder agrees that it will obtain, prior to the award of any subcontract for more than \$10,000 hereunder to a subcontractor with 100 or more employees, a statement, signed by the proposed subcontractor, that the proposed subcontractor has filed a current report on Standard Form 100.

The Bidder agrees that if it has 100 or more employees and has not submitted a report on Standard Form 100 for the current reporting year and that if this Contract will amount to more than \$10,000, the Bidder will file such report, as required by law, and notify the Owner in writing of such filing prior to the Owner's acceptance of this Proposal.

b. *Equal Opportunity Clause. During the performance of this Contract, the Bidder agrees as follows:*

- (1) The Bidder will not discriminate against any employee or applicant for employment because of race, color, religion, sex or national origin. The Bidder will take affirmative action to ensure that applicants are employed, and that employees are treated during employment without regard to their race, color, religion, sex or national origin. Such action shall include, but not be limited to, the following: Employment, upgrading, demotions or transfer; recruitment or recruitment advertising; layoff or termination; rates of pay or other forms of compensation; and selection of training, including apprenticeship. The Bidder agrees to post in conspicuous places, available to employees and applicants for employment, notices to be provided setting forth the provisions of this Equal Opportunity Clause.*
- (2) The Bidder will, in all solicitations or advertisements for employees placed by or on behalf of the Bidder, state that all qualified applicants will receive consideration for employment without regard to race, color, religion, sex or national origin.*
- (3) The Bidder will send to each labor union or representative of workers, with which it has a collective bargaining agreement or other contract or understanding, a notice to be provided advising the said labor union or workers' representative of the Bidder's commitments under this section, and shall post copies of the notice in conspicuous places available to employees and applicants for employment.*
- (4) The Bidder will comply with all provisions of Executive Order 11246 of September 24, 1965, and the rules, regulations and relevant orders of the Secretary of Labor.*
- (5) The Bidder will furnish all information and reports required by Executive Order 11246 of September 24, 1965, and by rules, regulations, and orders of the Secretary of Labor, or pursuant thereto, and will permit access to its books, records, and accounts by the administering agency and the Secretary of Labor for purposes of investigation to ascertain compliance with such rules, regulations, and orders.*
- (6) In the event of the Bidder's noncompliance with the Equal Opportunity Clause of this Contract or with any of the said rules, regulations, or orders, this Contract may be canceled, terminated, or suspended in whole or in part, and the Bidder may be declared ineligible for further Government contracts or federally assisted construction contracts in accordance with procedures authorized in Executive Order 11246 of September 24, 1965, and such other sanctions may be imposed and remedies invoked as provided in Executive Order 11246 of*

September 24, 1965, or by rule, regulation, or order of the Secretary of Labor, or as provided by law.

(7) *The Bidder will include this Equal Opportunity Clause in every subcontract or purchase order unless exempted by the rules, regulations, or order of the Secretary of Labor issued pursuant to Section 204 of Executive Order 11246 of September 24, 1965, so that such provisions will be binding upon each subcontractor or vendor. The Bidder will take such action with respect to any subcontract or purchase order as the administering agency may direct as a means of enforcing such provisions, including sanctions for noncompliance; Provided, however, that in the event Bidder becomes involved in, or is threatened with, litigation with a subcontractor or vendor as a result of such direction by the administering agency, the Bidder may request the United States to enter into such litigation to protect the interests of the United States.*


c. *Certificate of Nonsegregated Facilities. The Bidder certifies that it does not maintain or provide for its employees any segregated facilities at any of its establishments, and that it does not permit its employees to perform their services at any location, under its control, where segregated facilities are maintained. The Bidder certifies further that it will not maintain or provide for its employees any segregated facilities at any of its establishments, and that it will not permit its employees to perform their services at any location, under its control, where segregated facilities are maintained. The Bidder agrees that a breach of this certification is a violation of the Equal Opportunity Clause in this Contract. As used in this certification, the term "segregated facilities" means any waiting rooms, work areas, restrooms and washrooms, restaurants and other eating areas, timeclocks, locker rooms and other storage or dressing areas, parking lots, drinking fountains, recreation or entertainment areas, transportation, and housing facilities provided for employees which are segregated by explicit directive or are in fact segregated on the basis of race, color, religion, or national origin, because of habit, local custom, or otherwise. The Bidder agrees that (except where it has obtained identical certifications from proposed subcontractors for specific time periods) it will obtain identical certifications from proposed subcontractors prior to the award of subcontracts exceeding \$10,000 which are not exempt from the provisions of the Equal Opportunity Clause, and that it will retain such certifications in its files.*

Section 6. Successors and Assigns. *Each and all of the covenants and agreements herein contained shall extend to and be binding upon the successors and assigns of the parties hereto. The Owner and Bidder acknowledge that this Contract is assigned to the Government, acting through the Administrator, for security purposes under the Owner's mortgage and security instrument.*

Section 7. Independent Contractor. *The Bidder shall perform the work as an independent contractor, not as a subcontractor, agent, or employee of the Owner. Upon acceptance of this Proposal, the successful Bidder shall be the Contractor and all references in the Proposal to the Bidder shall apply to the Contractor.*

Section 8. Approval by the Administrator: *This contract does _____, does not _____, require approval of the Administrator. No acceptance of a Proposal for a contract upon which approval of the Administrator is required shall become effective until the contract has been approved by the Administrator; provided that no obligation shall arise hereunder unless such approval is given within one-hundred twenty (120) days after the date set for the opening of the proposals. The acceptance of a Proposal for a contract upon which approval of the Administrator is not required shall become effective the date of acceptance by the Owner.*

ATTEST:


Secretary

Dated 2/21/05

Whayne Supply Company
Bidder


Vice President

1400 Cecil Avenue, P.O. Box 35900
Lexington, Kentucky 40211
Address

The Proposal must be signed with the full name of the Bidder. If the Bidder is a partnership, the Proposal must be signed in the partnership name by a partner. If the Bidder is a corporation, the Proposal must be signed in the corporate name by a duly authorized officer and the corporate seal affixed and attested by the Secretary of the Corporation.

ACCEPTANCE

Subject to the approval of the Administrator, if approval of the Administrator is required, the Owner hereby accepts the foregoing Proposal of the Bidder, Whayne Supply Company for the following Equipment:

3 Caterpillar Landfill Gas Engine/Generator Systems

for a total contract price of \$ 1,112,017.00 (~~Seventeen Dollars and No Cents~~ One Million One Hundred Twelve Thousand dollars)

East Kentucky Power Cooperative, Inc.

Owner

By

Ray M. Talk
President & CEO

Secretary

March 21, 2005
Date of Contract

CERTIFICATION REGARDING DEBARMENT, SUSPENSION,
INELIGIBILITY AND VOLUNTARY EXCLUSION
LOWER TIER COVERED TRANSACTIONS

This certificate is required by the regulations implementing Executive Order 12549, Debarment and Suspension, 7 CFR Part 3017, Section 3017.510, participants' responsibilities. The regulations were published as Part IV of the January 30, 1989, Federal Register (pages 4722-4733).

- (1) The prospective lower tier participant certifies, by submission of this proposal, that neither it nor its principals is presently debarred, suspended, proposed for debarment, declared ineligible, or voluntarily excluded from participation in this transaction by any Federal department or agency.
- (2) Where the prospective lower tier participant is unable to certify to any of the statements in this certification, such prospective participant shall attach an explanation to this proposal.

WHAINE Supply Co.
Organization Name PR/Award Number Project Name

FRANK LEWIS VICEPRESIDENT - GENERAL MGR. DIV. ^{POWER SYSTEMS}
Name and Title of Authorized Representative

Frank Lewis FEBRUARY 18, 2005
Signature Date

INSTRUCTIONS FOR CERTIFICATION

1. By signing and submitting the Certification Regarding Debarment, Suspension, Ineligibility and Voluntary Exclusion Lower Tier Covered Transactions form, the prospective lower tier participant is providing the certification set out in accordance with these instructions.
2. The certification in this clause is a material representation of fact upon which reliance was placed when this transaction was entered into. If it is later determined that the prospective lower tier participant knowingly rendered an erroneous certification, in addition to other remedies available to the Federal Government, the department or agency with which this transaction originated may pursue available remedies, including suspension and/or debarment.
3. The prospective lower tier participant shall provide immediate written notice to the person to whom this proposal is submitted if at any time the prospective lower tier participant learns that its certification was erroneous when submitted or has become erroneous by reason of changed circumstances.
4. The terms "covered transaction," "debarred," "suspended," "ineligible," "lower tier covered transaction," "participant," "person," "primary covered transaction," "principal," "proposal," and "voluntarily excluded," as used in this clause, have the meanings set out in the Definitions and Coverage sections of rules implementing Executive Order 12549. You may contact the person to whom this proposal is submitted for assistance in obtaining a copy of those regulations.
5. The prospective lower tier participant agrees by submitting this form that, should the proposed covered transaction be entered into, it shall not knowingly enter into any lower tier covered transaction with a person who is debarred, suspended, declared ineligible, or voluntarily excluded from participation in this covered transaction, unless authorized by the department or agency with which this transaction originated.
6. The prospective lower tier participant further agrees by submitting this form that it will include this clause titled "Certification Regarding Debarment, Suspension, Ineligibility and Voluntary Exclusion Lower Tier Covered Transactions," without modification, in all lower tier covered transactions and in all solicitations for lower tier covered transactions.
7. A participant in a covered transaction may rely upon a certification of a prospective participant in a lower tier covered transaction that it is not debarred, suspended,

A. Russelectric generator switchgear to control and parallel the operation of 3 800kW, 4160 volt generator sets and can be expand in the future:

TOTAL NET PRICE F.O.B. JOBSITE
TAX AND UNLOADING NOT INCLUDED \$354,226.00

B. Russelectric generator switchgear to control and parallel the operation of 3 800kW, 4160 volt generator sets and includes all controls and beakers for two future gen sets:

TOTAL NET PRICE F.O.B. JOBSITE
TAX AND UNLOADING NOT INCLUDED. \$420,831.00

Enercon Switchgear

A. Enercon generator switchgear to control and parallel the operation of 3 800kW, 4160 volt generator sets and can be expand in the future:

TOTAL NET PRICE F.O.B. JOBSITE
TAX AND UNLOADING NOT INCLUDED \$304,344.00

B. Enercon generator switchgear to control and parallel the operation of 3 800kW, 4160 volt generator sets and includes all controls and beakers for two future gen sets:

TOTAL NET PRICE F.O.B. JOBSITE
TAX AND UNLOADING NOT INCLUDED \$402,022.00

DRAWINGS: Three to five weeks after receipt of order.

DELIVERY: Eighteen to twenty weeks for Caterpillar Generator sets. Twenty to twenty-two weeks for the Caterpillar switchgear delivery.

TERMS: Net 30 days with 1.5 percent per month added to the unpaid balance.

FIRM: Until February 28, 2005

Comments concerning this quotation are as follows:

1. You have requested we quote an air fuel ratio controller as an option. The net adder for this controller is \$10,046.00 per engine.
2. Our service people feel the Cat oil level regulator will do a better job than the Ren furnished with the previous G3516 generator sets because of the way it is vented by Caterpillar. We will provide whichever you prefer but have Cat in our quotation.
3. We have included lube oil from Caterpillar that is recommended for landfill gas engines. If you prefer to use DA lube oil in these engines, please advise and we will ship the engines without lube oil. We had to send some 1100 gallons of lube oil to a recycler with the previous engines and feel sure neither of us want to do that again.
4. Wiring of the gas pressure regulators that you will remote mount is included.
5. Setting of the VFD's on each remote radiator is included.
6. Exhaust pie rain caps are included.
7. Initial intake and exhaust valve projections will be recorded by Wayne for each engine.
8. Thermocouples for the variable speed fan drives are included.
9. Relocation of the Cat wiring harness at startup to facilitate removal of each individual valve cover is included.
10. Cold start procedure to eliminate the manual toggle switches at each generator set is now included with all three switchgear suppliers.
11. We wish to point out once again that we feel your exhaust system should include one flexible element at the engine and one expansion joint just inside the wall before the exhaust exits the building. You are currently using two flexible elements and these are

not expansion joints. We can provide an adder for the expansion joint, if you wish, as it is more expensive than a flexible exhaust element.

12. Caterpillar does not show another location available for the 12 hole Instrument panel. It seems to us the only other location that would be desirable for your application is on the front of the engine. We can order the engines, as quoted in order to keep our price protection, and then try to see if the factory will relocate this panel for us but we are not optimistic they will be able to do so.

Thank you for allowing us an opportunity to quote on Caterpillar equipment and we look forward to working with you on this project.

Very truly yours,

Larry K. Peyton
Power Systems Division

BILL OF MATERIAL

East Kentucky Power Cooperative, Inc.
Winchester, KY

For

Hardin County Landfill - Elizabethtown, KY

G3516-SITA LE Landfill Gas Power Generation System

Item 1 – Caterpillar Generator Sets

Three new Caterpillar Model G3516-SITA LE 130 Landfill Gas Electric Set Engines, each directly connected to a SR4B 804 frame single bearing synchronous generator permanent magnet excited, 60 Hz., 3 phase, 1200 RPM, 800 kW continuous without fan, 4160 volts, and each includes accessories as listed below:

Air cleaner, Intermediate duty, with service indicator
Thermostats (high temperature) and housing, full open temperature 130° C (265° F).
Jacket water pump (high temperature seal), gear driven, centrifugal, non-self-priming
Aftercooler, corrosion resistant for landfill gas use
Aftercooler water pump, gear driven, centrifugal, non-self-priming
Aftercooler thermostats and housing, full open temperature 66° C (151° F)
Oil cooler thermostatic control to maintain 93° C (200° F) minimum oil temperature.
Exhaust manifolds, watercooled
Exhaust and intake valves and guides, corrosion resistant
Flywheel, SAE No. 00
Flywheel housing, SAE No. 00
SAE standard rotation
Governor, Woodward 2301D electronic load share type with EG3P actuator
Gas pressure regulator (requires 1-5 psi gas)
Carburetor for 400 - 600 Btu fuel (minimum methane number 130)
Two stainless steel flexible gas connections
Caterpillar electronic ignition system (E.I.S.), includes detonation sensitive timing
Instrument panel, RH, 12 hole

- Oil Pressure
- Oil Temperature
- Jacket water pressure
- Water Temperature
- Oil Pressure differential
- Intake manifold temperature
- Service meter
- Exhaust pyrometer and thermocouples (individual exhaust ports and right and left bank exhaust stacks)
- Intake manifold pressure gauge

Crankcase ventilation system breathers
Oil cooler
Oil filters, RH
Shallow oil pan, 110 gallon
Lubricating oil cooler, separate circuit, thermostatically controlled oil temperature
Pre-lubrication / post-lubrication pump, 24VDC
Cat lube oil level meter with 25 gallon lube oil day tank
Two stainless steel flexible oil line connections
Rails, engine mounting, 330 mm (13 in), industrial-type
Vibration isolators, elastomer pad type
Front housing, two-sided

Electronic shutoff system. Requires 24 V power source and is shipped loose for remote mounting with a 20 foot wiring harness. The system is energized to run and is provided with a status control box that includes shutoff control system and power, warning and shutdown lights. Also included is a customer interface module with contacts for switchgear interface as follows:

- Low oil pressure, low idle 69 kPa (10 psi): high idle 207 kPa (30 psi).
- High coolant temperature 124° C (255° F)
- High oil temperature 102° C (215° F)
- High intake air temperature alarm 71° C (160° F)
- Overspeed
- Emergency stop pushbutton
- Jacket water pressure
- Detonation
- Gas valve 50.8 mm (2 in) pipe size. Energized to run.
- Start, run, stop switch

Paint, Caterpillar yellow

Vibration damper and guard

Lifting eyes

Brushless SR4 804 Frame generator installed. Includes 4160 volt permanent magnet, form wound generator with VPI and six (6) leads, .8333 pitch, 93.9% efficiency, 80°C temperature rise, flexible plate coupling, 330 mm (13 in) mounting rails and hardware. Generator arrangement 7C-4914 with 115-230 volt, 1200-watt space heater. Rating shown is generator set electrical output without fan. Does not include power terminal strip. Recommended for Continuous duty applications. 800 EkW at 1200 rpm, 54 C (130 F) SCAC.

Voltage regulator, Caterpillar digital

Generator mounted control panel, EMCP II+ in NEMA 1 enclosure and includes voltmeter, ammeter, frequency meter, with separate LCD display for each, 0.5% accuracy; voltmeter/ammeter phase selector switch; cool down timer factory set for five minutes; emergency stop switch with LED indicator; LCD indicator for engine speed, battery DC volts, lube oil pressure, coolant temperature, operating hours and system diagnostic codes; auxiliary relay, illumination lights, automatic starting controls quoted above, 3 phase power metering, (kW, kVAR, PF, %kW, kWh, L-N voltages), programmable protective relay functions, (under voltage, over voltage, over frequency, under frequency, reverse power, over current (phase and total), (kW level), 3 spare LED's(programmable).

Customer Communication Module - CCM, shipped loose, provides interface between engine ECM and remote Personal Computer or other RS-232C device. Allows engine and generator operational and diagnostic parameters to be monitored and displayed. Provides the capability to remotely start or stop the engine. Can be used with Hayes compatible modem and includes PC software. (One unit per site)

Customer Interface Module - CIM, shipped loose, provides dry contacts for low coolant temperature, low oil pressure, system not in automatic alarm, high coolant temperature alarm, high coolant level shutdown, low oil pressure shutdown, overcrank, overspeed shutdown, EMCP diagnostic shutdown.

Pre-alarm panel generator mounted per NFPA110 and includes all necessary contactors Starting motors-dual 24 VDC for use in an ambient of -22° to 68° F

Start switch is in the junction box).

Batteries consisting of two Caterpillar 12 volt 190 ampere-hour batteries with acid, rack and cables

Trickle charger, LaMarche A46-30-24, 120-volt AC input, 24 volt DC output, 30 ampere and is of the two-rate type which will float the batteries at 2.17 volts per cell and includes a low voltage alarm relay

Jacket water heater –single jacket water heater, UL recognized. LH mounted. 240-480 volt, single phase, 6 kW. Fixed thermostat, set for cut in at 60° C (140° F). Includes low water temperature switch.

Radiator, for remote mounting, Americool Model F16-103-1 horizontal dual core type with vertical air flow, galvanize coating on all components designed for landfill

environment, round tube finned construction, 25 HP single speed motor suitable for variable frequency drive by others, 277/480 volt, 3 phase, and of sufficient capacity to maintain a safe operating temperature in an ambient of 110°F, one 80 gallon and one 40 gallon expansion tank, fan vibration switch, low level switch for each circuit, and thermocouples for use with your variable speed drive (Note: the natural gas engine requires two cooling circuits, one for engine jacket water and one for the 130° aftercooler circuit. This will require two pipe runs from the engine to the radiator and back)

Stainless steel braided flexible connectors for installation at the radiator and engine
Anti-freeze, as required to fill system with 50/50 mixture
Exhaust silencer, 10" diameter, Maxim M-51 side inlet type for critical areas – includes type "D" legs installed by Maxim (shipped loose for your installation at the site)
Flexible exhaust fitting, stainless steel, 10" diameter – two provided
Shrink-wrap polyethylene protection applied at the factory prior to shipment
Field Testing using Wayne load bank
Startup and personnel training, 3 days per generator set
O & M Manuals - 5 sets
Drawings – 10 sets or as needed

WARRANTY: One year beginning with the date of start-up of the equipment

Item 2 – Caterpillar PowerLynx 5 kV Switchgear

The system is capable of operating the generators in parallel with the incoming utility source in the following Base Load Control mode:

The generators are operated in parallel with the utility source with the generators providing a pre-selected kW base load level. The station gensets shall be started by the station operator and paralleled to the live 4.16 kV bus manually via individual synchronizing selector switches.

Opening of the tie breaker shall disconnect genset cubicle load control circuits, and interconnect the governor modules for Isochronous load share operation to serve local station loads via the station service disconnect switch.

The following is a more detailed explanation of each switchgear control section:

Utility Control Section

- 1 - 1200A, 250 MVA, Utility Tie Vacuum CB, 120VAC charge / 24VDC trip, Electrically Operated, Draw Out
- 1 - CBCS w/ green and red lights
- 1 - Schweitzer SEL 387 multifunction protective relays
- 1 - SEL 2030 communications converter
- 1 - 86 Lockout Relay
- 2 - Test Switch, FT-1
- 1 - Set of 2 Utility VTs
- 1 - Set of 3 Utility CTs
- 1 - Utility Incoming **Station** Class Lightning Arrestor(3 Phase)
- 1 - Utility Incoming 3 Phase Surge Capacitors
- 1 - Remote Control Switch for 15 KV utility breaker

3 - Generator Control Section

- 1 - 1200A, 250 MVA, Generator Main Vacuum CB, 120VAC charge / 24VDC trip, Electrically Operated, Draw Out
- 1 - CBCS w/ green and red lights
- 1 - Beckwith M-3425 Generator Multifunction Protection Relay
- 1 - 86 Lockout Relay
- 2 - Test Switch, FT-1

- 1 - Set of 2 Generator VTs
- 1 - Set of 7 Generator CTs
- 1 - 200A, 10 second, 2400VAC (for 4160 Volt System) Neutral Grounding Resistor in enclosure, for field mounting by contractor – Includes 1 CT
- 1 - Generator Capacitors – Shipped Loose for field installation. Provided in a NEMA 1 enclosed cabinet. Each cabinet to be approximately 30 inches high by 24 inches wide by 13 inches deep.

Load Break Switch

- 1 - 600A, Fused, Load Break Switch
- 1 - Dead front, metal enclosed vertical section containing load interrupter switch and fuses
- 1 - Manually Operated
- 1 - 3 Pole
- 1 - 600Amp
- 1 - Three (3) Current Limiting fuses (100E)
- 1 - Door interlock with switch such that the switch must be opened before the door can be opened, and the door must be closed before the switch can be closed
- High Impact viewing window

Master Control Section

- 1 - PowerLynx® Control Section with:
 - 1 - PowerLynx® 15" Color Touch Screen
 - 1- "Auto dialer feature" – automatically dials selected phone numbers upon receipt of pre-determined faults/alarms.
 - 1 - System Graphic One Line Mimic. The Mimic shall graphically show each Generator source with its respective Main CB in a one-line representation. Utilizing colored lights and digital meters; the Mimic shall actively display the following:
 - Utility CB Open/Closed/Tripped
 - Utility Volts/Amps/kW/Frequency
 - Generator #1 CB Open/Closed/Tripped
 - Generator #1 Volts/Amps/kW/Frequency
 - Engine #1 Stopped/Running/Cooldown/Pre-Alarm/Shutdown
 - Engine #1 ECS Position Off/Auto/Manual/Cooldown
 - Generator #2 CB Open/Closed/Tripped
 - Generator #2 Volts/Amps/kW/Frequency
 - Engine #2 Stopped/Running/Cooldown/Pre-Alarm/Shutdown
 - Engine #2 ECS Position Off/Auto/Manual/Cooldown
 - Generator #3 CB Open/Closed/Tripped
 - Generator #3 Volts/Amps/kW/Frequency
 - Engine #3 Stopped/Running/Cooldown/Pre-Alarm/Shutdown
 - Engine #3 ECS Position Off/Auto/Manual/Cooldown
 - System Output Volts/Amps/kW/Frequency
 - System Summary Alarm
 - 1 - PowerLynx® System Metering (3P Voltage, 3P Current, Frequency, Power Factor, KW, KVAR), Control (Base Load Control only), and Protective Relaying including:
 - Device 27/59 – Bus Under/Over Voltage
 - Device 81O/U – Bus Under/Over Frequency
 - 1 - PowerLynx® System local Annunciation including:
 - Status, Light Only (Non-Latching)
 - Manual Mode (Red)
 - Auto Mode (Green)
 - System Not in Auto (Red)
 - Engine #1 Running (Red)
 - Engine #1 Stopped (Green)
 - Engine #1 Cooldown (Amber)
 - Gen #1 CB Open (Green)
 - Gen #1 CB Closed (Red)

Gen #1 Tripped (Amber)
Engine #1 Pre-Alarm (Amber)
Engine#1 Shutdown Fault (Red)
Engine #2 Running (Red)
Engine #2 Stopped (Green)
Engine #2 Cooldown (Amber)
Gen #2 CB Open (Green)
Gen #2 CB Closed (Red)
Gen #2 Tripped (Amber)
Engine #2 Pre-Alarm (Amber)
Engine#2 Shutdown Fault (Red)
Engine #3 Running (Red)
Engine #3 Stopped (Green)
Engine #3 Cooldown (Amber)
Gen #3 CB Open (Green)
Gen #3 CB Closed (Red)
Gen #3 Tripped (Amber)
Engine #3 Pre-Alarm (Amber)
Engine#3 Shutdown Fault (Red)

Alarm, Light and Horn (Non-Latching)

Emergency Mode (Red)
Bus Under frequency (Red)
Bus Under voltage (Red)
Processor Fault (Red)
Emergency Stop (Red)
Low System Battery (Red)

1 - PowerLynx® System Annunciation including:

Shutdown Alarm, Light and Horn (Latching)

High-High Methane (Utility Tie & Generator Breakers)
Fire System Operation (Utility Tie & Generator Breakers)
- includes N.C. contact for customer use
Blower Failure (Generator)
High-High Oxygen (Generator)
Tie Breaker Trip

Note: Each annunciation point to trip identified circuit breakers

Light and Horn (Latching)

Main power transformer high oil temperature
Main power transformer low oil level
Fire detection system trouble
High Methane
High Oxygen
Utility trip
Methane Detector sensor failure
Oxygen Detector sensor failure
Security System Operation
Bus Potential Ground Fault (59G)

Light and Horn (Non-Latching)

Air compressor low air pressure
Condensate Tank High Level
Sewage Holding Tank High Level
Potable Water Tank Low Level

1 - PowerLynx® Utility Metering (3P Voltage, 3P Current, Frequency, Power Factor, KW, KVAR), and Protective Relaying including:

Device 27/59 - Utility Under/Over Voltage
Device 810/U - Utility Under/Over Frequency
Device 47 - Phase Sequence/Phase Failure
Device 25 - Synch Check (Hardware redundant protective device)

- 3 - PowerLynx® Generator Metering (3P Voltage, 3P Current, Frequency, Power Factor, KW, KVAR, Synchroscope), Control, and Protective Relaying including:
 - Device 27/59 – Under/Over Voltage
 - Device 32 – Reverse Power
 - Device 810/U – Under/Over Frequency
 - Device 40 – Loss of Excitation
 - Device 25 – Synchronizing Check
 - Device 15 – Auto Synchronizer
 - Device 65 – Governor Load Sharing, Soft Loading Control
 - Device 90 – VAR/PF and Cross Current Compensation Controller
- 3 - PowerLynx® Engine-Generator local Annunciation including:
 - Status, Light Only (Non-Latching)
 - ECS Not in Auto (Red)
 - Gen ECS in Auto (Green)
 - Gen Emergency Mode (Red)
 - Gen Circuit Breaker Closed (Red)
 - Gen Circuit Breaker Open (Green)
 - Engine Stopped (Green)
 - Engine Running (Red)
 - Engine Cooldown (Amber)
 - Pre-Alarm, Light and Horn (Non-Latching)
 - Pre-High Coolant Temp (Amber)
 - Pre-Low Oil Pressure (Amber)
 - Low Lube Oil Temperature (Amber)
 - Low Coolant Temp (Amber)
 - Engine Low Battery (Amber)
 - Gen Fail to Synch (Amber)
 - High Inlet Air Temperature (Amber)
 - Low Water Level – After Cooler Surge Tank (Amber)
 - Low Water Level – Main Radiator Surge Tank (Amber)
 - Battery charger Malfunction
 - High Load – activates alarm only
 - Shutdown Alarm, Light and Horn (Latching)
 - Engine Overcrank (Red)
 - Engine Overspeed (Red)
 - Engine Low Oil Pressure (Red)
 - Engine High Coolant Temp (Red)
 - Engine Low Coolant Level (Red)
 - Engine Remote Emergency Shutdown (Red)
 - Gen Circuit Breaker Tripped (Red)
 - Gen Loss of Field (Red)
 - Gen Reverse Power (Red)
 - Gen Under voltage (Red)
 - Gen Over voltage (Red)
 - Gen Underfrequency (Red)
 - Gen Overfrequency (Red)
 - Low Water Pressure (Red)
 - Radiator Fan High Vibration (Red)
 - Air / Fuel Ratio
 - Low Load – causes alarm and Generator shutdown (if High Oxygen condition exists then alarm only will sound)

Cold Start Mode Enable Switch

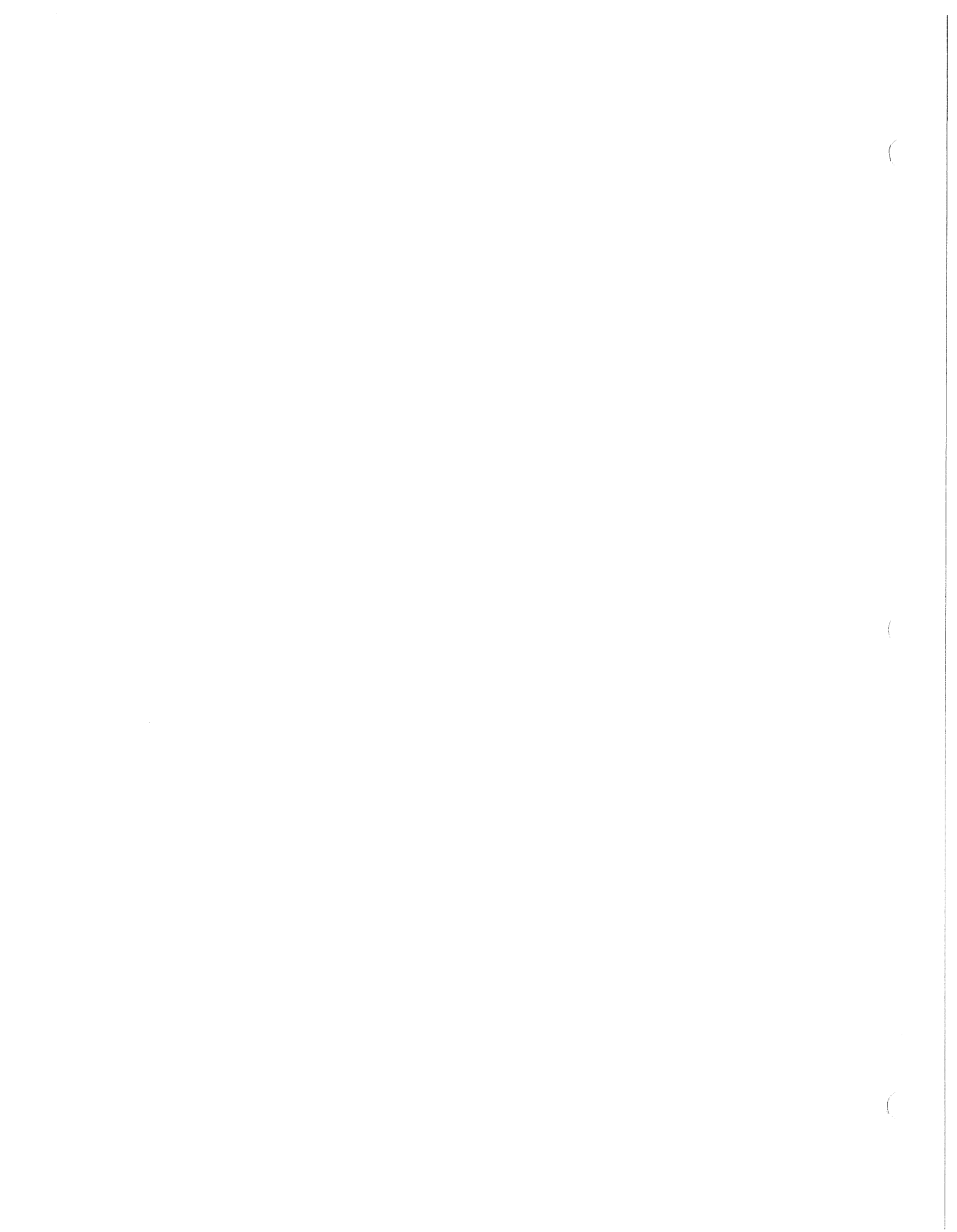
- 1 – Manual switch on the touch screen - Operating under this mode will start the generators in idle, and wait until the system reads normal jacket water temperature via the CCM. System will then allow units to parallel and export power. If CCM communication is lost, system will have a time period before allowing the units to proceed.

Additional Included Items

- x - 1200A Copper main bus, 3 phase, 3 wire, for use in a 4.16kV system, NEMA 1 enclosure, Section Heaters with thermostat
- 1 - Set of Breaker Accessories including:
 - 1 - Manual Racking Handle
 - 1 - Spring Charging Handle
 - 1 - Drawout Extension Rails (for breakers in upper cell)
 - 1 - Lifting Sling
 - 1 - Breaker Lifting Device
- 1 - Digital Metering Package – PML7330 ION, S1 Case, 85-240V with analog inputs
- 1 - Bus Ground Protection Scheme (Includes (1) Set of three bus VTs, one ABB 59G and one Burden Resistor)
- 1 - Remote MODBUS Data Table Interface to customer supplied SCADA system.
- 1 - Set of Test Plugs
- 1 - Startup and Check out
- 1 - PowerLynx® 1 year warranty
- 1 - The 24 vdc batteries and battery charger supplied for the PowerLynx ® system controls will be shipped loose for the contractor to install at the jobsite. One 20a 120vac dedicated emergency circuit will be required to be furnished by others to the Master Section.
- 1 - PowerLynx system control power is provided by a 24V best source DC system utilizing a 24VDC station battery, and the 24VDC Engine cranking batteries. 24VDC station battery and charger are included.

**Hardin County Landfill Gas to
Electric Generating Facility**

**480 Volt Motor Control Center
Contract**



U.S. Department of Agriculture
Rural Utilities Service

EQUIPMENT CONTRACT

NOTICE AND INSTRUCTIONS TO BIDDERS

1. Sealed proposals for the furnishing and delivering f.o.b. 480 Volt Motor Control Center

of equipment for the rural electric project of East Kentucky Power Cooperative, Inc.,
RUS designation KY 59 Fayette, (hereinafter called the "Owner") will be received by the Owner on or
before two o'clock P.M., April 27, 2005, at its office
at 4775 Lexington Road, Winchester KY at which time and place the proposals will be
publicly opened and read.

X privately opened. The Owner, subsequent to the bid opening, may elect to conduct clarifying discussions with the bidder to resolve any questions related to the substance of the bidder's proposal and to arrive at a final price for a responsive bid.

Any proposals received subsequent to the time specified will be promptly returned to the Bidder unopened.

2. **Obtaining Documents.** The Plans, Specifications, and Construction Drawings, together with all necessary forms and other documents for bidders may be obtained from the Owner, or from the Engineer Meade Electric

Company, Inc. at the latter's office at 9550 W 55th Street, Suite A, McCook IL
upon the payment of \$ N/A, which payment will not be subject to refund. The Plans, Specifications, and Construction Drawings may be examined at the office of the Owner or at the office of the Engineer.

3. **Manner of Submitting Proposals.** Proposals and all supporting instruments must be submitted on the forms furnished by the Owner and must be delivered in a sealed envelope addressed to the Owner. The name and address of the Bidder and the date and hour of the opening of bids must appear on the envelope in which the Proposal is submitted. Proposals must be completed in ink or typewritten. No alterations or interlineations will be permitted, unless made before submission, and initialed and dated. The successful Bidder will be required to execute two additional counterparts of the Proposal.

4. **Due Diligence.** Prior to the submission of the Proposal, the Bidder shall make and shall be deemed to have made a careful examination of the Plans, Specifications, Construction Drawings, and form of Proposal, and shall review the location and nature of the proposed construction, the transportation facilities, the kind and character of soil and terrain to be encountered, the kind of facilities required before and during the construction of the project, general local conditions, environmental and historic preservation considerations, and all other matters that may affect the cost and time of completion of the work. Bidder will be required to comply with all federal, state, and local laws, rules, and regulations applicable to its performance, including those pertaining to the licensing of contractors, and the Anti Kick-Back Act of 1986 (41 U.S.C. 51 et seq).

- ~~5. Proposals will be accepted only from those prequalified bidders invited by the Owner to submit a proposal.~~

6. **The Time for Delivery of the Equipment** is of the essence of the Contract and shall be as specified by the Engineer in the Proposal.

7. **Evaluation Factors.** *In estimating the lowest cost to the Owner as one of the factors in deciding the award of the Contract, the Owner will consider, in addition to the price quoted in the Proposals, the following:*

In conformance with all specifications

8. **Debarment Certification.** *The Bidder must provide to the Owner a suspension and debarment certificate in the form attached hereto.*
9. **Contract is Entire Agreement.** *The Contract to be effected by the acceptance of the Proposal shall be deemed to include the entire agreement between the parties thereto, and the Bidder shall not claim any modifications thereof resulting from any representation or promise made at any time by any officer, agent or employee of the Owner or by any other person.*
10. **Minor Irregularities.** *The Owner reserves the right to waive minor irregularities or minor errors in any Proposal, if it appears to the Owner that such irregularities or errors were made through inadvertence. Any such irregularities or errors so waived must be corrected on the Proposal in which they occur prior to the acceptance thereof by the Owner.*
11. **Bid Rejection.** *The Owner reserves the right to reject any or all Proposals.*
12. **Definition of Terms.** *The terms "Administrator" and "Engineer" as used throughout this Contract shall be as defined in Article VI, Section 1, of the Proposal.*

East Kentucky Power Cooperative, Inc.

Owner

By

Ray M. Falk

President & Chief Executive Officer

Title

 , 20

Date

PROPOSAL

TO:

East Kentucky Power Cooperative, Inc.

(hereinafter called the "Owner").

ARTICLE I--GENERAL

Section 1. Offer to Furnish and Deliver. *The undersigned (hereinafter called the "Bidder") hereby proposes to furnish and deliver the equipment (hereinafter called the "Equipment") described in the Plans, Specifications, and Construction Drawings for the following prices:*

Item: 480 Volt Motor Control Price: \$54,920.00
Center

Item: _____ Price: _____

The prices of Equipment set forth herein shall include the cost of delivery to:

Pearl Hollow Landfill, Hardin County, Kentucky

The prices set forth herein do not include any sums which are or may be payable by the Bidder on account of taxes imposed by any taxing authority upon the sale, purchase or use of the Equipment. If any such tax is applicable to the sale, purchase or use of the Equipment hereunder, the amount thereof shall be added to the purchase price and paid by the Owner

Section 2. Materials and Equipment. *The Bidder agrees to furnish and use in the construction of the project under this Proposal, in the event the Proposal is accepted, only such "fully accepted," "conditionally accepted," and "technically accepted" materials and equipment which have been accepted by RUS as indicated in the current RUS Informational Publication 202-1, "List of Materials Acceptable for Use on Systems of RUS Electrification Borrowers," including revisions adopted prior to the Bid Opening. The use of "conditionally accepted" or "technically accepted" materials and equipment requires prior consent by the Owner or Engineer.*

The Bidder will purchase all materials and equipment outright and not subject to any conditional sales agreements, bailment, lease or other agreement reserving unto the seller any right, title or interest therein. All such materials and equipment shall be new.

Section 3. Description of Contract. *The Notice and Instructions to Bidders, Plans, Specifications, and Construction Drawings, which by this reference are incorporated herein, together with the Proposal and Acceptance constitute the Contract. The Plans, Specifications, and Construction Drawings, including maps, special drawings, and approved modifications in standard specifications are attached hereto and identified as follows:*

Revere Electric Supply's Proposal dated 5-10-05

Section 4. Due Dillgence. *The Bidder has made a careful examination of the Plans, Specifications, and Construction Drawings attached hereto, and has become informed as to the location and nature of the proposed construction, the transportation facilities, the kind and character of soil and terrain to be encountered, and the kind of facilities required before and during the construction of the project, and*

has become acquainted with the labor conditions, federal, state, and local laws, rules, and regulations applicable to its performance.

Section 5. **Warranty of Good Faith.** The Bidder warrants that this Proposal is made in good faith and without collusion or connection with any person or persons bidding for the same work.

ARTICLE II--DELIVERY AND WARRANTY

Section 1. **Delivery.** The Bidder shall deliver the Equipment:

_____ within 60 days after receipt of the written order or orders of the Owner.

_____ not later than August 29, 2005.

The time for delivery shall be extended for the period of any reasonable delay due exclusively to causes beyond the control and without the fault of the Bidder, including, but not limited to, acts of God, fires, strikes, and floods.

Section 2. **Defective Materials and Workmanship.**

- a. All Equipment furnished hereunder shall be subject to the inspection, tests, and approval of the Owner and the Engineer, and the Bidder shall furnish all information required concerning the nature or source of any Equipment and provide adequate facilities for testing and inspecting the Equipment at the plant of the Bidder.
- b. The Equipment furnished hereunder shall become the property of the Owner upon delivery, provided, however, that the Owner or the Engineer, within one year after initial operation of the Equipment, or within the period for which the Equipment is guaranteed, whichever is longer, may reject any Equipment which does not comply with the Specifications attached hereto and made a part hereof or with the guarantees, if any, of the Bidder and the manufacturer. Upon any such rejection, the Bidder shall repair or replace such defective Equipment within a reasonable time after notice in writing from the Owner. If any such defective materials, equipment, or workmanship so replaced or repaired is found to be defective within one year after the completion of the replacement or repair, the Bidder shall replace or remedy such defective materials, equipment, or workmanship. In the event of failure by the Bidder so to do, the Owner may make such replacement and the cost and expense thereof shall be paid by and recoverable from the Bidder.
- c. All manufacturers' guarantees of Equipment, if any, shall be transferred and assigned to the Owner upon delivery of any Equipment and before final payment is made for such Equipment. Such guarantees shall be in addition to those required of the Bidder by other provisions of this Contract.

ARTICLE III--PAYMENT

Section 1. **Payments to Bidder.**

- a. Upon the shipment of any Equipment hereunder, the Bidder shall submit to the Owner a detailed statement of the Equipment shipped. The Owner shall, upon receipt of the Equipment, pay the Bidder ninety percent (90%) of the contract price of the Equipment. When the Equipment has been installed, placed in satisfactory operation, tested and accepted by the Owner, the Owner shall make final payments therefor to the Bidder; provided, however, such final payment

shall be made not later than 120 days after delivery of the Equipment, unless such acceptance by the Owner shall be withheld because of the fault of the Bidder.

- b. *No payment shall be due while the Bidder is in default in respect of any of the provisions of this Contract and the Owner may withhold from the Bidder the amount of any claim by a third party against either the Bidder or the Owner based upon an alleged failure of the Bidder to perform the work hereunder in accordance with the provisions of this Contract.*

ARTICLE IV--PARTICULAR UNDERTAKINGS OF THE BIDDER

The provisions of this Article IV apply to any work performed by the Bidder at the project site.

Section 1. Protection to Persons and Property. *The Bidder shall at all times take all reasonable precautions for the safety of employees on the project and of the public, and shall comply with all applicable provisions of federal, state, and local laws, rules, and regulations and building and construction codes, in addition to the safety rules and procedures of the Owner.*

The following provisions shall not limit the generality of the above requirements:

- a. *The Bidder shall at no time and under no circumstances cause or permit any employee of the Bidder to perform any work upon energized lines, or upon poles carrying energized lines, unless otherwise specified in the Notice and Instructions to Bidders.*
- b. *The Bidder shall transport and store all material in facilities and vehicles which are designed to protect the material from damage. The Bidder shall ensure that all vehicles, trailers, and other equipment used comply with all applicable licensing, traffic, and highway requirements.*
- c. *The Bidder shall conduct its operations to cause the least possible obstruction of public highways.*
- d. *The Bidder shall make good and fully repair all injuries and damages to the project or any portion thereof under the control of the Bidder by reason of any act of God or other casualty or cause whether or not the same shall have occurred by reason of the Bidder's negligence.*
 - (i) *To the maximum extent permitted by law, Bidder shall defend, indemnify, and hold harmless Owner and Owner's directors, officers, and employees from all claims, causes of action, losses, liabilities, and expenses (including reasonable attorney's fees) for personal loss, injury, or death to persons (including but not limited to Bidder's employees) and loss, damage to or destruction of Owner's property or the property of any other person or entity (including but not limited to Bidder's property) in any manner arising out of or connected with the Contract, or the materials or equipment supplied or services performed by Bidder, its subcontractors and suppliers of any tier. But nothing herein shall be construed as making Bidder liable for any injury, death, loss, damage, or destruction caused by the sole negligence of Owner.*
 - (ii) *To the maximum extent permitted by law, Bidder shall defend, indemnify, and hold harmless Owner and Owner's directors, officers, and employees from all liens and claims filed or asserted against Owner, its directors, officers, and employees, or Owner's property or facilities, for services performed or materials or equipment furnished by Bidder, its subcontractors and suppliers of any tier, and from all losses, demands, and causes of action arising out of any such lien or claim. Bidder shall promptly discharge or remove any such lien or claim by bonding, payment, or otherwise and shall notify Owner promptly when it has done so. If Bidder does not cause such lien or claim to be discharged or released by payment, bonding, or otherwise, Owner shall have the right (but shall not be obligated) to pay all sums necessary to obtain any such discharge or release and to deduct all amounts so paid from the amount due Bidder.*
 - (iii) *Bidder shall provide to Owner's satisfaction evidence of Bidder's ability to comply with the indemnification provisions of subparagraphs i and ii above, which evidence may include but may not be limited to a bond or liability insurance policy obtained for this purpose through a licensed surety or insurance company.*

- e. Upon violation by the Bidder of any of the provisions of this section, after written notice of such violation given to the Bidder by the Engineer or the Owner, the Bidder shall immediately correct such violation. Upon failure of the Bidder so to do the Owner may correct such violation at the Bidder's expense: Provided, however, that the Owner may, if it deems it necessary or advisable, correct such violation at the Bidder's expense without such prior notice to the Bidder.

Section 2. Insurance. The Bidder shall take out and maintain throughout the period of its operations at the project site the following types and minimum amounts of insurance:

- a. Workers' compensation and employers' liability insurance, as required by law, covering all its employees who perform any of the obligations of the Bidder under the contract. If any employer or employee is not subject to the workers' compensation laws of the governing state, then insurance shall be obtained voluntarily to extend to the employer and employee coverage to the same extent as though the employer or employee were subject to the workers' compensation laws.
- b. Public liability insurance covering all operations under the contract shall have limits for bodily injury or death of not less than \$1 million each occurrence, limits for property damage of not less than \$1 million each occurrence, and \$1 million aggregate for accidents during the policy period. A single limit of \$1 million of bodily injury and property damage is acceptable. This required insurance may be in a policy or policies of insurance, primary and excess including the umbrella or catastrophe form.
- c. Automobile liability insurance on all motor vehicles used in connection with the contract, whether owned, nonowned, or hired, shall have limits for bodily injury or death of not less than \$1 million per person and \$1 million each occurrence, and property damage limits of \$1 million for each occurrence. A single limit of \$1 million of bodily injury and property damage is acceptable. This required insurance may be in a policy or policies of insurance, primary and excess including the umbrella or catastrophe form.

The Owner shall have the right at any time to require public liability insurance and property damage liability insurance greater than those required in subsection "b" and "c" of this Section. In any such event, the additional premium or premiums payable solely as the result of such additional insurance shall be added to the Contract price.

The Owner shall be named as Additional Insured on all policies of insurance required in subsections "b" and "c" of this Section.

The policies of insurance shall be in such form and issued by such insurer as shall be satisfactory to the Owner. The Bidder shall furnish the Owner a certificate evidencing compliance with the foregoing requirements which shall provide not less than (30) days prior written notice to the Owner of any cancellation or material change in the insurance.

ARTICLE V--REMEDIES

Section 1. Liquidated Damages. The time of the delivery of the Equipment is of the essence of the Contract. Should the Bidder neglect, refuse or fail to deliver the Equipment within the time herein agreed upon, after giving effect to extensions of time, if any, herein provided, then, in that event and in view of the difficulty of estimating with exactness damages caused by such delay, the Owner shall have the right to deduct from and retain out of such moneys which may be then due, or which may become due and

payable to the Bidder the sum of N/A dollars (N/A) per day for each and every day that such delivery is delayed beyond the specified time, as liquidated damages and not as a penalty; if the amount due and to become due from the Owner to the Bidder is insufficient to pay in full any such liquidated damages, the Bidder shall pay to the Owner the amount necessary to effect such payment in full: Provided, however, that the Owner shall promptly notify the Bidder in writing of the manner in which the amount retained, deducted or claimed as liquidated damages was computed.

Section 2. Cumulative Remedies. *Every right or remedy herein conferred upon or reserved to the Owner or the Government or the Administrator shall be cumulative, shall be in addition to every right and remedy now or hereafter existing at law or in equity or by statute and the pursuit of any right or remedy shall not be construed as an election: Provided, however, that the provisions of Section 1 of this Article shall be the exclusive measure of damages for failure by the Bidder to deliver the Equipment within the time herein agreed upon.*

ARTICLE VI--MISCELLANEOUS

Section 1. Definitions.

- a. *The term "Administrator" shall mean the Administrator of the Rural Utilities Service of the United States of America and his or her duly authorized representative or any other person in whom or authority in which may be vested the duties and functions which the Administrator is now authorized by law to perform.*
- b. *The term "Engineer" shall mean the Engineer employed by the Owner, to provide engineering services for the project and said Engineer's duly authorized assistants and representatives.*

Section 2. Materials and Supplies. *In the performance of this contract there shall be furnished only such unmanufactured articles, materials, and supplies as have been mined or produced in the United States or in any eligible country, and only such manufactured articles, materials, and supplies as have been manufactured in the United States or in any eligible country substantially all from articles, materials, or supplies mined, produced or manufactured, as the case may be, in the United States or in any eligible country; provided that other articles, materials, or supplies may be used in the event and to the extent that the Administrator shall expressly in writing authorize such use pursuant to the provisions of the Rural Electrification Act of 1938, being Title IV of Public Resolution No. 122, 75th Congress, approved June 21, 1938. For the purposes of this section, an "eligible country" is any country that applies with respect to the United States an agreement ensuring reciprocal access for United States products and services and suppliers to the markets of that country, as determined by the United States Trade Representative. The Bidder agrees to submit to the Owner such certificates with respect to compliance with the foregoing provision as the Administrator from time to time may require.*

Section 3. Patent Infringement. *The Bidder shall hold harmless and indemnify the Owner from any and all claims, suits and proceedings for the infringement of any patent or patents covering Equipment purchased hereunder.*

Section 4. Compliance with Laws. *The Bidder shall comply with all federal, state, and local laws, rules, and regulations applicable to its performance under the contract and the construction of the project. The Bidder acknowledges that it is familiar with the Rural Electrification Act of 1936, as amended, the Anti Kick-Back Act of 1986 (41 U.S.C. 51 et seq), and 18 U.S.C. §§ 286, 287, 641, 661, 874, 1001, and 1366, as amended.*

The Bidder represents that to the extent required by Executive Orders 12549 (3 CFR, 1985-1988 Comp., p. 189) and 12689 (3 CFR, 1989 Comp., p. 235), Debarment and Suspension, and 7 CFR part 3017, it has submitted to the Owner a duly executed certification in the form prescribed in 7 CFR part 3017.

The Bidder represents that, to the extent required, it has complied with the requirements of Pub. L. 101-121, Section 319, 103 Stat. 701, 750-765 (31 U.S.C. 1352), entitled "Limitation on use of appropriated funds to influence certain Federal contracting and financial transactions," and any rules and regulations issued pursuant thereto.

Section 5. Equal Opportunity Provisions.

a. *Bidder's Representations*

The Bidder represents that:

It has , does not have , 100 or more employees, and if it has, that it has , has not , furnished the Equal Employment Opportunity-Employers Information Report EEO-1, Standard Form 100, required of employers with 100 or more employees pursuant to Executive Order 11246 of September 24, 1965, and Title VII of the Civil Rights Act of 1964.

The Bidder agrees that it will obtain, prior to the award of any subcontract for more than \$10,000 hereunder to a subcontractor with 100 or more employees, a statement, signed by the proposed subcontractor, that the proposed subcontractor has filed a current report on Standard Form 100.

The Bidder agrees that if it has 100 or more employees and has not submitted a report on Standard Form 100 for the current reporting year and that if this Contract will amount to more than \$10,000, the Bidder will file such report, as required by law, and notify the Owner in writing of such filing prior to the Owner's acceptance of this Proposal.

b. *Equal Opportunity Clause. During the performance of this Contract, the Bidder agrees as follows:*

(1) *The Bidder will not discriminate against any employee or applicant for employment because of race, color, religion, sex or national origin. The Bidder will take affirmative action to ensure that applicants are employed, and that employees are treated during employment without regard to their race, color, religion, sex or national origin. Such action shall include, but not be limited to, the following: Employment, upgrading, demotions or transfer, recruitment or recruitment advertising; layoff or termination; rates of pay or other forms of compensation; and selection of training, including apprenticeship. The Bidder agrees to post in conspicuous places, available to employees and applicants for employment, notices to be provided setting forth the provisions of this Equal Opportunity Clause.*

(2) *The Bidder will, in all solicitations or advertisements for employees placed by or on behalf of the Bidder, state that all qualified applicants will receive consideration for employment without regard to race, color, religion, sex or national origin.*

(3) *The Bidder will send to each labor union or representative of workers, with which it has a collective bargaining agreement or other contract or understanding, a notice to be provided advising the said labor union or workers' representative of the Bidder's commitments under this section, and shall post copies of the notice in conspicuous places available to employees and applicants for employment.*

(4) *The Bidder will comply with all provisions of Executive Order 11246 of September 24, 1965, and the rules, regulations and relevant orders of the Secretary of Labor.*

(5) *The Bidder will furnish all information and reports required by Executive Order 11246 of September 24, 1965, and by rules, regulations, and orders of the Secretary of Labor, or pursuant thereto, and will permit access to its books, records, and accounts by the administering agency and the Secretary of Labor for purposes of investigation to ascertain compliance with such rules, regulations, and orders.*

(6) *In the event of the Bidder's noncompliance with the Equal Opportunity Clause of this Contract or with any of the said rules, regulations, or orders, this Contract may be canceled, terminated, or suspended in whole or in part, and the Bidder may be declared ineligible for further Government contracts or federally assisted construction contracts in accordance with procedures authorized in Executive Order 11246 of September 24, 1965, and such other sanctions may be imposed and remedies invoked as provided in Executive Order 11246 of*

September 24, 1965, or by rule, regulation, or order of the Secretary of Labor, or as provided by law.

(7) *The Bidder will include this Equal Opportunity Clause in every subcontract or purchase order unless exempted by the rules, regulations, or order of the Secretary of Labor issued pursuant to Section 204 of Executive Order 11246 of September 24, 1965, so that such provisions will be binding upon each subcontractor or vendor. The Bidder will take such action with respect to any subcontract or purchase order as the administering agency may direct as a means of enforcing such provisions, including sanctions for noncompliance; Provided, however, that in the event Bidder becomes involved in, or is threatened with, litigation with a subcontractor or vendor as a result of such direction by the administering agency, the Bidder may request the United States to enter into such litigation to protect the interests of the United States.*

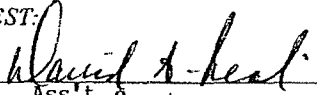
see attached EKPC additions page 1

- c. *Certificate of Nonsegregated Facilities. The Bidder certifies that it does not maintain or provide for its employees any segregated facilities at any of its establishments, and that it does not permit its employees to perform their services at any location, under its control, where segregated facilities are maintained. The Bidder certifies further that it will not maintain or provide for its employees any segregated facilities at any of its establishments, and that it will not permit its employees to perform their services at any location, under its control, where segregated facilities are maintained. The Bidder agrees that a breach of this certification is a violation of the Equal Opportunity Clause in this Contract. As used in this certification, the term "segregated facilities" means any waiting rooms, work areas, restrooms and washrooms, restaurants and other eating areas, timeclocks, locker rooms and other storage or dressing areas, parking lots, drinking fountains, recreation or entertainment areas, transportation, and housing facilities provided for employees which are segregated by explicit directive or are in fact segregated on the basis of race, color, religion, or national origin, because of habit, local custom, or otherwise. The Bidder agrees that (except where it has obtained identical certifications from proposed subcontractors for specific time periods) it will obtain identical certifications from proposed subcontractors prior to the award of subcontracts exceeding \$10,000 which are not exempt from the provisions of the Equal Opportunity Clause, and that it will retain such certifications in its files.*

Section 6. Successors and Assigns. *Each and all of the covenants and agreements herein contained shall extend to and be binding upon the successors and assigns of the parties hereto. The Owner and Bidder acknowledge that this Contract is assigned to the Government, acting through the Administrator, for security purposes under the Owner's mortgage and security instrument.*

Section 7. Independent Contractor. *The Bidder shall perform the work as an independent contractor, not as a subcontractor, agent, or employee of the Owner. Upon acceptance of this Proposal, the successful Bidder shall be the Contractor and all references in the Proposal to the Bidder shall apply to the Contractor.*

Section 8. Approval by the Administrator: This contract does _____, does not X, require approval of the Administrator. No acceptance of a Proposal for a contract upon which approval of the Administrator is required shall become effective until the contract has been approved by the Administrator; provided that no obligation shall arise hereunder unless such approval is given within one-hundred twenty (120) days after the date set for the opening of the proposals. The acceptance of a Proposal for a contract upon which approval of the Administrator is not required shall become effective the date of acceptance by the Owner.

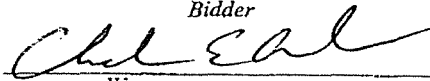
ATTEST:


Ass't Secretary

Dated August 5, 2005

Meade Electric Company, Inc.

Bidder



Vice President

9550 W 55th Street, Suite A
McCook, IL 60525

Address

The Proposal must be signed with the full name of the Bidder. If the Bidder is a partnership, the Proposal must be signed in the partnership name by a partner. If the Bidder is a corporation, the Proposal must be signed in the corporate name by a duly authorized officer and the corporate seal affixed and attested by the Secretary of the Corporation.

ACCEPTANCE

Subject to the approval of the Administrator, if approval of the Administrator is required, the Owner hereby accepts the foregoing Proposal of the Bidder, Meade Electric Company, Inc.

_____ for the following Equipment:

480 Volt Motor Control Center, Variable Frequency Drive (VFD),

shipping to the Pearl Hollow Landfill, as quoted by Revere Electric

Supply and a Meade handling adder

for a total contract price of Fifty-Four Thousand Nine Hundred Twenty Dollars (\$54,920.00)

East Kentucky Power Cooperative, Inc.

Owner

By

Ray M. Falk
President & CEO

Della E. Dameron, Forandon
Secretary
behalf of the Corporate Secretary

_____, 20____
Date of Contract

EKPC Additions, Page 9 dated March 7, 2005

The Following Additional General Conditions Shall be Added to This Contract RUS Form 198:

Page 9, Article VI, Section 5, the following paragraph will be added as (8)

- "(8) When this order and contract refer to manufactured goods or to work or services, Seller warrants and agrees that it has complied and will comply with (1) Fair Labor Standards Act; (2) Social Security and Workman's Compensation Laws, if work is done on Purchaser's premises; and (3) all other applicable Federal, State and local laws, codes and regulations. It is the policy of Purchaser to provide equal opportunities in employment without regard to race, color, religion, sex, age, or national origin and to employ and advance qualified disabled veterans, handicapped or disabled persons and Vietnam era veterans. Purchaser complies with the requirements placed on government contractors and subcontractors by Executive Order 11246, Section 402 of the Vietnam Era Veterans Readjustment Assistance Act of 1974 and Section 503 of the Rehabilitation Act of 1973, and it is agreed that as a Subcontractor, vendor, or supplier, Seller will also comply with the Executive Order, laws, and applicable rules and regulations. Seller agrees to indemnify Purchaser and save Purchaser harmless if Seller fails to comply with the foregoing, and in the event of such failure Purchaser may, in addition, cancel this order and contract. Seller invoices for work or materials covered hereby shall state that Seller has complied with the requirements of the Fair Labor Standards Act of 1938 as amended."

U.S. Department of Agriculture
Rural Utilities Service

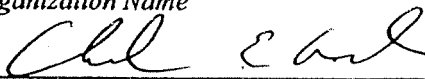
*Certification Regarding Debarment, Suspension, and Other Responsibility
Matters – Primary Covered Transactions*

This certification is required by the regulations implementing Executive Order 12549, Debarment and Suspension, 7 CFR Part 3017, Section 3017.510, Participants' Responsibilities. The regulations were published as Part IV of the January 30, 1989, Federal Register (pages 4722-4733). Copies of the regulations may be obtained by contacting the Department of Agriculture agency offering the proposed transaction.

- (1) The prospective primary participant certifies to the best of its knowledge and belief, that it and its principals:
- (a) are not presently debarred, suspended, proposed for Debarment, declared ineligible, or voluntarily excluded from covered transactions by any Federal department or agency;
 - (b) have not within a 3-year period preceding this proposal been convicted of or had a civil judgment rendered against them for commission of fraud or a criminal offense in connection with obtaining, attempting to obtain, or performing a public (Federal, State, or local) transaction or contract under a public transaction; violation of Federal or State antitrust statutes or commission of embezzlement, theft, forgery, bribery, falsification or destruction of records, making false statements, or receiving stolen property;
 - (c) are not presently indicted for or otherwise criminally or civilly charged by a governmental entity (Federal, State, or local) with commission of any of the offenses enumerated in paragraph (1)(b) of this certification; and
 - (d) have not within a 3-year period preceding this application/proposal had one or more public transactions (Federal, State, or local) terminated for cause or default.
- (2) Where the prospective primary participant is unable to certify to any of the statements in this certification, such prospective participant shall attach an explanation to this proposal.

Meade Electric Company, Inc.

Organization Name



Authorized Representative's Signature

August 5, 2005

Date

Charles E. Anderson

Name Typed or Printed

(This is not an official Government form. It has been prepared to assist and expedite the application process and is only intended for use in the Rural Broadband Access Loan and Loan Guarantee Program.)

U.S. Department of Agriculture
Rural Utilities Service

*Certification Regarding Lobbying for Contracts, Grants,
Loans, and Cooperative Agreements*

The undersigned certifies, to the best of his or her knowledge and belief, that:

- (1) No Federal appropriated funds have been paid or will be paid, by or on behalf of the undersigned, to any person for influencing or attempting to influence an officer or employee of any agency, a Member of Congress, an officer or employee of Congress, or an employee of a Member of Congress in connection with the awarding of any Federal contract, the making of any Federal grant or loan, the entering into of any cooperative agreement, and the extension, continuation, renewal, amendment, or modification of any Federal contract, grant, loan, or cooperative agreement.
- (2) If any funds other than Federal appropriated funds have been paid or will be paid to any person for influencing or attempting to influence an officer or employee of any agency, a Member of Congress, an officer or employee of Congress, or an employee of a Member of Congress in connection with this Federal contract, grant, loan, or cooperative agreement, the undersigned shall complete and submit Standard Form-LLL, "Disclosure Form to Report Lobbying," in accordance with its instructions. (Copies of this form may be obtained from RUS.)
- (3) The undersigned shall require that the language of this certification be included in the award documents for all subawards at all tiers (including subcontracts, subgrants, and contracts under grants, loans, and cooperative agreements) and that all subrecipients shall certify and disclose accordingly.

This certification is a material representation of fact upon which reliance was placed when this transaction was made or entered into. Submission of this certification is a prerequisite for making or entering into this transaction imposed by section 1352, title 31, U.S. Code. Any person who fails to file the required certification shall be subject to a civil penalty of not less than \$10,000 and not more than \$100,000 for each such failure.

Meade Electric Company, Inc.

Organization Name



August 5, 2005

Authorized Representative's Signature

Date

Charles E. Anderson

Name Typed or Printed

(This is not an official Government form. It has been prepared to assist and expedite the application process and is only intended for use in the Rural Broadband Access Loan and Loan Guarantee Program.)



9550 W. 55th Street • Suite A • McCook, IL 60525 • (708) 588-2500

April 18, 2005

Revere Electric
ATTN: Ron Pyrzynski
2501 W. Washington
Chicago, IL 60612

RE: East Kentucky Power Cooperative Landfill Gas Energy Projects
480 Volt Motor Control Center Equipment Bid Solicitation

Dear Mr. Pyrzynski:

The Meade Electric Company is issuing equipment bid solicitations for the East Kentucky Power Cooperative Pearl Hollow Landfill Gas Energy Project in Hardin County, KY.

The following documentation should be utilized in the preparation of your bid:

- Specification sheet
- Equipment bid sheet
- MCC Tabulation Sheet

Please note that your bids should include the attached bid sheet, a list of any exceptions and clarifications, and any product descriptive literature which you believe is necessary to fully define your offering.

Bids are due by 2:00 p.m. April 27, 2005 and should be submitted to:

Ralph Tyree
East Kentucky Power Cooperative
4775 East Lexington Road
Winchester, KY 40391
Telephone: 859-744-4812
Fax: 859-744-6008

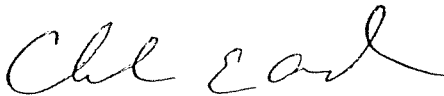
A copy of your proposal should be sent to my attention at the address indicated on this letterhead. Submission of bids by facsimile is acceptable. East Kentucky Power Cooperative will conduct a private bid opening and reserves the right to reject any and all bids.

April 18, 2005
Revere Electric
ATTN: Ron Pyrzynski
Page Two

Equipment delivery is being requested within approximately 90 days of receipt of order, which is anticipated to be released on or before May 16, 2005. Pricing should include delivery F.O.B. job site, and additional pricing information should be provided for extended warranty. Payment terms will be per RUS Form 220.198 *PR* CEA

If you have any technical questions, please contact me in writing via fax at 708-588-2501 or via e-mail at canderson@meadeelectric.com

Sincerely,



Charles E. Anderson
Vice President

cc: R. Tyree
Enclosures

EQUIPMENT BID SHEET
480V MOTOR CONTROL CENTER – 5 Engine Configuration

PHYSICAL DATA:

Dimensions: _____ L X _____ W X _____ H

Weight: _____ Lbs

ELECTRICAL DATA:

Main Bus Rating: Material = _____, _____ A Continuous, _____ A Withstand

Section Bus Rating: Material = _____, _____ A Continuous, _____ A Withstand

Main Breaker: Type = _____, _____ A Continuous, _____ A Interrupting

Feeder Breaker: Motor Circuit Protector Type = _____, _____ A Interrupting

Thermal Magnetic Type = _____, _____ A Interrupting

PRICING QUOTATION:

Price for MCC: \$ _____

Shipping to Pearl Hollow Landfill site (Hardin County, KY): \$ _____

Total Price, MCC plus Shipping: \$ _____

Alternate Price (VFD in lieu of Size 5 FVNR starter): \$ _____

MISCELLANEOUS INFORMATION:

Anticipated shop drawing date: _____ Days A.R.O.

Anticipated ship date: _____ Days A.R.O.

Standard Warranty Period: _____ after _____

Pricing for Extended Warranty (18 months after delivery): \$ _____

CLARIFICATIONS & EXCEPTIONS:

480V Motor Control Center Specification Sheet

Description:

The Motor Control Center (MCC) shall be a three phase, dead-front, free standing floor-mounted, indoor device consisting of draw-out unit buckets and fixed bus work housed in a sheet metal enclosure. The MCC shall be designed for power plant service and shall meet or exceed all applicable ANSI, NEMA, IEEE standards, and NEC® and CEA specifications.

The MCC vertical sections shall be approximately 20" wide by 20" deep by 90" high, and shall contain fully rated horizontal copper bus, 300A vertical copper bus, and a 1/4" by 2" copper ground bus. Wireways shall be provided on the bottom and right side of each vertical section for power and control wiring. Conduit entrance will be from the bottom of the MCC.

Unit buckets shall be plug-in and include safety features such as an interlocked door latching mechanism and padlockable handle mechanism with positive trip indication. Each unit bucket shall be provided with a control power transformer, indicating lights, control switches, and pull apart terminal blocks as indicated. The control power transformer shall be sized for the control load requirements plus 50VA, and be protected by primary and secondary fuses. Indicating lights shall be 120VAC transformer type and be provided with faceplates. Control switches shall contain operator, contact blocks and faceplates. Engraved phenolic nameplates shall be provided on each unit bucket with descriptions as indicated.

Overcurrent devices shall be 3 pole, thermal-magnetic circuit breakers for general purpose loads, and 3 pole, magnetic only circuit breakers with adjustable elements for motor starter protection. The main circuit breaker shall be thermal-magnetic and contain an adjustable magnetic trip element.

Full Voltage Non-Reversing (FVNR) and Two Speed Two Winding (TSTW) Starters shall consist of NEMA rated 3 pole devices with 120VAC coil and normally open (N.O.) and normally closed (N.C.) auxiliary contacts provided as required. Two speed contactors shall be mechanically and electrically interlocked, and provided with a time-delay relay having an adjustable 1 to 30 second delay range, to provide for motor speed coast down when transitioning from high to low speeds. Motor Overload protection devices shall be thermal bimetallic type with adjustable current setting range, manual reset, and contact for control circuit interlock.

Variable frequency drives (VFD) shall be designed to control NEMA Design B motors in variable torque (fan) applications. The drives shall provide volts/hertz control over a minimum 10 to 90 Hz output range with capability for 150% 1 minute overload, +/- 3 Hz line frequency variation and +/-10% line voltage variation. The drive shall contain integral over-current, motor overload, ground fault, over-voltage and over-temperature protection. The drives shall include input line filters to limit harmonic noise to within the specifications indicated by IEEE Standard 519-1992. The drive control system shall

provide for PID loop control with 4-20mA Input Signal, Local Speed Display, Auto/Manual Speed Control Selector, Local Manual Speed Control (e.g., potentiometer), and auxiliary dry contacts. The drive shall be a minimum of 95% efficient.

The MCC shall include a solid state metering and voltage protection device (IQ DP-4000 or equal), capable of measuring volts, amps, frequency, watts, VARs, volt-amperes, and % total harmonic distortion, and also providing alarm contact outputs for over-voltage, under-voltage, phase loss, phase unbalance and phase reversal. The metering device shall be provided with necessary current and potential transformers and overcurrent protection.

The MCC Finish shall include a three-step electrodeposited and oven-hardened epoxy primer (E-coat), as well as a polyester powder coat and a urethane final coat. Color shall be manufacturer's standard ANSI white on bucket interior and gray on MCC exterior.

Tests to be performed on the MCC shall include:

- Insulation Resistance
- Over Potential
- Control Circuit Functional Test
- Other Routine Manufacturer Tests

Electrical Ratings:

Voltage Rating:	480Y/277
Nominal Insulation Rating (Volts):	600V
60-Hz Dry 1 min Withstand:	1.6kV
Main Horizontal Bus Continuous Current Rating:	600A
Vertical Bus Continuous Current Rating:	300A
Fault Current Withstand Rating:	42,000A rms sym minimum
Overcurrent Device Interrupting Rating:	25,000A rms sym minimum

Terminal Cable Connections:

Main Breaker Terminals:	2 – 500kcmil per Phase
Grounding Bus:	#4/0 AWG NEMA 2 Hole (maximum)

Approved Manufacturers:

Allen-Bradley
Cutler-Hammer
Square D

Alternate Bid Item:

Furnish one (1) VFD in lieu of one (1) Size 5 FVNR starter for Fuel Gas Compressor Blower motor.

Motor Control Center Tabulation Sheet

MCC Designation: MCC
 Electrical Ratings: 480V, 3 Phase, 3 Wire, 60 Hz
 600A Continuous, 42,000A rms Symmetrical Interrupting
 NEMA 1A
 Enclosure: Class 1, Type B Wiring
 Class/Type: Bottom Right
 MCB Location: Bottom
 Ground Bus Location: Bottom Only
 Conduit Entrance: Bottom Only

#	UNIT TYPE	UNIT RATING	LOAD RATING	LOAD F.L.A.	UNIT C.P.T.	CONTROL CIRCUIT DEVICES			OTHER DEVICES	NAMEPLATE ENGRAVING		
						CONTROL SWITCHES	INDICATING LIGHTS	AUX. CONTACTS		LINE 1	LINE 2	LINE 3
1	MCB	600A	440KVA*	528*	n/a	n/a	n/a	n/a	MCC	Main Circuit	Breaker	
2	R&M	600A	n/a	n/a	1	n/a	n/a	n/a	3-PT's & 3-CT's	Relaying and Metering	Devices	
3	FVNR	Size 5	150HP	156	1	H-O-A	R,G	2	Time Delay Relay	Gas Compressor	Motor	
4	TSSW	Size 1	5/1.25HP	7.6/3	1	H-O-A,L-H	R,G	2**	Speed Control Pot.	Engine #1	Motor	
5	VFD	Size 2	25HP	34	1	H-O-A	R,G	2	Speed Control Pot.	Engine #2	Fan Motor	
6	VFD	Size 2	25HP	34	1	H-O-A	R,G	2	Speed Control Pot.	Engine #3	Fan Motor	
7	VFD	Size 2	25HP	34	1	H-O-A	R,G	2	Speed Control Pot.	Engine #4	Fan Motor	
8	VFD	Size 2	25HP	34	1	H-O-A	R,G	2	Speed Control Pot.	Engine #5	Fan Motor	
9	VFD	Size 2	25HP	34	1	H-O-A	R,G	2	Control Relay	Engine Room	Fan Motor	
10	FVNR	Size 1	10HP	14	1	H-O-A	R,G	2	Control Relay	Engine Room	Motor #SF-1	
11	FVNR	Size 1	10HP	14	1	H-O-A	R,G	2	Control Relay	Engine Room	Motor #SF-2	
12	FVNR	Size 1	10HP	14	1	H-O-A	R,G	2	Control Relay	Engine Room	Motor #SF-3	
13	FVNR	Size 1	10HP	14	1	H-O-A	R,G	2	Control Relay	Engine Room	Motor #SF-4	
14	FVNR	Size 1	10HP	14	1	H-O-A	R,G	2	Control Relay	Engine Room	Motor #SF-5	
15	FVNR	Size 1	5HP	7.6	1	H-O-A	R,G	2	Control Relay	Engine Room	Motor #EF-1	
16	FVNR	Size 1	5HP	7.6	1	H-O-A	R,G	2	Control Relay	Engine Room	Motor #EF-2	
17	FVNR	Size 1	5HP	7.6	1	H-O-A	R,G	2	Control Relay	Engine Room	Motor #EF-3	
18	FVNR	Size 1	5HP	7.6	1	H-O-A	R,G	2	Control Relay	Engine Room	Motor #EF-4	
19	FVNR	Size 1	5HP	7.6	1	H-O-A	R,G	2	Control Relay	Engine Room	Motor #EF-5	
20	FVNR	Size 1	1HP	1.8	1	H-O-A	R,G	2	Control Relay	Compressor Rm	Motor #EF-6	
21	CB	30A	17.4KVA	24	n/a	n/a	n/a	n/a	Control	Room HVAC	#RTU-1	
22	CB	20A	10HP	14	n/a	n/a	n/a	n/a	Air Compressor	Motor Control	Feeder #1	
23	CB	20A	10HP	14	n/a	n/a	n/a	n/a	Air Compressor	Motor Control	Feeder #2	
24	CB	125A	50KVA	104	n/a	n/a	n/a	n/a	Transformer T-3 & Panelboard	#DP-1 Feed	#DP-1 Feed	
25	CB	70A	45KVA	54	n/a	n/a	n/a	n/a	Transformer T-4 & Panelboard	#DP-2 Feed	#UH-1, 2 & 3	
26	CB	50A	30KW	36	n/a	n/a	n/a	n/a	Engine Room	Unit Heaters	Feed	
27	CB	20A	3HP	5.4	n/a	n/a	n/a	n/a	Condensate	Pump		
28	FVNR	Size 1	n/a	n/a	1	H-O-A	R,G	2	Spare	Spare		
29	CB	30A	n/a	n/a	n/a	n/a	n/a	n/a	Spare	Spare		
30	CB	20A	n/a	n/a	n/a	n/a	n/a	n/a	Spare	Spare		

LEGEND:
 MCB Main Circuit Breaker
 G.F.I. Ground Fault Interrupting Device
 R&M Electronic Protective Relaying & Metering Devices
 PT Potential Transformer
 CT Current Transformer
 FVNR Full Voltage Non-Reversing Combination Starter
 TSTW Two Speed Two Winding Combination Starter
 CB Circuit Breaker
 XFMR Dry Type Power Transformer
 PNLBD Panelboard
 VFD Variable Frequency Drive

NOTES:
 * - Maximum Coincidental Load
 ** - Provide for both High-Speed and Low-Speed Contactors
 VFD+ - Provisions only for future VFD additions.

OTHER DEVICES:
 CPT Control Power Transformer
 H-O-A Hand-Off-Auto, 3 Position, Maintained Contact Selector Switch
 L-H Low-High, 2 Position, Maintained Contact Selector Switch
 R Red (Run) Indicating Light
 G Green (Stopped) Indicating Light
 n/a Not Applicable

EKPC

Pearl Hollow Landfill Gas-to-Energy Project

EQUIPMENT BID SHEET
480V MOTOR CONTROL CENTER - 5 Engine Configuration

PHYSICAL DATA:

Dimensions: 165" LX 20" WX 90" H

Weight: 5,500 Lbs Est.

ELECTRICAL DATA:

Main Bus Rating: Material = CU, 600 A Continuous, 42KA Withstand

Section Bus Rating: Material = CU, 300 A Continuous, 42K A Withstand

Main Breaker: Type = C-H, LD, 600 A Continuous, 25K A Interrupting

Feeder Breaker: Motor Circuit Protector Type = C-H, HMCP, 25K A Interrupting

Thermal Magnetic Type = C-H, FD, 25K A Interrupting

PRICING QUOTATION:

Price for MCC: \$ 39,020⁰⁰

Shipping to Pearl Hollow Landfill site (Hardin County, KY): \$ 2,000⁰⁰

Total Price, MCC plus Shipping: \$ 41,020⁰⁰

Alternate Price (VFD in lieu of Size 5 FVNR starter): \$ 54,920⁰⁰

MISCELLANEOUS INFORMATION:

Anticipated shop drawing date: 28 Days A.R.O.

Anticipated ship date: 42 Days A.R.O.

Standard Warranty Period: 1 YEAR after SHIPMENT

Pricing for Extended Warranty (18 months after delivery): \$ N/A

CLARIFICATIONS & EXCEPTIONS:

MEADE BID BASED UPON ALLEN-BRADLEY
2100 MOTOR CONTROL CENTER AS DISTRIBUTED
THROUGH REVERE ELECTRIC SUPPLY, CHICAGO, IL

MAY. -10' 05(TUE) 10:41

P. 011

ALLEN-BRADLEY CO. - PACKAGED CONTROL PRODUCTS DIVISION
2100 MOTOR CONTROL CENTER - STRUCTURE AND UNIT SPECS

QUOTATION PREPARED FOR: EAST KENTUCKY POWER BY SALESMAN: CHI440
MCC NAME: 480 VOLT MCC A-B REFERENCE: 1188580/0002
WIRING TYPE: B ENCLOSURE TYPE: 1 VOLTS: 480 DATE/TIME: 05/10/05 11:32
LAST ACCESS - DATE/TIME: 05/10/05 11:07

STANDARD STRUCTURE/SECTION SPECIFICATIONS

8	BASIC SECTION(S)	SCII
8	20 INCH DEEP SECTION(S)	SCII
8	BOTTOM PLATE(S)	SCII
8	MAIN BUS 600A COPPER/TIN	SCII
8	0.25" X 2" HORZ GRND BUS - BOTTOM	SCII
3	GROUND BUS SPLICE KIT: FOR 0.25" X 2" BUS	SCII
3	POWER BUS SPLICE KIT 600A CU/SN	SCII

STARTER/UNIT SPECIFICATIONS

ID	CATALOG-NUMBER	QTY	S/F	DELV
1	2193MB-BKC-52CT-80B500	1	2.0	SCII
3	2113B-BAB-3-4RG-6XP-41CA-89CF22-90011	5	1.0	SCI
4	2113B-BAB-3-4RG-6XP-39CA-89CF22-90011	5	1.0	SCI
5	2193F-AKC-32CB	1	1.0	SCI
6	2193F-AKC-31CB	2	1.0	SCI
7	2193F-BKC-41CB	1	1.0	SCI
8	2193F-AKC-37CB	1	1.0	SCI
9	2193F-AKC-35CB	1	1.0	SCI
10	2193F-AKC-31CB	1	1.0	SCI
11	2113B-BAB-3-4RG-6XP-41CA-90011	1	1.0	SCI
12	2193F-AKC-32CB	1	1.0	SCI
13	2193F-AKC-31CB	1	1.0	SCI
14	2190-BKC-52M-86KCXC	1	1.0	PENG
15	2163RA-034KB-3-14DA1C-14HA4-14RLX-44CA	5	3.0	SCI
16	2123EB-BAB-3-4RG-6XP-39CA-89CF22A-90011	1	2.0	SCI
17	2113B-BAB-3-4RG-6XP-35CA-90011	1	1.0	SCI
18	2163RA-180KB-3-14DA1C-14HA4-14RLX-52CA	1	6.0	SCII
	DOCUMENTATION - WITHIN EACH UNIT			
	2100-BK10	1	1.0	SCI
	HEATER ELEMENTS	42		SCI
	NAMEPLATES (ENGRAVED PHENOLIC)	31		SCI

***** TOTAL SPACE FACTORS USED ==> 47.0

***** DELIVERY PROGRAM TYPE: PENG

~~\$50,400.00~~ *Handwritten signature*

B-1

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P. 012

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ALLEN-BRADLEY CO. - PACKAGED CONTROL PRODUCTS DIVISION
2100 MOTOR CONTROL CENTER - STRUCTURE AND UNIT SPECS

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QUOTATION PREPARED FOR: EAST KENTUCKY POWER BY SALESPERSON: CHI440
MCC NAME: 480 VOLT MCC REFERENCE: 01188580/0002
ENCLOSURE TYPE: 1 VOLTS: 480 CURRENT DATE/TIME: 05/10/05 11:32
DELIVERY PROGRAM: PE-II LAST ACCESS - DATE/TIME: 05/10/05 11:07

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STANDARD STRUCTURE/SECTION SPECIFICATION

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QTY	DESCRIPTION
8	BASIC SECTION(S)
8	20 INCH DEEP SECTION(S)
8	BOTTOM PLATE(S)
8	MAIN BUS 600A COPPER/TIN
8	0.25" X 2" HORZ GRND BUS - BOTTOM
3	GROUND BUS SPLICE KIT: FOR 0.25" X 2" BUS
3	POWER BUS SPLICE KIT 600A CU/SN

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STARTER/UNIT SPECIFICATIONS

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UNIT ID: 0001 CATALOG NO.: 2193MB-EKC-52CT-80B500

WIRING DIAGRAM: CS70072523
DESCRIPTION: MAIN 3-POLE CIRCUIT BREAKER COMPARTMENT - BOTTOM FRAME MOUNTED
UNIT DELIVERY TYPE: SCII SPACE FACTOR: 2.0 600 AMP FRAME SIZE
NEMA ENCL TYPE 1 & 1G
STD LOCATION: 08J

OPTION	DESCRIPTION
52CT	600 AMP - THERMAL MAG CKT BRKR (STD INTERRUPT CAP) - 600A FRAME
80B500	(2) 500 KCMIL MECHANICAL TYPE LUG PER PHASE (CU/AL)

=====

UNIT ID: 0003 CATALOG NO.: 2113B-BAB-3-4RG-6XP-41CA-89CF22-90011

WIRING DIAGRAM: CS70540033
DESCRIPTION: FULL VOLTAGE NON-REVERSING STARTER W/ CIRCUIT BREAKER (FVNR)
UNIT DELIVERY TYPE: SCI UNIT WIRING TYPE: B SPACE FACTOR: 1.0
CNCL CIRCUIT VOLTS: 120 NEMA SIZE 1 STARTER NEMA ENCL TYPE 1 & 1G
480 VOLT LINE
STD LOCATION: 04A 04C 04E 04G 08A

OPTION	DESCRIPTION
3	DOOR MOUNTED SELECTOR SWITCH (HAND-OFF-AUTO)
4RG	(1-RED/1-GREEN) DOOR MOUNTED PILOT LIGHTS (ON-OFF)
6XP	100 W. EXTRA CAPACITY CONTROL CIRCUIT XFMR (PRIMARY FUSING)
41CA	10 HP - HMCP CIRCUIT BREAKER
89CF22	BULLETIN 700CF 4-POLE RELAY (2 N.O. & 2 N.C.)
900	(2) N.O. AUXILIARY CONTACTS PER STARTER OR CONTACTOR
911	(2) N.C. AUXILIARY CONTACTS PER STARTER OR CONTACTOR

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UNIT ID: 0004 CATALOG NO.: 2113B-BAB-3-4RG-6XP-39CA-89CF22-90011

B-2

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P. 013

STARTER/UNIT SPECIFICATIONS (CONTINUED)

WIRING DIAGRAM: CS70540033
 DESCRIPTION: FULL VOLTAGE NON-REVERSING STARTER W/ CIRCUIT BREAKER (FVNR)
 UNIT DELIVERY TYPE: SCI UNIT WIRING TYPE: B SPACE FACTOR: 1.0
 NEMA ENCL TYPE 1 & 1G
 CNTL CIRCUIT VOLTS: 120 NEMA SIZE 1 STARTER
 480 VOLT LINE
 STD LOCATION: 03C 03E 03G 03J 03L

OPTION	DESCRIPTION
3	DOOR MOUNTED SELECTOR SWITCH (HAND-OFF-AUTO)
4RG	(1-RED/1-GREEN) DOOR MOUNTED PILOT LIGHTS (ON-OFF)
6XP	100 W. EXTRA CAPACITY CONTROL CIRCUIT XFMR (PRIMARY FUSING)
39CA	5 HP - HMCP CIRCUIT BREAKER
89CF22	BULLETIN 700CF 4-POLE RELAY (2 N.O. & 2 N.C.)
900	(2) N.O. AUXILIARY CONTACTS PER STARTER OR CONTACTOR
911	(2) N.C. AUXILIARY CONTACTS PER STARTER OR CONTACTOR

UNIT ID: 0005 CATALOG NO.: 2193F-AKC-32CB

WIRING DIAGRAM: CS70002875
 DESCRIPTION: 3-POLE CIRCUIT BREAKER COMPARTMENT - PLUG-IN FEEDER
 UNIT DELIVERY TYPE: SCI SPACE FACTOR: 1.0 150 AMP FRAME SIZE
 NEMA ENCL TYPE 1 & 1G
 STD LOCATION: 03A.

OPTION	DESCRIPTION
32CB	30 AMP - THERMAL MAG CKT BRKR (MED INTERRUPT CAP)

UNIT ID: 0006 CATALOG NO.: 2193F-AKC-31CB

WIRING DIAGRAM: CS70002875
 DESCRIPTION: 3-POLE CIRCUIT BREAKER COMPARTMENT - PLUG-IN FEEDER
 UNIT DELIVERY TYPE: SCI SPACE FACTOR: 1.0 150 AMP FRAME SIZE
 NEMA ENCL TYPE 1 & 1G
 STD LOCATION: 02J 02L

OPTION	DESCRIPTION
31CB	20 AMP - THERMAL MAG CKT BRKR (MED INTERRUPT CAP)

UNIT ID: 0007 CATALOG NO.: 2193F-BKC-41CB

WIRING DIAGRAM: CS70002955
 DESCRIPTION: 3-POLE CIRCUIT BREAKER COMPARTMENT - PLUG-IN FEEDER
 UNIT DELIVERY TYPE: SCI SPACE FACTOR: 1.0 150 AMP FRAME SIZE
 NEMA ENCL TYPE 1 & 1G
 STD LOCATION: 02G

OPTION	DESCRIPTION
41CB	125 AMP - THERMAL MAG CKT BRKR (MED INTERRUPT CAP)

UNIT ID: 0008 CATALOG NO.: 2193F-AKC-37CB

B-3

STARTER/UNIT SPECIFICATIONS (CONTINUED)

WIRING DIAGRAM: CS70002875
DESCRIPTION: 3-POLE CIRCUIT BREAKER COMPARTMENT - PLUG-IN FEEDER
UNIT DELIVERY TYPE: SCI SPACE FACTOR: 1.0 150 AMP FRAME SIZE
NEMA ENCL TYPE 1 & 1G
STD LOCATION: 02E

OPTION	DESCRIPTION
37CB	70 AMP - THERMAL MAG CKT BRKR (MED INTERRUPT CAP)

UNIT ID: 0009 CATALOG NO.: 2193F-AKC-35CB

WIRING DIAGRAM: CS70002875
DESCRIPTION: 3-POLE CIRCUIT BREAKER COMPARTMENT - PLUG-IN FEEDER
UNIT DELIVERY TYPE: SCI SPACE FACTOR: 1.0 150 AMP FRAME SIZE
NEMA ENCL TYPE 1 & 1G
STD LOCATION: 02C

OPTION	DESCRIPTION
35CB	50 AMP - THERMAL MAG CKT BRKR (MED INTERRUPT CAP)

UNIT ID: 0010 CATALOG NO.: 2193F-AKC-31CB

WIRING DIAGRAM: CS70002875
DESCRIPTION: 3-POLE CIRCUIT BREAKER COMPARTMENT - PLUG-IN FEEDER
UNIT DELIVERY TYPE: SCI SPACE FACTOR: 1.0 150 AMP FRAME SIZE
NEMA ENCL TYPE 1 & 1G
STD LOCATION: 02A

OPTION	DESCRIPTION
31CB	20 AMP - THERMAL MAG CKT BRKR (MED INTERRUPT CAP)

UNIT ID: 0011 CATALOG NO.: 2113B-BAB-3-4RG-6XP-41CA-90011

WIRING DIAGRAM: CS70392246
DESCRIPTION: FULL VOLTAGE NON-REVERSING STARTER W/ CIRCUIT BREAKER (FVNR)
UNIT DELIVERY TYPE: SCI UNIT WIRING TYPE: B SPACE FACTOR: 1.0
CNTL CIRCUIT VOLTS: 120 NEMA SIZE 1 STARTER NEMA ENCL TYPE 1 & 1G
480 VOLT LINE
STD LOCATION: 01L

OPTION	DESCRIPTION
3	DOOR MOUNTED SELECTOR SWITCH (HAND-OFF-AUTO)
4RG	(1-RED/1-GREEN) DOOR MOUNTED PILOT LIGHTS (ON-OFF)
6XP	100 W. EXTRA CAPACITY CONTROL CIRCUIT XFMR (PRIMARY FUSING)
41CA	10 HP - HMCP CIRCUIT BREAKER
900	(2) N.O. AUXILIARY CONTACTS PER STARTER OR CONTACTOR
911	(2) N.C. AUXILIARY CONTACTS PER STARTER OR CONTACTOR

UNIT ID: 0012 CATALOG NO.: 2193F-AKC-32CB

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MAY. -10' 05(TUE) 10:42

P. 015

 =====
 STARTER/UNIT SPECIFICATIONS (CONTINUED)
 =====

WIRING DIAGRAM: CS70002875
 DESCRIPTION: 3-POLE CIRCUIT BREAKER COMPARTMENT - PLUG-IN FEEDER
 UNIT DELIVERY TYPE: SCI SPACE FACTOR: 1.0 150 AMP FRAME SIZE
 NEMA ENCL TYPE 1 & 1G
 STD LOCATION: 01J

OPTION	DESCRIPTION
32CB	30 AMP - THERMAL MAG CKT BRKR (MED INTERRUPT CAP)

 =====
 UNIT ID: 0013 CATALOG NO.: 2193F-AKC-31CB

WIRING DIAGRAM: CS70002875
 DESCRIPTION: 3-POLE CIRCUIT BREAKER COMPARTMENT - PLUG-IN FEEDER
 UNIT DELIVERY TYPE: SCI SPACE FACTOR: 1.0 150 AMP FRAME SIZE
 NEMA ENCL TYPE 1 & 1G
 STD LOCATION: 01G

OPTION	DESCRIPTION
31CB	20 AMP - THERMAL MAG CKT BRKR (MED INTERRUPT CAP)

 =====
 UNIT ID: 0014 CATALOG NO.: 2190-BKC-52M-86KCXC

WIRING DIAGRAM: CS70153630
 DESCRIPTION: METERING COMPARTMENT
 UNIT DELIVERY TYPE: PENGR SPACE FACTOR: 1.0 NEMA ENCL TYPE 1 & 1G
 STD LOCATION: 01E

OPTION	DESCRIPTION
52M	600 AMP - AMMETER SCALE
86KCXC	CUTLER-HAMMER WESTINGHOUSE IQDP4130 600V LINE VOLTAGE

 =====
 UNIT ID: 0015 CATALOG NO.: 2163RA-034KB-3-14DA1C-14HA4-14RLX-44CA

WIRING DIAGRAM: CS70540034
 DESCRIPTION: COMBINATION POWERFLEX 700 AC DRIVE UNIT WITH CIRCUIT BREAKER (VFD)
 UNIT DELIVERY TYPE: SCI UNIT WIRING TYPE: A SPACE FACTOR: 3.0
 STD LOCATION: 06A 06G 07A 07G 08C

OPTION	DESCRIPTION
3	DOOR MOUNTED SELECTOR SWITCH (AUTO - MANUAL)
14DA1C	VECTOR CONTROL I/O BOARD - 24VDC/AC INTERFACE
14HA4	HUMAN INTERFACE MODULE-LCD DISPLAY, ANALOG POTENTIOMETER-MTD.ON DRIVE
14RLX	LINE REACTOR - 3% IMPEDANCE
44CA	25 HP - HMCP CIRCUIT BREAKER

 =====
 UNIT ID: 0016 CATALOG NO.: 2123EB-BAB-3-4RG-6XP-39CA-89CF22A-90011

WIRING DIAGRAM: CS70540035
 DESCRIPTION: TWO SPEED 2-WINDING STARTER W/ CIRCUIT BREAKER (TS2W)

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MAY -10' 05(TUE) 10:43

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 =====
 STARTER/UNIT SPECIFICATIONS (CONTINUED)
 =====

UNIT DELIVERY TYPE: SCI UNIT WIRING TYPE: B SPACE FACTOR: 2.0
 CNTL CIRCUIT VOLTS: 120 NEMA SIZE 1 STARTER NEMA ENCL TYPE 1 & 1G
 480 VOLT LINE
 STD LOCATION: 04J

 =====
 OPTION DESCRIPTION
 =====

3 DOOR MOUNTED SELECTOR SWITCH (HIGH-OFF-LOW)
 4RG DOOR MOUNTED PILOT LIGHTS (1-RED AND 1-GREEN)
 6XP 100 W. EXTRA CAPACITY CONTROL CIRCUIT XFMR (PRIMARY FUSING)
 39CA 5 HP - HMCP CIRCUIT BREAKER
 89CF22A BULLETIN 700CF 4-POLE RELAY W/ON TD (2 N.O. & 2 N.C.)
 900 (2) N.O. AUXILIARY CONTACTS PER STARTER OR CONTACTOR
 911 (2) N.C. AUXILIARY CONTACTS PER STARTER OR CONTACTOR

 =====
 UNIT ID: 0017 CATALOG NO.: 2113B-BAB-3-4RG-6XP-35CA-90011

WIRING DIAGRAM: C870392246

DESCRIPTION: FULL VOLTAGE NON-REVERSING STARTER W/ CIRCUIT BREAKER (FVNR)

UNIT DELIVERY TYPE: SCI UNIT WIRING TYPE: B SPACE FACTOR: 1.0
 CNTL CIRCUIT VOLTS: 120 NEMA SIZE 1 STARTER NEMA ENCL TYPE 1 & 1G
 480 VOLT LINE
 STD LOCATION: 01C

 =====
 OPTION DESCRIPTION
 =====

3 DOOR MOUNTED SELECTOR SWITCH (HAND-OFF-AUTO)
 4RG (1-RED/1-GREEN) DOOR MOUNTED PILOT LIGHTS (ON-OFF)
 6XP 100 W. EXTRA CAPACITY CONTROL CIRCUIT XFMR (PRIMARY FUSING)
 35CA 1 HP - HMCP CIRCUIT BREAKER
 900 (2) N.O. AUXILIARY CONTACTS PER STARTER OR CONTACTOR
 911 (2) N.C. AUXILIARY CONTACTS PER STARTER OR CONTACTOR

 =====
 UNIT ID: 0018 CATALOG NO.: 2163RA-180KB-3-14DA1C-14HA4-14RLX-52CA

WIRING DIAGRAM: NOT AVAILABLE

DESCRIPTION: COMBINATION POWERFLEX 700 AC DRIVE UNIT WITH CIRCUIT BREAKER (VFD)

UNIT DELIVERY TYPE: SC11 UNIT WIRING TYPE: A SPACE FACTOR: 6.0
 STD LOCATION: 05A

 =====
 OPTION DESCRIPTION
 =====

3 DOOR MOUNTED SELECTOR SWITCH (AUTO - MANUAL)
 14DA1C VECTOR CONTROL I/O BOARD - 24VDC/AC INTERFACE
 14HA4 HUMAN INTERFACE MODULE-LCD DISPLAY, ANALOG POTENTIOMETER-MTD.ON DRIVE
 14RLX LINE REACTOR - 3% IMPEDANCE
 52CA 150 HP - HMCP CIRCUIT BREAKER

 =====
 MISCELLANEOUS INFORMATION
 =====

1 1.0 SPACE FACTOR BLANK UNIT DOOR(S) (2100-BK10)
 42 HEATER ELEMENTS SUPPLIED
 31 ENGRAVED PHENOLIC NAMEPLATE(S) SUPPLIED
 DOCUMENTATION- WITHIN EACH UNIT

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06/15/2005 14:38 7085882501
MAY. -10' 05(TUE) 10:43

MEADE ELECTRIC CO

PAGE 09/11

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=====

MISCELLANEOUS INFORMATION (CONTINUED)

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***** END OF REPORT *****

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MAY. -10' 05 (TUE) 10:43

P. 018

ALLEN-BRADLEY CO. - PACKAGED CONTROL PRODUCTS DIVISION
2100 MOTOR CONTROL CENTER PLAN AND ELEVATION DRAWING

QUOTE PREPARED FOR: EAST KENTUCKY POWER BY: CHI440 ON: 05/10/05
REF/ITM: 1188580 2 Q-NO.: SOE-ORDER: TIME: 11:32
MCC NAME: 480 VOLT MCC NO. OF SECTIONS: 6 SHIPPING PARTS: 4
* * * * * ELEVATION VIEW - APPROXIMATE DIMENSIONS * * * * *

	SECT 1	SECT 2	SECT 3	SECT 4	SECT 5	SECT 6
	ID DESC	ID DESC	ID DESC	ID DESC	ID DESC	ID DESC
A	DR DOOR	10 FCB	05 FCB	03 FVNR	18 VFD	15 VFD
B	:: ::	:: ::	:: ::	:: 10 HP:	:: 150 HP:	:: 25 HP:
C	17 FVNR	09 FCB	04 FVNR	03 FVNR		
D	:: 1 HP:	:: ::	:: 5 HP:	:: 10 HP:		
E	14 METR	08 FCB	04 FVNR	03 FVNR		
F	:: ::	:: ::	:: 5 HP:	:: 10 HP:		
G	13 FCB	07 FCB	04 FVNR	03 FVNR		15 VFD
H	:: ::	:: ::	:: 5 HP:	:: 10 HP:		25 HP:
J	12 FCB	06 FCB	04 FVNR	16 TS2W		
K	:: ::	:: ::	:: 5 HP:	:: 5 HP:		
L	11 FVNR	06 FCB	04 FVNR			
M	:: 10 HP:	:: ::	:: 5 HP:			

* * * * * PLAN VIEW - APPROXIMATE DIMENSIONS * * * * *

	CONDUIT ACCESS AREA	CONDUIT ACCESS AREA	CONDUIT ACCESS AREA	CONDUIT ACCESS AREA	CONDUIT ACCESS AREA	CONDUIT ACCESS AREA
20"D						

|<--20"W-->|<--20"W-->S<--20"W-->|<--20"W-->S<--25"W-->S<--20"W-->|

SEE PUBLICATION 2100-5.0 "INSTRUCTIONS" FOR SPECIFIC STRUCTURE DATA

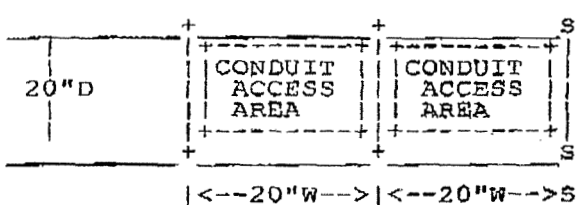
B-8

ALLEN-BRADLEY CO. - PACKAGED CONTROL PRODUCTS DIVISION
 2100 MOTOR CONTROL CENTER PLAN AND ELEVATION DRAWING

QUOTE PREPARED FOR: EAST KENTUCKY POWER BY: CHI440 ON: 05/10/05
 REF/ITM: 1108580 2 Q-NO.: SOE-ORDER: TIME: 11:32
 MCC NAME: 480 VOLT MCC NO. OF SECTIONS: 8 SHIPPING PARTS: 4
 * * * * * ELEVATION VIEW - APPROXIMATE DIMENSIONS * * * * *

	SECT 7		SECT 8	
	ID	DESC	ID	DESC
A	15	VFD	03	FVNR
B	::	25 HP:	::	10 HP:
C	::	:::	::	15 VFD
D	::	:::	::	25 HP:
E	::	:::	::	:::
F	::	:::	::	:::
G	15	VFD	::	:::
H	::	25 HP:	::	:::
J	::	:::	01	MCB
K	::	:::	::	:::
L	::	:::	::	:::
M	::	:::	::	:::

* * * * * PLAN VIEW - APPROXIMATE DIMENSIONS * * * * *

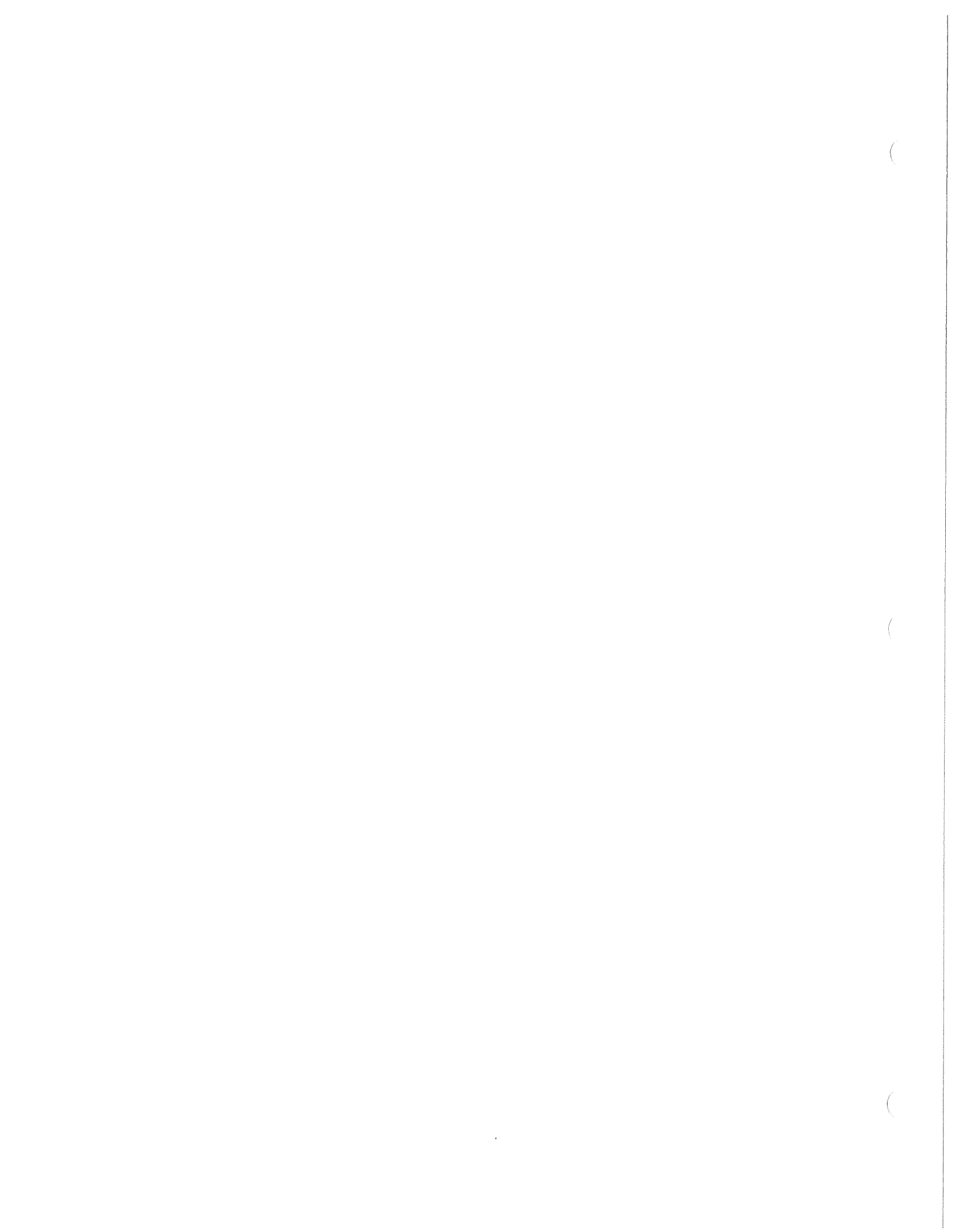


SEE PUBLICATION 2100-5.0 "INSTRUCTIONS" FOR SPECIFIC STRUCTURE DATA

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**Hardin County Landfill Gas to
Electric Generating Facility**

**Fuel Gas Compressor Skid
Contract**





EAST KENTUCKY POWER COOPERATIVE

June 30, 2005

Mr. Andrew D. Conner P. E.
SCFM Compressor Systems
3701 South Maybelle
Tulsa, OK 74107-5708

Subject: East Kentucky Power Cooperative, Inc.
Hardin County Landfill Gas to Electric ("LFGTE") Generating Plant
Fuel Gas Compressor Skid Contract (RUS Form 198)

Dear Mr. Conner:

Please find enclosed, an executed original contract for the above referenced, returned for your use.

We are also in agreement with the clarifications indicated in your letter of June 23, 2005. As such, please forward an invoice to my attention for the 10% progress payment requested.

We look forward to working with you on this project. If you should have any questions, please contact me.

Sincerely,

A handwritten signature in black ink that reads "Ralph Tyree".

Ralph Tyree, Manager
Non-traditional Power Production Projects

c: Chuck Anderson Meade Electric Co., Inc.

enclosure



Thursday, June 23, 2005

Ralph Tyree, Manager
Non-traditional Power Production Projects
East Kentucky Power Cooperative
4775 Lexington Road
Winchester, Kentucky 40391
Tel: (859) 744-4812
Fax: (859) 744-6008

Re: Hardin County Landfill Gas to Electric Generating Plant
Fuel Gas Compressor Skid Contract (RUS Form 198)
Executed copies and clarification of ruling terms and delivery

Dear Mr. Tyree:

Thank you very much for this order. I look forward to working with you. Please find enclosed the four original copies of the contract executed per your instructions in the cover letter that accompanied them. I look forward to receiving an original executed copy.

To clarify we have executed the contract with the following understandings:

- (1) Progress payments and terms will be as stated in the "Proposal" section of the contract in place of those listed Article III-Payment. Section 1. Subpart a. which might be in conflict. They are as follows:

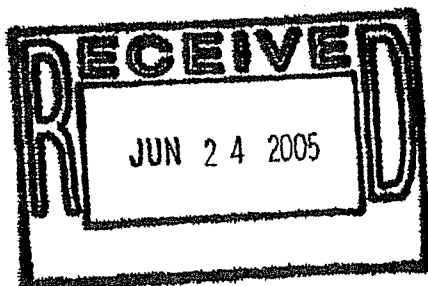
Progress Payments (per unit)

- 10% with Purchase Order.
- 25% upon Issue of Approval Drawings.
- 25% upon Issue of Certified Drawings.
- 25% upon SCFM's Receipt of Compressor.
- 5% upon Completion of Fabrication (ready to ship)
- 10% upon Completion of Startup or 90 days from Completion of Fabrication (ready to ship) whichever shall occur first. This is due upon receipt.

Payment Terms

Net 10 days from invoice issue date.

- (2) Delivery will be as stated in the "Proposal" section of the contract in the Equipment Bid Sheet (126 days A.R.O.) in place of the delivery listed in Article II-Delivery and Warranty. Section 1. which is in conflict.



Yours very truly,
SCFM Compression Systems

By:

Andrew D. Connor P.E.
Sr. Director of Sales Support

U.S. Department of Agriculture
Rural Utilities Service

EQUIPMENT CONTRACT

NOTICE AND INSTRUCTIONS TO BIDDERS

1. Sealed proposals for the furnishing and delivering f.o.b. Fuel Gas Compressor Skid

of equipment for the rural electric project of East Kentucky Power Cooperative, Inc.,
RUS designation KY 59 Fayette, (hereinafter called the "Owner") will be received by the Owner on or
before two o'clock P M., March 30, 20 05, at its office
at 4775 Lexington Road, Winchester KY at which time and place the proposals will be
publicly opened and read.

X privately opened. The Owner, subsequent to the bid opening, may elect to conduct clarifying discussions
with the bidder to resolve any questions related to the substance of the bidder's proposal and to arrive at a final
price for a responsive bid.

Any proposals received subsequent to the time specified will be promptly returned to the Bidder unopened.
2. **Obtaining Documents.** The Plans, Specifications, and Construction Drawings, together with all necessary
forms and other documents for bidders may be obtained from the Owner, or from the Engineer Meade Electric
Company, Inc. at the latter's office at 9550 W 55th Street, Suite A, McCook, IL
upon the payment of \$ N/A, which payment will not be subject to refund. The Plans,
Specifications, and Construction Drawings may be examined at the office of the Owner or at the office of the
Engineer.
3. **Manner of Submitting Proposals.** Proposals and all supporting instruments must be submitted on the forms
furnished by the Owner and must be delivered in a sealed envelope addressed to the Owner. The name and
address of the Bidder and the date and hour of the opening of bids must appear on the envelope in which the
Proposal is submitted. Proposals must be completed in ink or typewritten. No alterations or interlineations
will be permitted, unless made before submission, and initialed and dated. The successful Bidder will be
required to execute two additional counterparts of the Proposal.
4. **Due Diligence.** Prior to the submission of the Proposal, the Bidder shall make and shall be deemed to have
made a careful examination of the Plans, Specifications, Construction Drawings, and form of Proposal, and
shall review the location and nature of the proposed construction, the transportation facilities, the kind and
character of soil and terrain to be encountered, the kind of facilities required before and during the
construction of the project, general local conditions, environmental and historic preservation considerations,
and all other matters that may affect the cost and time of completion of the work. Bidder will be required to
comply with all federal, state, and local laws, rules, and regulations applicable to its performance, including
those pertaining to the licensing of contractors, and the Anti Kick-Back Act of 1986 (41 U.S.C. 51 et seq).
5. ~~Proposals will be accepted only from those prequalified bidders invited by the Owner to submit a proposal.~~
6. **The Time for Delivery of the Equipment** is of the essence of the Contract and shall be as specified by the
Engineer in the Proposal.

7. **Evaluation Factors.** *In estimating the lowest cost to the Owner as one of the factors in deciding the award of the Contract, the Owner will consider, in addition to the price quoted in the Proposals, the following:*

In conformance with all specifications

8. **Debarment Certification.** *The Bidder must provide to the Owner a suspension and debarment certificate in the form attached hereto.*
9. **Contract is Entire Agreement.** *The Contract to be effected by the acceptance of the Proposal shall be deemed to include the entire agreement between the parties thereto, and the Bidder shall not claim any modifications thereof resulting from any representation or promise made at any time by any officer, agent or employee of the Owner or by any other person.*
10. **Minor Irregularities.** *The Owner reserves the right to waive minor irregularities or minor errors in any Proposal, if it appears to the Owner that such irregularities or errors were made through inadvertence. Any such irregularities or errors so waived must be corrected on the Proposal in which they occur prior to the acceptance thereof by the Owner.*
11. **Bid Rejection.** *The Owner reserves the right to reject any or all Proposals.*
12. **Definition of Terms.** *The terms "Administrator" and "Engineer" as used throughout this Contract shall be as defined in Article VI, Section 1. of the Proposal.*

East Kentucky Power Cooperative, Inc.

Owner

By Ray M. Park

President & Chief Executive Officer

Title

6/30 . 20 05
Date

PROPOSAL

TO:

East Kentucky Power Cooperative, Inc.

(hereinafter called the "Owner").

ARTICLE I--GENERAL

Section 1. Offer to Furnish and Deliver. *The undersigned (hereinafter called the "Bidder") hereby proposes to furnish and deliver the equipment (hereinafter called the "Equipment") described in the Plans, Specifications, and Construction Drawings for the following prices:*

Item: Fuel Gas Compressor Skid Price: \$232,532.00

Item: _____ Price: _____

The prices of Equipment set forth herein shall include the cost of delivery to:

Pearl Hollow Landfill, Hardin County, Kentucky

The prices set forth herein do not include any sums which are or may be payable by the Bidder on account of taxes imposed by any taxing authority upon the sale, purchase or use of the Equipment. If any such tax is applicable to the sale, purchase or use of the Equipment hereunder, the amount thereof shall be added to the purchase price and paid by the Owner.

Section 2. Materials and Equipment. *The Bidder agrees to furnish and use in the construction of the project under this Proposal, in the event the Proposal is accepted, only such "fully accepted," "conditionally accepted," and "technically accepted" materials and equipment which have been accepted by RUS as indicated in the current RUS Informational Publication 202-1, "List of Materials Acceptable for Use on Systems of RUS Electrification Borrowers," including revisions adopted prior to the Bid Opening. The use of "conditionally accepted" or "technically accepted" materials and equipment requires prior consent by the Owner or Engineer.*

The Bidder will purchase all materials and equipment outright and not subject to any conditional sales agreements, bailment, lease or other agreement reserving unto the seller any right, title or interest therein. All such materials and equipment shall be new.

Section 3. Description of Contract. *The Notice and Instructions to Bidders, Plans, Specifications, and Construction Drawings, which by this reference are incorporated herein, together with the Proposal and Acceptance constitute the Contract. The Plans, Specifications, and Construction Drawings, including maps, special drawings, and approved modifications in standard specifications are attached hereto and identified as follows:*

Notice and Instructions to Bidders, SCFM Proposal

dated June 17, 2005

Section 4. Due Diligence. *The Bidder has made a careful examination of the Plans, Specifications, and Construction Drawings attached hereto, and has become informed as to the location and nature of the proposed construction, the transportation facilities, the kind and character of soil and terrain to be encountered, and the kind of facilities required before and during the construction of the project, and*

has become acquainted with the labor conditions, federal, state, and local laws, rules, and regulations applicable to its performance.

Section 5. Warranty of Good Faith. The Bidder warrants that this Proposal is made in good faith and without collusion or connection with any person or persons bidding for the same work.

ARTICLE II--DELIVERY AND WARRANTY

Section 1. Delivery. The Bidder shall deliver the Equipment:

_____ within 98 days after receipt of the written order or orders of the Owner.

_____ not later than September 27, 2005.

The time for delivery shall be extended for the period of any reasonable delay due exclusively to causes beyond the control and without the fault of the Bidder, including, but not limited to, acts of God, fires, strikes, ~~and~~ floods, and unavailability of accepted materials.

Section 2. Defective Materials and Workmanship.

- a. All Equipment furnished hereunder shall be subject to the inspection, tests, and approval of the Owner and the Engineer, and the Bidder shall furnish all information required concerning the nature or source of any Equipment and provide adequate facilities for testing and inspecting the Equipment at the plant of the Bidder, which testing and inspection shall be conducted during regular business hours and at the expense of the Owner, unless otherwise agreed by the parties.
- b. The Equipment furnished hereunder shall become the property of the Owner upon delivery, provided, however, that the Owner or the Engineer, within one year after initial operation of the Equipment, or within the period for which the Equipment is guaranteed, whichever is longer, may reject any Equipment which does not comply with the Specifications attached hereto and made a part hereof or with the guarantees, if any, of the Bidder and the manufacturer. Upon any such rejection, the Bidder shall repair or replace such defective Equipment within a reasonable time after notice in writing from the Owner. If any such defective materials, equipment, or workmanship so replaced or repaired is found to be defective within one year after the completion of the replacement or repair, the Bidder shall replace or remedy such defective materials, equipment, or workmanship. In the event of failure by the Bidder so to do, the Owner may make such replacement and the cost and expense thereof shall be paid by and recoverable from the Bidder.
- c. All manufacturers' guarantees of Equipment, if any, shall be transferred and assigned to the Owner upon delivery of any Equipment and before final payment is made for such Equipment. Such guarantees shall be in addition to those required of the Bidder by other provisions of this Contract.

ARTICLE III--PAYMENT

Section 1. Payments to Bidder.

- a. Upon the shipment of any Equipment hereunder, the Bidder shall submit to the Owner a detailed statement of the Equipment shipped. The Owner shall, ~~upon~~ not later than ten (10) days after receipt of the Equipment, pay the Bidder ninety percent (90%) of the contract price of the Equipment. When the Equipment has been installed, placed in satisfactory operation, tested and accepted by the Owner, the Owner shall make final payments therefor to the Bidder; provided, however, such final payment

shall be made not later than 30 days after delivery of the Equipment, unless such acceptance by the Owner shall be withheld because of the fault of the Bidder.

provided that the alleged default of the Bidder shall be immediately submitted to mediation, and if not resolved, then to binding arbitration under Construction Industry Rules of the American Arbitration Association, and the parties shall cooperate in good faith to resolve the matter, and the parties shall promptly pay any amounts ordered by the arbitrator.

- b. *No payment shall be due while the Bidder is in default in respect of any of the provisions of this Contract and the Owner may withhold from the Bidder the amount of any claim by a third party against either the Bidder or the Owner based upon an alleged failure of the Bidder to perform the work hereunder in accordance with the provisions of this Contract,*

ARTICLE IV--PARTICULAR UNDERTAKINGS OF THE BIDDER

The provisions of this Article IV apply to any work performed by the Bidder at the project site.

Section 1. Protection to Persons and Property. *The Bidder shall at all times take all reasonable precautions for the safety of employees on the project and of the public, and shall comply with all applicable provisions of federal, state, and local laws, rules, and regulations and building and construction codes, in addition to the safety rules and procedures of the Owner.*

The following provisions shall not limit the generality of the above requirements:

- a. *The Bidder shall at no time and under no circumstances cause or permit any employee of the Bidder to perform any work upon energized lines, or upon poles carrying energized lines, unless otherwise specified in the Notice and Instructions to Bidders.*
- b. *The Bidder shall transport and store all material in facilities and vehicles which are designed to protect the material from damage. The Bidder shall ensure that all vehicles, trailers, and other equipment used comply with all applicable licensing, traffic, and highway requirements.*
- c. *The Bidder shall conduct its operations to cause the least possible obstruction of public highways.*
- d. *The Bidder shall make good and fully repair all injuries and damages to the project or any portion thereof under the control of the Bidder by reason of any act of God or other casualty or cause whether or not the same shall have occurred by reason of the Bidder's negligence.*
- (i) *To the maximum extent permitted by law, Bidder shall defend, indemnify, and hold harmless Owner and Owner's directors, officers, and employees from all claims, causes of action, losses, liabilities, and expenses (including reasonable attorney's fees) for personal loss, injury, or death to persons (including but not limited to Bidder's employees) and loss, damage to or destruction of Owner's property or the property of any other person or entity (including but not limited to Bidder's property) in any manner arising out of or connected with the Contract, or the materials or equipment supplied or services performed by Bidder, its subcontractors and suppliers of any tier. But nothing herein shall be construed as making Bidder liable for any injury, death, loss, damage, or destruction caused by the ~~sole~~ negligence of Owner or any third party.*
- (ii) *To the maximum extent permitted by law, Bidder shall defend, indemnify, and hold harmless Owner and Owner's directors, officers, and employees from all liens and claims filed or asserted against Owner, its directors, officers, and employees, or Owner's property or facilities, for services performed or materials or equipment furnished by Bidder, its subcontractors and suppliers of any tier, and from all losses, demands, and causes of action arising out of any such lien or claim. Bidder shall promptly discharge or remove any such lien or claim by bonding, payment, or otherwise and shall notify Owner promptly when it has done so. If Bidder does not cause such lien or claim to be discharged or released by payment, bonding, or otherwise, Owner shall have the right (but shall not be obligated) to pay all sums necessary to obtain any such discharge or release and to deduct all amounts so paid from the amount due Bidder.*
- (iii) *Bidder shall provide to Owner's satisfaction evidence of Bidder's ability to comply with the indemnification provisions of subparagraphs i and ii above, which evidence may include but may not be limited to a bond or liability insurance policy obtained for this purpose through a licensed surety or insurance company. Owner shall notify Bidder of any bonding requirement or other security requirement upon receipt of this proposal and prior to execution of the contract.*

- e. Upon violation by the Bidder of any of the provisions of this section, after written notice of such violation given to the Bidder by the Engineer or the Owner, the Bidder shall immediately correct such violation. Upon failure of the Bidder so to do the Owner may correct such violation at the Bidder's expense: ~~Provided, however, that the Owner may, if it deems it necessary or advisable, correct such violation at the Bidder's expense without such prior notice to the Bidder.~~

Section 2. Insurance. The Bidder shall take out and maintain throughout the period of its operations at the project site the following types and minimum amounts of insurance:

- a. Workers' compensation and employers' liability insurance, as required by law, covering all its employees who perform any of the obligations of the Bidder under the contract. If any employer or employee is not subject to the workers' compensation laws of the governing state, then insurance shall be obtained voluntarily to extend to the employer and employee coverage to the same extent as though the employer or employee were subject to the workers' compensation laws.
- b. Public liability insurance covering all operations under the contract shall have limits for bodily injury or death of not less than \$1 million each occurrence, limits for property damage of not less than \$1 million each occurrence, and \$1 million aggregate for accidents during the policy period. A single limit of \$1 million of bodily injury and property damage is acceptable. This required insurance may be in a policy or policies of insurance, primary and excess including the umbrella or catastrophe form.
- c. Automobile liability insurance on all motor vehicles used in connection with the contract, whether owned, nonowned, or hired, shall have limits for bodily injury or death of not less than \$1 million per person and \$1 million each occurrence, and property damage limits of \$1 million for each occurrence. A single limit of \$1 million of bodily injury and property damage is acceptable. This required insurance may be in a policy or policies of insurance, primary and excess including the umbrella or catastrophe form.

The Owner shall have the right at any time to require public liability insurance and property damage liability insurance greater than those required in subsection "b" and "c" of this Section. In any such event, the additional premium or premiums payable solely as the result of such additional insurance shall be added to the Contract price.

The Owner shall be named as Additional Insured on all policies of insurance required in subsections "b" and "c" of this Section.

The policies of insurance shall be in such form and issued by such insurer as shall be satisfactory to the Owner. The Bidder shall furnish the Owner a certificate evidencing compliance with the foregoing requirements which shall provide not less than (30) days prior written notice to the Owner of any cancellation or material change in the insurance.

ARTICLE V--REMEDIES

Section 1. Liquidated Damages. The time of the delivery of the Equipment is of the essence of the Contract. Should the Bidder neglect, refuse or fail to deliver the Equipment within the time herein agreed upon, after giving effect to extensions of time, if any, herein provided, then, in that event and in view of the difficulty of estimating with exactness damages caused by such delay, the Owner shall have the right to deduct from and retain out of such moneys which may be then due, or which may become due and payable to the Bidder the sum of N/A dollars (N/A) per day for each and every day that such delivery is delayed beyond the specified time, as liquidated damages and not as a penalty; if the amount due and to become due from the Owner to the Bidder is insufficient to pay in full any such liquidated damages, the Bidder shall pay to the Owner the amount necessary to effect such payment in full: Provided, however, that the Owner shall promptly notify the Bidder in writing of the manner in which the amount retained, deducted or claimed as liquidated damages was computed.

Section 2. Cumulative Remedies. *Every right or remedy herein conferred upon or reserved to the Owner or the Government or the Administrator shall be cumulative, shall be in addition to every right and remedy now or hereafter existing at law or in equity or by statute and the pursuit of any right or remedy shall not be construed as an election. Provided, however, that the provisions of Section 1 of this Article shall be the exclusive measure of damages for failure by the Bidder to deliver the Equipment within the time herein agreed upon.*

ARTICLE VI--MISCELLANEOUS

Section 1. Definitions.

- a. *The term "Administrator" shall mean the Administrator of the Rural Utilities Service of the United States of America and his or her duly authorized representative or any other person in whom or authority in which may be vested the duties and functions which the Administrator is now authorized by law to perform.*
- b. *The term "Engineer" shall mean the Engineer employed by the Owner, to provide engineering services for the project and said Engineer's duly authorized assistants and representatives.*

Section 2. Materials and Supplies. *In the performance of this contract there shall be furnished only such unmanufactured articles, materials, and supplies as have been mined or produced in the United States or in any eligible country, and only such manufactured articles, materials, and supplies as have been manufactured in the United States or in any eligible country substantially all from articles, materials, or supplies mined, produced or manufactured, as the case may be, in the United States or in any eligible country; provided that other articles, materials, or supplies may be used in the event and to the extent that the Administrator shall expressly in writing authorize such use pursuant to the provisions of the Rural Electrification Act of 1938, being Title IV of Public Resolution No. 122, 75th Congress, approved June 21, 1938. For the purposes of this section, an "eligible country" is any country that applies with respect to the United States an agreement ensuring reciprocal access for United States products and services and suppliers to the markets of that country, as determined by the United States Trade Representative. The Bidder agrees to submit to the Owner such certificates with respect to compliance with the foregoing provision as the Administrator from time to time may require.*

Section 3. Patent Infringement. *The Bidder shall hold harmless and indemnify the Owner from any and all claims, suits and proceedings for the infringement of any patent or patents covering Equipment purchased hereunder.*

Section 4. Compliance with Laws. *The Bidder shall comply with all federal, state, and local laws, rules, and regulations applicable to its performance under the contract and the construction of the project. The Bidder acknowledges that it is familiar with the Rural Electrification Act of 1936, as amended, the Anti Kick-Back Act of 1986 (41 U.S.C. 51 et seq), and 18 U.S.C. §§ 286, 287, 641, 661, 874, 1001, and 1366, as amended.*

The Bidder represents that to the extent required by Executive Orders 12549 (3 CFR, 1985-1988 Comp., p. 189) and 12689 (3 CFR, 1989 Comp., p. 235), Debarment and Suspension, and 7 CFR part 3017, it has submitted to the Owner a duly executed certification in the form prescribed in 7 CFR part 3017.

The Bidder represents that, to the extent required, it has complied with the requirements of Pub. L. 101-121, Section 319, 103 Stat. 701, 750-765 (31 U.S.C. 1352), entitled "Limitation on use of appropriated funds to influence certain Federal contracting and financial transactions," and any rules and regulations issued pursuant thereto.

Section 5. Equal Opportunity Provisions.

a. *Bidder's Representations.*

The Bidder represents that:

It has ___ , does not have , 100 or more employees, and if it has, that it has ___ , has not , furnished the Equal Employment Opportunity-Employers Information Report EEO-1, Standard Form 100, required of employers with 100 or more employees pursuant to Executive Order 11246 of September 24, 1965, and Title VII of the Civil Rights Act of 1964.

The Bidder agrees that it will obtain, prior to the award of any subcontract for more than \$10,000 hereunder to a subcontractor with 100 or more employees, a statement, signed by the proposed subcontractor, that the proposed subcontractor has filed a current report on Standard Form 100.

The Bidder agrees that if it has 100 or more employees and has not submitted a report on Standard Form 100 for the current reporting year and that if this Contract will amount to more than \$10,000, the Bidder will file such report, as required by law, and notify the Owner in writing of such filing prior to the Owner's acceptance of this Proposal.

b. *Equal Opportunity Clause. During the performance of this Contract, the Bidder agrees as follows:*

- (1) The Bidder will not discriminate against any employee or applicant for employment because of race, color, religion, sex or national origin. The Bidder will take affirmative action to ensure that applicants are employed, and that employees are treated during employment without regard to their race, color, religion, sex or national origin. Such action shall include, but not be limited to, the following: Employment, upgrading, demotions or transfer; recruitment or recruitment advertising; layoff or termination; rates of pay or other forms of compensation; and selection of training, including apprenticeship. The Bidder agrees to post in conspicuous places, available to employees and applicants for employment, notices to be provided setting forth the provisions of this Equal Opportunity Clause.*
- (2) The Bidder will, in all solicitations or advertisements for employees placed by or on behalf of the Bidder, state that all qualified applicants will receive consideration for employment without regard to race, color, religion, sex or national origin.*
- (3) The Bidder will send to each labor union or representative of workers, with which it has a collective bargaining agreement or other contract or understanding, a notice to be provided advising the said labor union or workers' representative of the Bidder's commitments under this section, and shall post copies of the notice in conspicuous places available to employees and applicants for employment.*
- (4) The Bidder will comply with all provisions of Executive Order 11246 of September 24, 1965, and the rules, regulations and relevant orders of the Secretary of Labor.*
- (5) The Bidder will furnish all information and reports required by Executive Order 11246 of September 24, 1965, and by rules, regulations, and orders of the Secretary of Labor, or pursuant thereto, and will permit access to its books, records, and accounts by the administering agency and the Secretary of Labor for purposes of investigation to ascertain compliance with such rules, regulations, and orders.*
- (6) In the event of the Bidder's noncompliance with the Equal Opportunity Clause of this Contract or with any of the said rules, regulations, or orders, this Contract may be canceled, terminated, or suspended in whole or in part, and the Bidder may be declared ineligible for further Government contracts or federally assisted construction contracts in accordance with procedures authorized in Executive Order 11246 of September 24, 1965, and such other sanctions may be imposed and remedies invoked as provided in Executive Order 11246 of*

September 24, 1965, or by rule, regulation, or order of the Secretary of Labor, or as provided by law.

(7) *The Bidder will include this Equal Opportunity Clause in every subcontract or purchase order unless exempted by the rules, regulations, or order of the Secretary of Labor issued pursuant to Section 204 of Executive Order 11246 of September 24, 1965, so that such provisions will be binding upon each subcontractor or vendor. The Bidder will take such action with respect to any subcontract or purchase order as the administering agency may direct as a means of enforcing such provisions, including sanctions for noncompliance; Provided, however, that in the event Bidder becomes involved in, or is threatened with, litigation with a subcontractor or vendor as a result of such direction by the administering agency, the Bidder may request the United States to enter into such litigation to protect the interests of the United States.*

see attached EKPC additions page 1

- c. *Certificate of Nonsegregated Facilities. The Bidder certifies that it does not maintain or provide for its employees any segregated facilities at any of its establishments, and that it does not permit its employees to perform their services at any location, under its control, where segregated facilities are maintained. The Bidder certifies further that it will not maintain or provide for its employees any segregated facilities at any of its establishments, and that it will not permit its employees to perform their services at any location, under its control, where segregated facilities are maintained. The Bidder agrees that a breach of this certification is a violation of the Equal Opportunity Clause in this Contract. As used in this certification, the term "segregated facilities" means any waiting rooms, work areas, restrooms and washrooms, restaurants and other eating areas, timeclocks, locker rooms and other storage or dressing areas, parking lots, drinking fountains, recreation or entertainment areas, transportation, and housing facilities provided for employees which are segregated by explicit directive or are in fact segregated on the basis of race, color, religion, or national origin, because of habit, local custom, or otherwise. The Bidder agrees that (except where it has obtained identical certifications from proposed subcontractors for specific time periods) it will obtain identical certifications from proposed subcontractors prior to the award of subcontracts exceeding \$10,000 which are not exempt from the provisions of the Equal Opportunity Clause, and that it will retain such certifications in its files.*

Section 6. Successors and Assigns. *Each and all of the covenants and agreements herein contained shall extend to and be binding upon the successors and assigns of the parties hereto. The Owner and Bidder acknowledge that this Contract is assigned to the Government, acting through the Administrator, for security purposes under the Owner's mortgage and security instrument.*

Section 7. Independent Contractor. *The Bidder shall perform the work as an independent contractor, not as a subcontractor, agent, or employee of the Owner. Upon acceptance of this Proposal, the successful Bidder shall be the Contractor and all references in the Proposal to the Bidder shall apply to the Contractor.*

Section 8. Approval by the Administrator: This contract does _____, does not X, require approval of the Administrator. No acceptance of a Proposal for a contract upon which approval of the Administrator is required shall become effective until the contract has been approved by the Administrator; provided that no obligation shall arise hereunder unless such approval is given within one-hundred twenty (120) days after the date set for the opening of the proposals. The acceptance of a Proposal for a contract upon which approval of the Administrator is not required shall become effective the date of acceptance by the Owner.

ATTEST:

J. P. L.
Secretary
Dated 6/23/05

SCFM Compression Systems, Company

Bidder

B. J. Cloud
~~President~~ **CEO**
3701 S Maybelle Avenue
Tulsa, OK 74107
Address

The Proposal must be signed with the full name of the Bidder. If the Bidder is a partnership, the Proposal must be signed in the partnership name by a partner. If the Bidder is a corporation, the Proposal must be signed in the corporate name by a duly authorized officer and the corporate seal affixed and attested by the Secretary of the Corporation.

ACCEPTANCE

Subject to the approval of the Administrator, if approval of the Administrator is required, the Owner hereby accepts the foregoing Proposal of the Bidder, SCFM Compression Systems

_____ for the following Equipment:

Fuel Gas Compressor Skid - Option #1 Offering, Two mandays start-up and shipping to the Pearl Hollow Landfill site near Elizabethtown, Kentucky

_____ for a total contract price of Two Hundred Thirty-Two Thousand Five Hundred Thirty-Two Dollars and No Cents (\$232,532.00)

East Kentucky Power Cooperative, Inc.

Owner
By Ray M. Palk
President & CEO

Secretary

6/30, 2005
Date of Contract

EKPC Additions, Page 9 dated March 7, 2005

The Following Additional General Conditions Shall be Added to This Contract RUS Form 198:

Page 9, Article VI, Section 5, the following paragraph will be added as (8)

- "(8) When this order and contract refer to manufactured goods or to work or services, Seller warrants and agrees that it has complied and will comply with (1) Fair Labor Standards Act; (2) Social Security and Workman's Compensation Laws, if work is done on Purchaser's premises; and (3) all other applicable Federal, State and local laws, codes and regulations. It is the policy of Purchaser to provide equal opportunities in employment without regard to race, color, religion, sex, age, or national origin and to employ and advance qualified disabled veterans, handicapped or disabled persons and Vietnam era veterans. Purchaser complies with the requirements placed on government contractors and subcontractors by Executive Order 11246, Section 402 of the Vietnam Era Veterans Readjustment Assistance Act of 1974 and Section 503 of the Rehabilitation Act of 1973, and it is agreed that as a Subcontractor, vendor, or supplier, Seller will also comply with the Executive Order, laws, and applicable rules and regulations. Seller agrees to indemnify Purchaser and save Purchaser harmless if Seller fails to comply with the foregoing, and in the event of such failure Purchaser may, in addition, cancel this order and contract. Seller invoices for work or materials covered hereby shall state that Seller has complied with the requirements of the Fair Labor Standards Act of 1938 as amended."

U.S. Department of Agriculture
Rural Utilities Service

*Certification Regarding Debarment, Suspension, and Other Responsibility
Matters – Primary Covered Transactions*

This certification is required by the regulations implementing Executive Order 12549, Debarment and Suspension, 7 CFR Part 3017, Section 3017.510, Participants' Responsibilities. The regulations were published as Part IV of the January 30, 1989, Federal Register (pages 4722-4733). Copies of the regulations may be obtained by contacting the Department of Agriculture agency offering the proposed transaction.

- (1) The prospective primary participant certifies to the best of its knowledge and belief, that it and its principals:
- (a) are not presently debarred, suspended, proposed for Debarment, declared ineligible, or voluntarily excluded from covered transactions by any Federal department or agency;
 - (b) have not within a 3-year period preceding this proposal been convicted of or had a civil judgment rendered against them for commission of fraud or a criminal offense in connection with obtaining, attempting to obtain, or performing a public (Federal, State, or local) transaction or contract under a public transaction; violation of Federal or State antitrust statutes or commission of embezzlement, theft, forgery, bribery, falsification or destruction of records, making false statements, or receiving stolen property;
 - (c) are not presently indicted for or otherwise criminally or civilly charged by a governmental entity (Federal, State, or local) with commission of any of the offenses enumerated in paragraph (1)(b) of this certification; and
 - (d) have not within a 3-year period preceding this application/proposal had one or more public transactions (Federal, State, or local) terminated for cause or default.
- (2) Where the prospective primary participant is unable to certify to any of the statements in this certification, such prospective participant shall attach an explanation to this proposal.

SCFM Compression Systems, INC.
Organization Name

B. J. Cloud 6-22-05
Authorized Representative's Signature Date

B. J. Cloud
Name Typed or Printed

(This is not an official Government form. It has been prepared to assist and expedite the application process and is only intended for use in the Rural Broadband Access Loan and Loan Guarantee Program.)

U.S. Department of Agriculture
Rural Utilities Service

*Certification Regarding Lobbying for Contracts, Grants,
Loans, and Cooperative Agreements*

The undersigned certifies, to the best of his or her knowledge and belief, that:

- (1) No Federal appropriated funds have been paid or will be paid, by or on behalf of the undersigned, to any person for influencing or attempting to influence an officer or employee of any agency, a Member of Congress, an officer or employee of Congress, or an employee of a Member of Congress in connection with the awarding of any Federal contract, the making of any Federal grant or loan, the entering into of any cooperative agreement, and the extension, continuation, renewal, amendment, or modification of any Federal contract, grant, loan, or cooperative agreement.
- (2) If any funds other than Federal appropriated funds have been paid or will be paid to any person for influencing or attempting to influence an officer or employee of any agency, a Member of Congress, an officer or employee of Congress, or an employee of a Member of Congress in connection with this Federal contract, grant, loan, or cooperative agreement, the undersigned shall complete and submit Standard Form-LLL, "Disclosure Form to Report Lobbying," in accordance with its instructions. (Copies of this form may be obtained from RUS.)
- (3) The undersigned shall require that the language of this certification be included in the award documents for all subawards at all tiers (including subcontracts, subgrants, and contracts under grants, loans, and cooperative agreements) and that all subrecipients shall certify and disclose accordingly.

This certification is a material representation of fact upon which reliance was placed when this transaction was made or entered into. Submission of this certification is a prerequisite for making or entering into this transaction imposed by section 1352, title 31, U.S. Code. Any person who fails to file the required certification shall be subject to a civil penalty of not less than \$10,000 and not more than \$100,000 for each such failure.

B. SCFM Compression Systems, Inc.
Organization Name

B. J. Cloud
Authorized Representative's Signature

6-20-05
Date

B. J. Cloud
Name Typed or Printed

(This is not an official Government form. It has been prepared to assist and expedite the application process and is only intended for use in the Rural Broadband Access Loan and Loan Guarantee Program.)



9550 W. 55th Street • Suite A • McCook, IL 60525 • (708) 588-2500

ELECTRIC COMPANY, INC.

March 15, 2005

SCFM Compression Systems
ATTN: Steve Miller
3701 South Maybelle
Tulsa, OK 74107-5708

RE: East Kentucky Power Cooperative Landfill Gas Energy Projects
Fuel Gas Compressor Skid Bid Solicitation

Dear Mr. Miller:

The Meade Electric Company is issuing equipment bid solicitations for the East Kentucky Power Cooperative Landfill Gas Energy Projects at the Pearl Hollow Landfill, Hardin County, KY.

The following documentation should be utilized in the preparation of your bid:

- Specification sheets
- Equipment bid sheet
- P & ID Diagram RE5-MI

Please note that your bids should include the attached bid sheet, a list of any exceptions and clarifications, and any product descriptive literature that you believe is necessary to fully define your offering.

Bids are due by 2:00 p.m March 30, 2005, and should be submitted to:

Ralph Tyree
East Kentucky Power Cooperative
4775 East Lexington Road
Winchester, KY 40391
Telephone: 859-744-4812
Fax: 859-744-6008

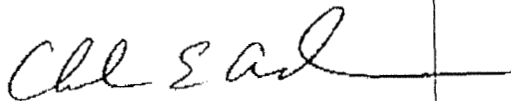
A copy of your proposal should be sent to my attention at the address indicated on this letterhead. Submission of bids by facsimile is acceptable. East Kentucky Power Cooperative will conduct a private bid opening and reserves the right to reject any and all bids.

Pearl Hollow
Fuel Gas Compressor Skid
Page Two

Equipment delivery is being requested within approximately 150 days of receipt of order, which is anticipated to be released on or before April 15, 2005. Pricing should include delivery F.O.B. job site, and additional pricing information should be provided for extended warranty and start-up services. Contract terms of equipment will be RUS Standard.

If you have any technical questions, please contact me in writing via fax at 708-588-2501 or via e-mail at canderson@meadeelectric.com

Sincerely,



Charles E. Anderson
Vice President

cc: R. Tyree
Enclosures

EKPC

Hardin County Landfill
Gas-to-Energy ProjectSECTION 11930
LANDFILL GAS COMPRESSOR SYSTEM

PART 1 GENERAL

1.01 DESCRIPTION OF WORK AND DEFINITIONS

A. System Description

This specification covers the design and performance requirements for a landfill fuel gas compression system (FGC). The FGC will provide landfill fuel gas to five (5) Caterpillar 3516 low pressure engine generator sets (three engines initially). The FGC shall consist of a skid-mounted gas compression system designed to operate in an automated, unattended mode for continuous operation 24 hours per day, 365 days per year. The FGC shall be designed for indoor or outdoor installation with the exception of the gas cooler which shall be located outdoors. Design objectives shall strive to avoid complex control systems, facilitate ease of maintenance and to operate the equipment at a high degree of reliability. Each piece of equipment shall be selected for its performance characteristics and proven satisfactory operation in landfill gas or comparable service. The design shall be an efficient system applying proven engineering practices and state-of-the-art technology. All components shall be new, of high quality, free from defects in manufacture and workmanship, low in maintenance, and intended for a long service life.

B. Definitions

1. Vendor - Manufacturer/Supplier of the landfill fuel gas blower and clean-up system.
2. Contractor - General Contractor or his Subcontractor performing installation and construction work at the jobsite.
3. FGC - Landfill fuel gas compression and clean-up system consisting of blower, electric motors, oil management system, suction liquid knockout vessel, aerial after cooler, discharge coalescing gas filter, gas reheat exchanger, piping, controls, safety shutdowns, on-skid electrical wiring, local gauge/control panel, skid frame and all other equipment and materials as described in this specification.
4. Buyer - Responsible party, whether General Contractor or landfill owner, for purchasing and receiving of FGC.

C. Vendor Responsibility

Vendor shall furnish all labor, materials, equipment, freight, taxes and supervision for the design, fabrication and delivery of the equipment as described herein, with all appurtenances necessary to perform the specified function, whether expressly described or not, F.O.B. jobsite.

D. Work By Others

1. Off-loading, inspection, on-site storage and installation of FGC.
2. Providing power from power source to power connections on Vendor-supplied, skid-mounted equipment and control panels.
3. Control wiring from FGC summary shutdown contacts to remote mounted controls or annunciator panel (not part of FGC).
4. Field welding of Vendor supplied interconnecting pipe spools between FGC main blower skid and off-skid aftercooler.

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Hardin County Landfill
Gas-to-Energy Project

1.02 REFERENCES

- A. American National Standards Institute (ANSI):
1. ANSI B19.3-1991 - Safety Standard for Blowers for Process Industries
 2. ANSI B31.3 - Power Piping, Latest Edition
- B. American Society of Mechanical Engineers (ASME):
1. ASME Boiler and Pressure Vessel Code Section VIII, Division 1, Latest Edition
- C. Code of Federal Regulations (CFR) Title 49 Part 192, Latest Edition
- D. National Electrical Code (NEC), Latest Edition
- E. Occupational Safety and Health Administration (OSHA) General Industry Standards, Latest Edition
- F. Steel Structures Painting Council (SSPC), Latest Edition

1.03 SUBMITTALS

A. Drawings

Drawings furnished shall contain sufficient information that when combined with other Documents, the FGC may be properly installed, operated and maintained. Each drawing is to have a title block in the lower right hand corner with certification, reference, revision number, date and drawing title.

B. Project Schedule

A project schedule (bar chart) showing the major activities with their commencement dates and projected completion dates shall be issued to Buyer at time of receipt of Purchase Order. This schedule shall be resubmitted at any time changes are made.

C. Progress Reports

Written progress reports shall be issued every two weeks to Buyer starting from date of purchase order to include:

1. Project schedule status
2. Scheduling problems
3. Possible delays
4. Deviations from initial schedule

D. Design Information

Four (4) weeks after the receipt of the purchase order, the following will be provided to the Buyer for design of the FGC facility:

1. Utility Requirements

Submit utility requirements for all energy consumers such as pumps, electric motors, heaters, pneumatic actuators, etc. within four (4) weeks after receipt of purchase order. Preliminary requirements shall be submitted with proposal.

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Hardin County Landfill
Gas-to-Energy Project

2. Heat rejection data shall be supplied for the following:

- a. Blower
- b. Process piping
- c. Gas Cooler
- d. Oil Cooler
- e. Utility piping
- f. Total heat rejection of the FGC

E. Preliminary Issue

Six (6) sets of the following shall be submitted to Buyer "For Approval" within six weeks after receipt of purchase order and shall be reviewed and approved by Buyer or Buyer's representative prior to ordering materials and fabrication:

1. Customer drawings for the FGC:

- a. Flow, P&ID and utility diagrams.
- b. Electrical wiring diagrams and cable schedule.
- c. General arrangement plans and elevations with customer connections noted on a legend located on the drawings upper right hand corner (certified dimensionally correct). All customer connections should be identified (including electrical motors, heaters, controls, etc.).

2. Equipment list, specifications and equipment flow charts.
3. Control panel layout with name plate wording.
4. Control logic and start sequence (narrative).
5. Performance curves for the FGC showing capacity, pressure, and power (kW) required from 0% to 120% of rated capacity.
6. Electric motor curves (motor speed vs. torque and current, and time vs. current)
7. Expected condensate volumes.
8. Equipment noise data shall be furnished for the FGC and each major component (including aerial cooler) and shall contain expected noise levels (in dbA) at the following frequencies: 31.5, 63, 125, 250, 500, 1K, 2K, 4K and 8K Hz. Approval shall be given for the noise emissions levels prior to purchase of such equipment.
9. Weight and size information of all equipment requiring foundations shall be supplied. Information shall be sufficient to design and construct equipment foundations (by others) and shall include anchor bolt patterns, overall dimensions, vibration information, operating weights, etc. Information shall be included on general arrangement drawings.
10. Leveling procedures and grouting recommendations.
11. Initial oil fill and cooling capacities, including make up due to loss or consumption, lubrication recommendations and filter sizes and quantities.

F. "Certified" Submittal

Four (4) weeks after review and approval comments have been received by Vendor, three (3) sets of all Drawings and Documents listed in 1.03.E and one (1) set of reproducible mylars of Drawings shall be submitted to Buyer. Drawings shall be certified dimensionally correct. All Drawings and Documents shall be issued "Certified".

G. "As-Built" Drawings

Within four (4) weeks after the FGC fabrication is completed submit six (6) sets of blue line "as-builts" with all revisions noted, certified and dated.

H. "As-Installed" Drawings

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Hardin County Landfill
Gas-to-Energy Project

After the system is installed at the jobsite, submit three (3) sets of blue lines (or CADD black line), one (1) reproducible set of "as-installed" mylars and three (3) sets for inclusion in operation and maintenance manuals. These drawings shall be submitted no later than four (4) weeks after the FGC has been placed in commercial operation or has achieved substantial completion.

I. Operation and Maintenance Manuals

Provide written instructions to enable the installation, operation and maintenance of the FGC. This information shall be completed in manuals with title pages containing index sheets and section titles. The Operation and Maintenance Manual shall be prepared specifically for this installation.

Three (3) Operation and Maintenance manuals per unit, one of which will be the master manual with the original vendor information, shall be supplied at time of FGC delivery and shall include the following information:

1. Catalog descriptions of all equipment utilized in the system as well as performance criteria for the operating conditions.
2. Recommended spare parts lists for all equipment, to include part name, manufacturer, part #, manufacturer's part #, cost and supplier, etc.
3. Operating instructions for the FGC under the conditions for which it was designed.
 - a. Start-up and shutdown procedures
 - b. Preventive maintenance schedule
 - c. Operating and safety procedures
 - d. Maintenance procedures
 - e. Emergency shutdown
 - f. Rigging procedures
 - g. Methods of disassembly
 - h. Methods of reassembly
4. A table indicating the proper control settings for all instrumentation on the FGC.
5. Certified copies of as-built drawings (to be replaced by as-installed drawings).
6. Troubleshooting instructions.

Two (2) copies of preliminary operating and maintenance manuals shall be supplied within two weeks following completion of FGC fabrication.

1.04 SITE CONDITIONS

A. The unit will be located at the Laurel Ridge Landfill in Lily, Kentucky.

B. Specific Site Conditions

1.	Plant Elevation	500 FASL
2.	Ambient Pressure	14.38 psia
3.	Maximum Relative Humidity	100%
4.	Average Annual Precipitation	40 inches
5.	Ambient Temperature Range	110°F Max. -20°F Min.
6.	Avg. Annual Snow Accumulation	20 inches
7.	Area Classification	NEC Class 1, Div. 2, Group D

1.05 GENERAL SERVICE DESCRIPTION

A. System Description

EKPC

Hardin County Landfill
Gas-to-Energy Project

The FGC shall be designed to compress, clean, and deliver a volume of landfill gas at a specified pressure and quality. The design of the FGC shall strive for efficiency, one that minimizes initial cost, seeks to operate at the lowest possible horsepower, but meets all required performance and material standards as described in this specification. The FGC shall be designed for indoor or outdoor installation.

The FGC shall consist of a blower, electric motors, inlet liquid knockout vessel, gas reheat exchanger, discharge gas coalescing filter, interconnecting piping, relief valves, safety shutdowns, on-skid electrical wiring, and local control panel, all skid-mounted. The aerial aftercooler shall be mounted off the main skid. FGC skid shall have a single flanged suction connection with a manual butterfly valve and a single flanged discharge connection.

Initial cleaning of the gas shall be accomplished by a liquid knockout vessel with a stainless steel mesh pad demister at the suction of the blower. Compression of the gas shall be followed by cooling of the gas in an aerial aftercooler. Prior to the blower discharge aftercooler, the gas shall pass through a shell and tube gas-to-gas heat exchanger for reheating the gas following final filtration. The final gas filter shall be a two stage, coalescing filter to remove condensed liquids and particulates.

All equipment, instrumentation, interconnecting piping, and controls are to be furnished for the jobsite in an integrated packaged system by the Vendor. The package components shall be fabricated such that unloading and setting on a foundation at the jobsite requires minimal field interconnection of piping and wiring. Skid-mounted means the process equipment is assembled and pre-piped on a steel structure of such a size and weight that permits its shipment by highway or other transport from point of fabrication to the jobsite. All freight charges shall be FOB Jobsite and paid by the Vendor and billed to Buyer at cost.

B. Functional Conditions

1. Landfill Gas Inlet Design Conditions

a.	Suction Pressure, max.	11.8 psia (-6" Hg vacuum)
b.	Suction Temperature	100°F
c.	Design Flow Rate, wet	1500 scfm maximum (900 scfm initial)
d.	Guaranteed Capacity	+ 3%
e.	Water Content	Saturated

2. Suction temperature of the gas may vary between 30°F and 120°F.

3. Landfill Gas Composition (Typical)

<u>Gas</u>	<u>Mol Fraction</u>
Methane	53.450
Ethane	0.050
Propane	0.040
Isobutane	0.030
Normal Butane	0.020
Isopentane +	0.010
Carbon Dioxide	42.000
Nitrogen	1.000
Oxygen	0.200
Hydrogen	0.000
Water	3.200

4. Calculated Gas Properties

a.	Molecular Weight	28.770
b.	Specific Gravity	0.992 Dry

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5. Final Discharge Gas Requirements (at FGC system discharge flange)
- | | | |
|----|--------------------------------|--|
| a. | Discharge Pressure | 4 psig |
| b. | Discharge Temperature | Min. 20°F above gas dew point
Max. 140°F |
| c. | Discharge Guaranteed Flow Rate | 1500 scfm maximum (900 scfm initial)
(based on 1500 scfm inlet flow and 3% water vapor by volume) |
| d. | Oil Carryover, max. | 50 ppmv |
| e. | Total Particulates | Less than 30 ppmw |
| f. | Maximum Particle Size | 8 micron |

1.06 QUALITY ASSURANCE

The FGC shall be manufactured at facilities to the same standards, specifications, and quality requirements as detailed in the Vendor's Quality Control Program. Quality Control Program shall be incorporated with specific inspection and test points through the entire manufacturing process. Included are the following requirements.

A. Buyout Components

Vendor procurement specifications and supplier quality requirements shall be submitted to all major suppliers. Approved vendors must have in place a specific quality plan. Suppliers shall be monitored for compliance through facility visits and through specific project inspection, both in vendor shop and via receiving inspection procedures. Supplier's standard inspection documents shall be furnished to Buyer upon request. Tests and inspections shall be to Vendor's standards.

B. Shop Manufacturing

Welding, fabrication, and assembly shall be accomplished via formal shop planning and related manufacturer specifications. Welding and weld procedures shall be in accordance with recognized industry standards (ASME, API, ANSI, etc.). All pressure vessels shall be fabricated and inspected to ASME code requirements.

PART 2 PRODUCTS

2.01 BLOWER

A. Description

1. Positive displacement, dry rotary lobe blower
2. Belt driven via electric motor
3. Blower driven lube oil pump
4. Oil heater
5. Expansion joints at suction and discharge
6. Dresser Roots 1012 RGS-JH, or equal (subject to approval)

2.02 ELECTRICAL MOTORS

A. Description

1. National Electric Code (NEC) Class 1, Division 2, Group D requirements.
2. Totally enclosed, fan cooled (TEFC)
3. 480 volts AC, 60 Hz, 3 phase for blower drive motor;
480 volts AC, 60 Hz, 3 phase for all other motors ½ HP and larger
120 volts AC, 60 Hz, 1 phase for all other motors less than ½ HP
4. 1.15 Service Factor (S.F.)

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5. Include 110 VOLTS AC, 1 phase space heater
6. Continuous duty operation at ambient temperatures of 105°F or above.
7. Motor starters shall not be furnished as part of the packaged system.

B. Manufacturers

1. Siemens
2. U.S. Electric Motor
3. Or equal.

2.03 CONTROL SYSTEM

A. Control System Description

1. Stand alone NEMA construction for mounting in a NEC Class 1, Division 2 area.
2. Automatic start/stop logic sequencing initiated by a single system start or stop pushbutton.
3. One (1) system control panel locally mounted on-skid.
4. Intrinsically safe control components.
5. "First Out" annunciators that indicate the primary cause of shutdown and then the subsequent failures.
6. Each wire, tube and gauge shall be clearly marked or tagged with their respective termination point for ease of field installation (pencil or ink marking is not satisfactory).
7. Thermocouples/capillaries shall be installed at time of fabrication.
8. Flexible conduit runs on the skid shall be limited to 3 feet in length.
9. Temperature gauges/devices shall have stainless steel thermowells.
10. Local temperature gauges shall be 4 inch min. dial face with flexible head.
11. Pressure gauges/devices will have pulsation dampeners and isolation valves.
12. Wires shall be clearly marked on both ends and the panel shall have wires placed in wire raceways and tie-wrapped.
13. Contact devices shall have explosion-proof enclosures if not intrinsically safe, and dust covers.
14. Wire termination points shall be clearly marked for proper location with black name plates and white letters.
15. The FGC shall have a system emergency stop pushbutton on the locally mounted skid panel.
16. Instrument control devices (e.g. dump valves, bypass controls) shall be pneumatically operated (instrument air supplied by others). Landfill gas as a pneumatic control media is unacceptable.
17. The FGC control system shall have a gas temperature switch to control aftercooler fan speed (high/low) and to shut down the fan on low gas temperature (e.g., 35 degrees F).

B. Local Control Panel

1. General
 - a. Each device mounted on the face of the control panel shall be identified with a phenolic laminated, engraved nameplate. The nameplates are to be black with white letters.
 - b. All wires, tubes and gauges in the rear or inside of the panel shall be clearly labeled or tagged with their respective termination point for ease of maintenance.
2. The following items shall be included in the FGC control panel (but not limited to):
 - a. One (1) explosion proof (EP) box for pushbuttons and switches.

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- b. One (1) push to start FGC.
- c. One (1) push to stop FGC.
- d. One (1) alarm reset.
- e. One (1) key switch (on/off control).
- f. One (1) EP horn (sounds for three seconds prior to starting FGC).
- g. One (1) EP alarm red strobe light (shutdown indication).
- h. One (1) EP box on skid for terminal block interconnect.
- i. One (1) emergency shutdown.
- j. Automatic cooler fan speed control. Include low temperature cut-out switch and timer for high to low speed transition.
- k. FGC capacity controls (may mount external to control panel).
- l. Runtime hour meter.
- m. Power On indicator light

3. Gauges (Panel mounted unless otherwise indicated.)

- a. One (1) U-tube (mercury) manometer for system suction pressure w/ shutoff valve
- b. One (1) blower suction pressure w/ s.s. trim.
- c. One (1) blower discharge pressure w/ s.s. trim.
- d. One (1) blower suction temperature w/ s.s. capillary or thermocouple.
- e. One (1) blower discharge temperature w/ s.s. capillary or thermocouple.

4. Shutdown Indications

- a. Suction gas pressure low/high.
- b. Blower gas discharge pressure high.
- c. Suction gas temperature high.
- d. Blower gas discharge temperature high.
- e. Final gas discharge temperature high.
- f. Blower oil pressure low.
- g. Blower oil temperature high.
- h. Blower oil level low.
- i. Inlet knockout vessel high liquid level.
- j. Final coalescing filter high liquid level (upper/lower).
- k. Blower vibration high.
- l. Blower motor vibration high.
- m. Gas cooler fan(s) vibration high.
- n. Emergency shutdown (from local emergency stop pushbutton)
- o. Customer emergency shutdown (signal by others)
- p. Spare.
- q. Spare.

5. One (1) set of control contacts/terminations for the following:

- a. Gas aftercooler fan speed controls (High/Low/Off).
- b. Blower main motor control.
- c. Blower oil heater control.
- d. Remote FGC running indication.
- e. Remote FGC emergency shutdown.

C. Local Mounted Gauges

- 1. Final discharge gas pressure w/ s.s. trim and pulsation/shutoff valve.
- 2. Final discharge gas temperature.
- 2. After reheat exchanger gas temperature.

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3. Blower aftercooler discharge gas temperature.
4. Skid suction gas temperature.
5. Blower oil temperature.

D. Capacity Control

1. Pressure control via blower recycle valve.
2. Recycle capacity shall be sized for 100% of actual recycle flow (zero discharge flow).
3. Recycle valve to have stainless steel trim.
4. Local mounted pneumatic controller.
5. FGC shall be shipped with appropriate sheaves and belts installed for initial operation at 900 scfm flow. A set of sheaves and belts shall be loose shipped for operation of the FGC at full rated flow of 1500 scfm in the future.

2.04 PRESSURE VESSELS

A. Description

1. General - All Vessels

- a. ASME Boiler and Pressure Vessel Code, Section VIII, Division I, latest edition.
- b. ASME code stamped with a National Board number affixed. Vessels to be code stamped:
 1. Inlet knockout vessel
 2. Final coalescing filter
 3. Gas reheat exchanger
- c. Bolted in place.
- d. Fabricated with removable heads and demisters.
- e. Equipped with automatic and manual liquid dump control valves for unattended operation. Automatic controls shall have isolation valves for maintenance.
- f. Vessel connections 2 inches and larger shall be flanged. Vessel connections smaller than 2 inches may be flanged at Vendor's option.
- g. Threaded fittings shall be stainless steel.
- h. Manways 6 inches or larger to have flanged davits for ease of installation and removal. Davits shall have grease fittings to lubricate the davit arm.
- i. Gaskets
 1. Vessel closure or manway flanges prior to the blower in the process stream - non-asbestos, compound type gaskets, Garlock Gylon blue or similar.
 2. Vessel closure or manway flanges downstream of the blower - wire wound, non-asbestos filled, Flexitallic type gaskets, or similar.

2. Inlet Liquid Knockout

- a. Carbon steel, internally epoxy coated or 304/316 stainless steel.
- b. Supplied with an automatic, pneumatic drain pump to remove liquids.
- c. Liquid level sight gauges.
- d. Stainless steel wire meshpad demister.

3. Final Coalescing Filter

- a. 304/316 stainless steel.

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- b. Coalescing filter/separator.
- c. 0.3 micron absolute particulate size rating.
- d. Liquid level sight gauges.

2.05 PUMPS**A. General**

1. Isolation ball valves to allow removal without draining system.
2. ANSI type pumps.
3. Continuous duty operation.
4. NEC Class 1, Division 2, Group D.

2.06 GAS AFTERCOOLER/LUBE OIL COOLER**A. Description**

1. Blower aftercooling.
2. Blower lube oil cooling.

B. Construction

1. ASME Boiler and Pressure Vessel Code, Section VIII, Division I, latest edition.
2. Unitized, horizontal, forced draft, air-cooled heat exchanger having a vertical air discharge.
3. Incorporate final gas temperature control via manual fan motor speed control and manual louvers over blower aftercooling section.
4. Entire cooler structure, not including cooling section tubes shall be coated with epoxy paint - color shall be same as skid. (See Section 2.13 for painting specifications.)

C. Gas Aftercooler Section

1. Header removable tube type construction.
2. Stainless steel tubes with carbon steel header boxes.
3. ANSI raised face, flanged connections.

D. Blower Lube Oil Cooler Section

1. Double pass finned tubes.
2. Carbon steel tubes.
3. NPT or tubing connections.

2.07 LUBRICATION SYSTEM**A. Description**

1. Blower oil system provides lubrication for the bearings and gears.
2. Heaters with thermostats and temperature control valves to maintain proper lube oil temperatures when FGC is not in operation. Heaters shall be 120/240V AC single phase.
3. Oil filters shall be designed to have a dirt loading capacity of a minimum of three (3) month filter change interval.
4. Provided with oil sample location (i.e., sample valve prior to filter).

B. Blower Lube Oil System

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1. Carbon steel construction.
2. Blower driven lube oil pump.
2. Blower manufacturer recommended lube oil filtration system.
3. Thermostatic temperature control (Amot or equal) to provide bypass of aerial cooler for cold starts.

2.08 MATERIALS OF CONSTRUCTION

<u>Description</u>	<u>Material</u>
Sight gauges	Carbon steel with stainless steel trim
Vessel trim	304/316 stainless steel
Inlet knockout vessel	Epoxy coated carbon steel or 304/316 stainless steel
Final gas filter	304/316 stainless steel
Blower discharge pulsation dampener	304/316 stainless steel
Gas cooler sections	304/316 stainless steel tubes & carbon steel headers; carbon steel structure and supporting legs
Gas reheat exchanger	304/316 stainless steel
Blower oil cooler section	Carbon steel tubes
Condensate piping	304/316 stainless steel
Instrument air piping	Carbon steel
All piping that comes in contact with landfill gas	304/316 stainless steel
Blower oil piping	Carbon steel
Pipe flanges for stainless piping	Stainless steel
Inlet valve	Carbon steel, stainless steel trim
Dump and liquid level controls	Stainless steel
Instrument air tubing	Stainless steel
Process tubing	All tubing in contact with landfill gas shall be stainless steel.
Blower oil filters	Carbon steel
Shims	Stainless steel
Gas interconnecting piping	Stainless steel

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Relief valves

Carbon steel with stainless steel
trim

2.09 CONSTRUCTION

- A. Piping and equipment arrangements shall be designed to provide adequate clearance areas and safe access for operation and maintenance.
- B. Blower discharge piping shall be equipped with a pressure safety relief valve (PSV) that is piped to an atmospheric vent.
- C. Clear overhead access shall be provided over all equipment that requires a hoist for removal.
- D. The skid shall be designed and constructed to allow any corner to be independently raised 3 inches without damage to equipment or piping installed on the skid.
- E. FGC skid shall include a minimum of four lifting eyes for ease of installation.
- F. Mounting surfaces shall be machined milled and leveled within 0.005 inch (i.e. motor, blower, etc.). Mounting hardware for all equipment shall have lock and flat washers.
- G. Maintenance items 5 feet above the base of the skid shall have ladders and step-offs (i.e. liquid knockout and filter vessels) meeting OSHA Standards for ease of access and maintenance.
- H. Driven equipment shall have OSHA approved guards for personnel protection.
- I. Skids shall have jacking screws placed approximately 5 feet on center for leveling and setting. All equipment shall have jacking screws for X, Y and Z axis alignment (i.e., blower and electric motor).
- J. The fabrication of the skid shall conform in dimensions for installation in the engine facility. The dimensions of the main blower skid shall not exceed 8 feet wide and 14 feet long. The cooler skid shall not exceed 4-1/2 feet wide and 5 feet long. The height shall not exceed 13 feet high for the blower skid and 8 feet high for the cooler.
- K. The skid shall be laid out so that the landfill gas suction piping connection is located at the front of the skid, the aftercooler piping connections are located at the rear of the skid, and the landfill gas discharge piping connection is located on the left side of the skid when viewed from the front (suction) end.

2.10 WELDING

- A. Welding on pipe spools shall conform with ANSI B31.3.
- B. Welders shall be ASME certified and all necessary documentation shall be produced upon request of Buyer.
- C. Welds shall be verified by in-process inspection and shall be documented in a certified report and submitted at the completion of fabrication. A minimum of 5% of all welds shall be radiographed at Vendor's selection and attached to the final report.

2.11 PIPING

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- A. Piping and piping fabrication shall be consistent with recognized industry specifications and shall be 304 or 316L stainless steel unless otherwise noted on the Materials of Construction, Section 2.08.
- B. Piping flanges shall be ANSI 150 lbs. rated. Fabricated flanges are not acceptable.
- C. Flange connections upstream of the blower shall use Garlock type gaskets. Flange connections downstream of the blower shall use non-asbestos, wire wound, Flexitallic type gaskets.
- D. Piping 2 inches (nominal) and larger shall be butt welded and flanged.
- E. Piping wall thickness shall be designed for a minimum of 1.5 times the operating pressure.
- F. Screwed piping shall have a minimum wall thickness of ANSI schedule 40 pipe with minimum 150 lb. fittings. Close thread nipples or street elbows shall not be used.
- G. Stainless steel tubing and fittings may be substituted for piping 1 inch (nominal) or smaller; piping 1/2 inch and smaller shall use stainless steel tubing and fittings.
- H. Tubing and fittings shall be 304 or 316L stainless steel unless otherwise noted in Section 2.08.
- I. Condensate drain lines shall be manifolded to one location on the skid with all necessary check valves at each vessel for safe operation. A shut-off ball valve shall be provided at skid edge.
- J. Gas piping, where it is possible for liquids to collect, shall have drain connections (manual ball valves) and shall ensure complete drainage through low points without disassembly. Low points in gas piping are to be avoided.
- K. Isolation valves shall be placed in piping around all components to avoid loss of gas pressure and fluids during scheduled or unscheduled maintenance of the components.
- L. Instrument air lines shall be manifolded and have a coalescing filter with a shutoff ball valve. Regulation of air pressure shall be by a single point gauge and regulator (except where required by individual devices for correct operation). Dedicated instrument control connections shall be provided for all gauges and shutdowns.
- M. Oil system drain shall be brought to the skid edge. A shut-off ball valve shall be provided at skid edge.
- N. Interconnecting pipe spools shall be provided with one field weld in each X, Y and Z axis. All field welded pipe to be shipped loose is to be stamped with identifying marking to match with adjoining pipe.
- O. Interconnecting instrument air tubing shall be tagged at both ends for ease of field installation.

2.12 CLEANING

- A. Prior to testing and final assembly, all gas process piping, vessels, and utility piping shall be thoroughly cleaned. The cleaning procedure proposed shall be submitted to Buyer for approval one month prior to actual performance of any such cleaning and shall be a proven method to remove foreign materials, corrosion products and mill scale.
- B. All stainless steel piping shall be cleaned and filed with stainless steel files and wire wheels prior to welding. At no time shall stainless steel piping or components come in contact with carbon steel cleaning devices.

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- C. Oil systems shall meet the cleanliness intent of API 614 standard.

2.13 PAINTING

- A. All piping, vessels, mechanical equipment and skid shall be painted per SSPC paint specification. (Alternative method shall be Ameron Amerlock 400 paint system per manufacturer's specifications.)
1. Commercial sandblast per SSPC-SP6-63
 2. Prime inorganic Zinc - 0.0635 mm dry minimum thickness
 3. Top coat Epoxy Polyamide - 0.0762 to 0.1016 mm dry minimum thickness
 4. Color - Solar grey (paint chip available upon request)
- B. Prior to cleaning and painting, openings shall be plugged and all nameplates, labels, tags, manufacturers information and glass shall be covered. All coverings shall be removed when painting is complete.
- C. Stainless steel items shall also be sandblasted and painted. (Only exception shall be stainless steel tubing and fittings.)
- D. Piping on the underside of the skid, the underside of vessel skirts, cast aluminum boxes and subvendor supplied items shall be hand cleaned per SSPC-SP2-63 and primed with one coat of epoxy primer and finish coat.

2.14 INSPECTION AND TESTING

- A. All testing protocols shall be submitted to Buyer for review and approval prior to the start of fabrication.
- B. All utility systems shall be run tested at Vendor's shop. Tests shall be performed at operating pressures and temperatures. Any exceptions must be submitted to and approved by Buyer thirty (30) days prior to testing.
- C. The following utility piping shall be hydro-tested prior to assembly to 1.5 times its operating pressure or to a minimum of 25 psi gauge pressure.
1. Oil lines (air tested - soap bubble tested)
 2. Instrument air lines after final assembly (air tested - soap bubble tested)
 3. Condensate drain lines greater than one inch diameter
- D. Gas piping shall be hydro-tested prior to assembly to 1.5 times its operating pressure or to a minimum of 25 psi gauge pressure and the reading shall be recorded with a chart recorder for a minimum of one hour. Gas piping connections shall be air tested for flange leaks after assembly. The test shall be performed at operating pressure for a minimum of thirty (30) minutes to check for leaks when subjected to a soap-bubble test or to another approved leak test.
- E. All pressure vessels shall be tested per code requirements:
1. Final gas filter
 2. Inlet liquid knockout
 3. Gas cooler
- F. All purchased items shall have the necessary documentation to confirm code conformance.

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- G. Buyer shall be notified one week prior to all testing described and tests shall include but not be limited to the following:
1. Control panel tests
 2. Vessel closures and pressure tests
 3. Pipe spool hydrostatic testing
 4. Utility system tests
 5. Shutdown safety test
 6. Blower factory tests
- H. Buyer shall also be notified for the following activities:
1. Alignment of the blower to the electric motor
 2. After skid is sandblasted and prior to painting
- I. Each manufacturer shall supply written certification that all tests have been performed together with the results of such tests.
- J. All safeties shall be checked and gauges proved operational for both temperature and pressure.
- K. Vessels shall be sufficiently filled with water to ensure the correct operation of dump valves, controls and high liquid level shutdowns.
- L. A mechanical bar-over test for the blower and electric motors shall be performed prior to shipment.
- M. Control panels shall be witness tested by Vendor and Buyer.
- N. Relief valves on all gas piping shall be certified at correct settings.
- O. Drive sheaves and belts shall be installed after the unit and the electric motor have been positioned and aligned.
- P. The Buyer's representative shall have the right to reject any components that do not conform with the specifications. The Buyer's acceptance of shop test results shall not constitute waiver of Vendor's obligation to provide equipment which meets the design operating requirements of the FGC.

2.15 COMMISSIONING AND START-UP

- A. Vendor shall include a three (3) day start-up period including travel and subsistence to begin upon notice of Buyer. Vendor shall provide additional start-up assistance as required by Buyer at Vendor's standard service rates. Vendor shall provide standard service rates to Owner prior to start-up.
- B. Vendor shall provide services for commissioning and start-up with Service Representatives who are experienced and qualified in all electrical, mechanical and process control equipment that is part of the system supplied.
- C. Part of the start-up procedure shall include verification of correct equipment installation and alignment. Alignment shall be checked at a cold setting and once again after the unit has run for a minimum of three consecutive days.

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- D. Vendor shall provide an equipment start-up and check off sheet to Buyer to certify that necessary start-up activities are accomplished. Vendor shall record and supply all initial start up data and blower log readings to compare actual verses design readings and explanations for variances.
- E. The Vendor's Service Representative shall be trained in the design, operation, and servicing of the fuel gas blower package and will be involved during factory assembly and testing to supplement training for these specific machines at no cost to Buyer.
- F. Start-up time may include, at Buyer's option, a familiarization training session for Buyer operator personnel on the blower packages.

2.16 PREPARATION FOR SHIPMENT

- A. Flanged connections shall be covered with wood discs and bolted.
- B. Screw connections shall be sealed with plastic covers.
- C. Instruments vulnerable to shipping damage shall be removed, boxed and packed for reinstallation at the jobsite.
- D. Buyer is to be notified twelve (12) weeks after receipt of purchase order which items will ship loose and require field assembly.
- E. Each unit shall be suitably prepared for at least six (6) months of outdoor storage from time of shipment in a manner requiring no major reassembly prior to operation, except as required in Item C above.
- F. Ship loose items shall have weather resistant tags indicating item identification and serial number.
- G. Exterior machined surfaces shall be coated with a suitable rust preventive.
- H. The FGC shall be delivered to the Jobsite with a complete bill of materials noting all items shipped.
- I. The FGC shall be canvased or covered with polyethylene during the shipping process.

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Hardin County Landfill
Gas-to-Energy Project**PART 3 EXECUTION****3.01 WARRANTY**

It shall be the responsibility of the Vendor to design and provide an integrated system including blower, motors, vessels, controls, etc. which meets all requirements of the specifications. The FGC shall be supplied as a complete and operable package and shall be warrantied as a single package for a minimum period of 18 months after shipment and 12 months after start-up. Individual component warranties shall not be carried through unless they exceed the warranty of the package. The warranty shall ensure the proper operation of the FGC package as designed and of all components supplied.

3.02 INSTALLATION

Contractor will install the FGC in accordance with the installation instructions provided by the Vendor.

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Hardin County Landfill Gas-to-Energy Project

**EQUIPMENT BID SHEET
FUEL GAS COMPRESSOR SKID**

PROCESS INFORMATION: (Attach P&I D Diagram)

PHYSICAL DATA:

Skid Dimensions: _____ L X _____ W X _____ H

Weight: _____ Lbs

ELECTRICAL DATA:

Blower Motor Rating: _____ HP, _____ SF, _____ V

Estimate Full Load Power Consumption (@ Rated Conditions): _____ kW

PRICING QUOTATION:

Price for FGC Skid: \$ _____

Price for Start-Up of Skid: \$ _____

Shipping to Pearl Hollow Landfill site (Elizabethtown, KY): \$ _____

Total Price: FGC plus Start-up and Shipping: \$ _____

MISCELLANEOUS INFORMATION:

Anticipated ship date: _____ Days A.R.O.

Standard Warranty Period: _____ after _____

Pricing for Extended Warranty (18 months after delivery): \$ _____

R2



June 17, 2005

Ralph Tyree
 East Kentucky Power Cooperative
 4775 East Lexington Road
 Winchester, KY 40391
 Ph: 859-744-4812
 Fax: 859-744-6008

Subject: Pearl Hollow Landfill Fuel Gas Booster
 SCFM Compression Systems Ref #

RFQ
 030504R2

Mr. Ralph Tyree:

We are pleased to offer for your consideration the following for your landfill gas compressor project. Option #1 offering is to meet the letter of the specifications as well as the intent including specific content. Option #1 will include freight to site and two man days of labor only no expenses. Additional days and all expenses will be charged at the rates listed below.

COMMERCIAL

Pricing:

Option #1 Offering

\$232,532.00 US

FOB our shop, valid for 15 days, basis an order for one (1) of each unit
 Pricing is basis current Raw Materials costs and is subject to escalation with documentation provided for any pricing changes.

Freight

Freight is included.

Shipment

16-18 Weeks after receipt of written acceptable Purchase Order

Progress Payments (per unit)

- 10% with Purchase Order.
- 25% upon Issue of Approval Drawings.
- 25% upon Issue of Certified Drawings.
- 25% upon SCFM's Receipt of Compressor.
- 5% upon Completion of Fabrication (ready to ship).
- 10% upon Completion of Startup or 90 days from Completion of Fabrication (ready to ship) whichever shall occur first. This is due upon receipt.

Payment Terms

Net 10 days from invoice issue date.

Drawings and Operation / Maintenance Manuals

Drawings per your requirements. Two (2) copies Operation / Maintenance Manuals are included.

Start-up Assistance

Start-up assistance, erection supervision, training, etc. are not included but are available at US\$ as follows:

- Technician \$1000.00 per day Domestic, \$1,400.00 per day International
- Engineer \$1,300.00 per day Domestic, \$1,800.00 per day International
- Senior Engineer \$1,800.00 per day Domestic, \$2,300.00 per day International
- Plus all travel and living expenses to, from and at the job site for each.

3701 S. Maybelle Ave, Tulsa, OK 74107 ph.:(918) 663-1309, fax (918) 663-6140

E-mail: mail@scfm.com, www: www.scfm.com

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**EQUIPMENT BID SHEET
FUEL GAS COMPRESSOR SKID**

PROCESS INFORMATION: (Attach P&I D Diagram)

PHYSICAL DATA:

Skid Dimensions: _____ 19'3" _____ L X _____ 8' _____ W X _____ 13'2" _____ H

Weight: _____ 34,000 _____ Lbs

ELECTRICAL DATA:

Blower Motor Rating: _____ 125 _____ HP, _____ 1.15 _____ SF, _____ 480 _____ V

Estimate Full Load Power Consumption (@ Rated Conditions): _____ 84.264 _____ kW

PRICING QUOTATION:

Price for FGC Skid: _____ \$ 232,532 _____

Price for Start-Up of Skid: _____ \$ 2 man days labor only included above

Shipping to Pearl Hollow Landfill site (Elizabethtown, KY): _____ \$ Included above _____

Total Price: FGC plus Start-up and Shipping: _____ \$ 232,532 _____

MISCELLANEOUS INFORMATION:

Anticipated ship date: _____ 126 _____ Days A.R.O.

Standard Warranty Period: _____ See our terms and conditions with the proposal

Pricing for Extended Warranty (18 months after delivery): _____ \$ 8,964 _____



EAST KENTUCKY POWER COOPERATIVE

*Received
6-13-05
Dan Dale*

Hardin County Landfill Gas to Electric Generating Facility

Switchgear Contract

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U.S. Department of Agriculture
Rural Utilities Service

EQUIPMENT CONTRACT

NOTICE AND INSTRUCTIONS TO BIDDERS

1. **Sealed proposals for the furnishing and delivering f.o b.** 4160 Volt Switchgear and Controls

_____ of equipment for the rural electric project of East Kentucky Power Cooperative, Inc., RUS designation _____, (hereinafter called the "Owner") will be received by the Owner on or before 2:00 o'clock P M., March 30, 2005, at its office at 4775 Lexington Road, Winchester, KY at which time and place the proposals will be _____ publicly opened and read.

X privately opened. The Owner, subsequent to the bid opening, may elect to conduct clarifying discussions with the bidder to resolve any questions related to the substance of the bidder's proposal and to arrive at a final price for a responsive bid.

Any proposals received subsequent to the time specified will be promptly returned to the Bidder unopened.

2. **Obtaining Documents.** The Plans, Specifications, and Construction Drawings, together with all necessary forms and other documents for bidders may be obtained from the Owner, or from the Engineer Meade Electric Company, Inc. at the latter's office at 9550 W 55th Street, Suite A, McCook, IL

upon the payment of \$ N/A, which payment will not be subject to refund. The Plans, Specifications, and Construction Drawings may be examined at the office of the Owner or at the office of the Engineer.

3. **Manner of Submitting Proposals.** Proposals and all supporting instruments must be submitted on the forms furnished by the Owner and must be delivered in a sealed envelope addressed to the Owner. The name and address of the Bidder and the date and hour of the opening of bids must appear on the envelope in which the Proposal is submitted. Proposals must be completed in ink or typewritten. No alterations or interlineations will be permitted, unless made before submission, and initialed and dated. The successful Bidder will be required to execute two additional counterparts of the Proposal.
4. **Due Diligence.** Prior to the submission of the Proposal, the Bidder shall make and shall be deemed to have made a careful examination of the Plans, Specifications, Construction Drawings, and form of Proposal, and shall review the location and nature of the proposed construction, the transportation facilities, the kind and character of soil and terrain to be encountered, the kind of facilities required before and during the construction of the project, general local conditions, environmental and historic preservation considerations, and all other matters that may affect the cost and time of completion of the work. Bidder will be required to comply with all federal, state, and local laws, rules, and regulations applicable to its performance, including those pertaining to the licensing of contractors, and the Anti Kick-Back Act of 1986 (41 U.S.C. 51 et seq).
5. **Proposals will be accepted only from those prequalified bidders invited by the Owner to submit a proposal.**
6. **The Time for Delivery of the Equipment is of the essence of the Contract and shall be as specified by the Engineer in the Proposal.**

7. **Evaluation Factors.** *In estimating the lowest cost to the Owner as one of the factors in deciding the award of the Contract, the Owner will consider, in addition to the price quoted in the Proposals, the following:*

In conformance with all specifications.

8. **Debarment Certification.** *The Bidder must provide to the Owner a suspension and debarment certificate in the form attached hereto.*
9. **Contract is Entire Agreement.** *The Contract to be effected by the acceptance of the Proposal shall be deemed to include the entire agreement between the parties thereto, and the Bidder shall not claim any modifications thereof resulting from any representation or promise made at any time by any officer, agent or employee of the Owner or by any other person.*
10. **Minor Irregularities.** *The Owner reserves the right to waive minor irregularities or minor errors in any Proposal, if it appears to the Owner that such irregularities or errors were made through inadvertence. Any such irregularities or errors so waived must be corrected on the Proposal in which they occur prior to the acceptance thereof by the Owner.*
11. **Bid Rejection.** *The Owner reserves the right to reject any or all Proposals.*
12. **Definition of Terms.** *The terms "Administrator" and "Engineer" as used throughout this Contract shall be as defined in Article VI, Section 1, of the Proposal.*

East Kentucky Power Cooperative,

By ^{Owner} Ray M. Palk

President and Chief Executive Officer
Title

July 12, 2005
Date

PROPOSAL

TO:

East Kentucky Power Cooperative, Inc.

(hereinafter called the "Owner").

ARTICLE I--GENERAL

Section 1. Offer to Furnish and Deliver. *The undersigned (hereinafter called the "Bidder") hereby proposes to furnish and deliver the equipment (hereinafter called the "Equipment") described in the Plans, Specifications, and Construction Drawings for the following prices:*

Item: 4160 Volt Switchgear/Controls Price: \$334,275.00

Item: _____ Price: _____

The prices of Equipment set forth herein shall include the cost of delivery to:

Pearl Hollow Landfill, Audobon Trace Trail, Elizabethtown, KY

The prices set forth herein do not include any sums which are or may be payable by the Bidder on account of taxes imposed by any taxing authority upon the sale, purchase or use of the Equipment. If any such tax is applicable to the sale, purchase or use of the Equipment hereunder, the amount thereof shall be added to the purchase price and paid by the Owner.

Section 2. Materials and Equipment. *The Bidder agrees to furnish and use in the construction of the project under this Proposal, in the event the Proposal is accepted, only such "fully accepted," "conditionally accepted," and "technically accepted" materials and equipment which have been accepted by RUS as indicated in the current RUS Informational Publication 202-1, "List of Materials Acceptable for Use on Systems of RUS Electrification Borrowers," including revisions adopted prior to the Bid Opening. The use of "conditionally accepted" or "technically accepted" materials and equipment requires prior consent by the Owner or Engineer.*

The Bidder will purchase all materials and equipment outright and not subject to any conditional sales agreements, bailment, lease or other agreement reserving unto the seller any right, title or interest therein. All such materials and equipment shall be new.

Section 3. Description of Contract. *The Notice and Instructions to Bidders, Plans, Specifications, and Construction Drawings, which by this reference are incorporated herein, together with the Proposal and Acceptance constitute the Contract. The Plans, Specifications, and Construction Drawings, including maps, special drawings, and approved modifications in standard specifications are attached hereto and identified as follows:*

Pearl Hollow Landfill, Hardin County, Kentucky, Specifications Rev. 0.

Proposal dated 3/29/05 and Clarifications dated 4/19/05 and 5/9/05,

EKPC Switchgear/Control Specifications, Notice and Instructions to Bidders, Enercon Proposal

Section 4. Due Diligence. *The Bidder has made a careful examination of the Plans, Specifications, and Construction Drawings attached hereto, and has become informed as to the location and nature of the proposed construction, the transportation facilities, the kind and character of soil and terrain to be encountered, and the kind of facilities required before and during the construction of the project, and*

has become acquainted with the labor conditions, federal, state, and local laws, rules, and regulations applicable to its performance.

Section 5. Warranty of Good Faith. *The Bidder warrants that this Proposal is made in good faith and without collusion or connection with any person or persons bidding for the same work.*

ARTICLE II--DELIVERY AND WARRANTY

Section 1. Delivery. *The Bidder shall deliver the Equipment:*

_____ within 150 days after receipt of the written order or orders of the Owner.

_____ not later than September 13, 2005.

The time for delivery shall be extended for the period of any reasonable delay due exclusively to causes beyond the control and without the fault of the Bidder, including, but not limited to, acts of God, fires, strikes, and floods.

Section 2. Defective Materials and Workmanship.

- a. *All Equipment furnished hereunder shall be subject to the inspection, tests, and approval of the Owner and the Engineer, and the Bidder shall furnish all information required concerning the nature or source of any Equipment and provide adequate facilities for testing and inspecting the Equipment at the plant of the Bidder.*
- b. *The Equipment furnished hereunder shall become the property of the Owner upon delivery, provided, however, that the Owner or the Engineer, within one year after initial operation of the Equipment, or within the period for which the Equipment is guaranteed, whichever is longer, may reject any Equipment which does not comply with the Specifications attached hereto and made a part hereof or with the guarantees, if any, of the Bidder and the manufacturer. Upon any such rejection, the Bidder shall repair or replace such defective Equipment within a reasonable time after notice in writing from the Owner. If any such defective materials, equipment, or workmanship so replaced or repaired is found to be defective within one year after the completion of the replacement or repair, the Bidder shall replace or remedy such defective materials, equipment, or workmanship. In the event of failure by the Bidder so to do, the Owner may make such replacement and the cost and expense thereof shall be paid by and recoverable from the Bidder.*
- c. *All manufacturers' guarantees of Equipment, if any, shall be transferred and assigned to the Owner upon delivery of any Equipment and before final payment is made for such Equipment. Such guarantees shall be in addition to those required of the Bidder by other provisions of this Contract.*

ARTICLE III--PAYMENT

Section 1. Payments to Bidder.

- a. *Upon the shipment of any Equipment hereunder, the Bidder shall submit to the Owner a detailed statement of the Equipment shipped. The Owner shall, upon receipt of the Equipment, pay the Bidder ninety percent (90%) of the contract price of the Equipment. When the Equipment has been installed, placed in satisfactory operation, tested and accepted by the Owner, the Owner shall make final payments therefor to the Bidder; provided, however, such final payment*

shall be made not later than ninety (90) days after delivery of the Equipment, unless such acceptance by the Owner shall be withheld because of the fault of the Bidder. or site commissioning, which ever should come first,

- b. *No payment shall be due while the Bidder is in default in respect of any of the provisions of this Contract and the Owner may withhold from the Bidder the amount of any claim by a third party against either the Bidder or the Owner based upon an alleged failure of the Bidder to perform the work hereunder in accordance with the provisions of this Contract.*

ARTICLE IV--PARTICULAR UNDERTAKINGS OF THE BIDDER

The provisions of this Article IV apply to any work performed by the Bidder at the project site.

Section 1. Protection to Persons and Property. *The Bidder shall at all times take all reasonable precautions for the safety of employees on the project and of the public, and shall comply with all applicable provisions of federal, state, and local laws, rules, and regulations and building and construction codes, in addition to the safety rules and procedures of the Owner.*

The following provisions shall not limit the generality of the above requirements:

- a. *The Bidder shall at no time and under no circumstances cause or permit any employee of the Bidder to perform any work upon energized lines, or upon poles carrying energized lines, unless otherwise specified in the Notice and Instructions to Bidders.*
- b. *The Bidder shall transport and store all material in facilities and vehicles which are designed to protect the material from damage. The Bidder shall ensure that all vehicles, trailers, and other equipment used comply with all applicable licensing, traffic, and highway requirements.*
- c. *The Bidder shall conduct its operations to cause the least possible obstruction of public highways.*
- d. *The Bidder shall make good and fully repair all injuries and damages to the project or any portion thereof under the control of the Bidder by reason of any act of God or other casualty or cause whether or not the same shall have occurred by reason of the Bidder's negligence.*
- (i) *To the maximum extent permitted by law, Bidder shall defend, indemnify, and hold harmless Owner and Owner's directors, officers, and employees from all claims, causes of action, losses, liabilities, and expenses (including reasonable attorney's fees) for personal loss, injury, or death to persons (including but not limited to Bidder's employees) and loss, damage to or destruction of Owner's property or the property of any other person or entity (including but not limited to Bidder's property) in any manner arising out of or connected with the Contract, or the materials or equipment supplied or services performed by Bidder, its subcontractors and suppliers of any tier. But nothing herein shall be construed as making Bidder liable for any injury, death, loss, damage, or destruction caused by the sole negligence of Owner.*
- (ii) *To the maximum extent permitted by law, Bidder shall defend, indemnify, and hold harmless Owner and Owner's directors, officers, and employees from all liens and claims filed or asserted against Owner, its directors, officers, and employees, or Owner's property or facilities, for services performed or materials or equipment furnished by Bidder, its subcontractors and suppliers of any tier, and from all losses, demands, and causes of action arising out of any such lien or claim. Bidder shall promptly discharge or remove any such lien or claim by bonding, payment, or otherwise and shall notify Owner promptly when it has done so. If Bidder does not cause such lien or claim to be discharged or released by payment, bonding, or otherwise, Owner shall have the right (but shall not be obligated) to pay all sums necessary to obtain any such discharge or release and to deduct all amounts so paid from the amount due Bidder.*
- (iii) *Bidder shall provide to Owner's satisfaction evidence of Bidder's ability to comply with the indemnification provisions of subparagraphs i and ii above, which evidence may include but may not be limited to a bond or liability insurance policy obtained for this purpose through a licensed surety or insurance company.*

- e. Upon violation by the Bidder of any of the provisions of this section, after written notice of such violation given to the Bidder by the Engineer or the Owner, the Bidder shall immediately correct such violation. Upon failure of the Bidder so to do the Owner may correct such violation at the Bidder's expense: Provided, however, that the Owner may, if it deems it necessary or advisable, correct such violation at the Bidder's expense without such prior notice to the Bidder.

Section 2. Insurance. The Bidder shall take out and maintain throughout the period of its operations at the project site the following types and minimum amounts of insurance:

- a. Workers' compensation and employers' liability insurance, as required by law, covering all its employees who perform any of the obligations of the Bidder under the contract. If any employer or employee is not subject to the workers' compensation laws of the governing state, then insurance shall be obtained voluntarily to extend to the employer and employee coverage to the same extent as though the employer or employee were subject to the workers' compensation laws.
- b. Public liability insurance covering all operations under the contract shall have limits for bodily injury or death of not less than \$1 million each occurrence, limits for property damage of not less than \$1 million each occurrence, and \$1 million aggregate for accidents during the policy period. A single limit of \$1 million of bodily injury and property damage is acceptable. This required insurance may be in a policy or policies of insurance, primary and excess including the umbrella or catastrophe form.
- c. Automobile liability insurance on all motor vehicles used in connection with the contract, whether owned, nonowned, or hired, shall have limits for bodily injury or death of not less than \$1 million per person and \$1 million each occurrence, and property damage limits of \$1 million for each occurrence. A single limit of \$1 million of bodily injury and property damage is acceptable. This required insurance may be in a policy or policies of insurance, primary and excess including the umbrella or catastrophe form.

The Owner shall have the right at any time to require public liability insurance and property damage liability insurance greater than those required in subsection "b" and "c" of this Section. In any such event, the additional premium or premiums payable solely as the result of such additional insurance shall be added to the Contract price.

The Owner shall be named as Additional Insured on all policies of insurance required in subsections "b" and "c" of this Section.

The policies of insurance shall be in such form and issued by such insurer as shall be satisfactory to the Owner. The Bidder shall furnish the Owner a certificate evidencing compliance with the foregoing requirements which shall provide not less than (30) days prior written notice to the Owner of any cancellation or material change in the insurance.

ARTICLE V--REMEDIES

Section 1. Liquidated Damages. The time of the delivery of the Equipment is of the essence of the Contract. Should the Bidder neglect, refuse or fail to deliver the Equipment within the time herein agreed upon, after giving effect to extensions of time, if any, herein provided, then, in that event and in view of the difficulty of estimating with exactness damages caused by such delay, the Owner shall have the right to deduct from and retain out of such moneys which may be then due, or which may become due and

payable to the Bidder the sum of Not Applicable dollars (-----) per day for each and every day that such delivery is delayed beyond the specified time, as liquidated damages and not as a penalty; if the amount due and to become due from the Owner to the Bidder is insufficient to pay in full any such liquidated damages, the Bidder shall pay to the Owner the amount necessary to effect such payment in full: Provided, however, that the Owner shall promptly notify the Bidder in writing of the manner in which the amount retained, deducted or claimed as liquidated damages was computed.

Section 2. Cumulative Remedies. *Every right or remedy herein conferred upon or reserved to the Owner or the Government or the Administrator shall be cumulative, shall be in addition to every right and remedy now or hereafter existing at law or in equity or by statute and the pursuit of any right or remedy shall not be construed as an election: Provided, however, that the provisions of Section 1 of this Article shall be the exclusive measure of damages for failure by the Bidder to deliver the Equipment within the time herein agreed upon.*

ARTICLE VI--MISCELLANEOUS

Section 1. Definitions.

- a. *The term "Administrator" shall mean the Administrator of the Rural Utilities Service of the United States of America and his or her duly authorized representative or any other person in whom or authority in which may be vested the duties and functions which the Administrator is now authorized by law to perform.*
- b. *The term "Engineer" shall mean the Engineer employed by the Owner, to provide engineering services for the project and said Engineer's duly authorized assistants and representatives.*

Section 2. Materials and Supplies. *In the performance of this contract there shall be furnished only such unmanufactured articles, materials, and supplies as have been mined or produced in the United States or in any eligible country, and only such manufactured articles, materials, and supplies as have been manufactured in the United States or in any eligible country substantially all from articles, materials, or supplies mined, produced or manufactured, as the case may be, in the United States or in any eligible country; provided that other articles, materials, or supplies may be used in the event and to the extent that the Administrator shall expressly in writing authorize such use pursuant to the provisions of the Rural Electrification Act of 1938, being Title IV of Public Resolution No. 122, 75th Congress, approved June 21, 1938. For the purposes of this section, an "eligible country" is any country that applies with respect to the United States an agreement ensuring reciprocal access for United States products and services and suppliers to the markets of that country, as determined by the United States Trade Representative. The Bidder agrees to submit to the Owner such certificates with respect to compliance with the foregoing provision as the Administrator from time to time may require.*

Section 3. Patent Infringement. *The Bidder shall hold harmless and indemnify the Owner from any and all claims, suits and proceedings for the infringement of any patent or patents covering Equipment purchased hereunder.*

Section 4. Compliance with Laws. *The Bidder shall comply with all federal, state, and local laws, rules, and regulations applicable to its performance under the contract and the construction of the project. The Bidder acknowledges that it is familiar with the Rural Electrification Act of 1936, as amended, the Anti Kick-Back Act of 1986 (41 U.S.C. 51 et seq), and 18 U.S.C. §§ 286, 287, 641, 661, 874, 1001, and 1366, as amended.*

The Bidder represents that to the extent required by Executive Orders 12549 (3 CFR, 1985-1988 Comp., p. 189) and 12689 (3 CFR, 1989 Comp., p. 235), Debarment and Suspension, and 7 CFR part 3017, it has submitted to the Owner a duly executed certification in the form prescribed in 7 CFR part 3017.

The Bidder represents that, to the extent required, it has complied with the requirements of Pub. L. 101-121, Section 319, 103 Stat. 701, 750-765 (31 U.S.C. 1352), entitled "Limitation on use of appropriated funds to influence certain Federal contracting and financial transactions," and any rules and regulations issued pursuant thereto.

Section 5. Equal Opportunity Provisions.

a. Bidder's Representations.

The Bidder represents that:

It has , does not have , 100 or more employees, and if it has, that it has , has not , furnished the Equal Employment Opportunity-Employers Information Report EEO-1, Standard Form 100, required of employers with 100 or more employees pursuant to Executive Order 11246 of September 24, 1965, and Title VII of the Civil Rights Act of 1964.

The Bidder agrees that it will obtain, prior to the award of any subcontract for more than \$10,000 hereunder to a subcontractor with 100 or more employees, a statement, signed by the proposed subcontractor, that the proposed subcontractor has filed a current report on Standard Form 100.

The Bidder agrees that if it has 100 or more employees and has not submitted a report on Standard Form 100 for the current reporting year and that if this Contract will amount to more than \$10,000, the Bidder will file such report, as required by law, and notify the Owner in writing of such filing prior to the Owner's acceptance of this Proposal.

b. Equal Opportunity Clause. During the performance of this Contract, the Bidder agrees as follows:

- (1) The Bidder will not discriminate against any employee or applicant for employment because of race, color, religion, sex or national origin. The Bidder will take affirmative action to ensure that applicants are employed, and that employees are treated during employment without regard to their race, color, religion, sex or national origin. Such action shall include, but not be limited to, the following: Employment, upgrading, demotions or transfer; recruitment or recruitment advertising; layoff or termination; rates of pay or other forms of compensation; and selection of training, including apprenticeship. The Bidder agrees to post in conspicuous places, available to employees and applicants for employment, notices to be provided setting forth the provisions of this Equal Opportunity Clause.*
- (2) The Bidder will, in all solicitations or advertisements for employees placed by or on behalf of the Bidder, state that all qualified applicants will receive consideration for employment without regard to race, color, religion, sex or national origin.*
- (3) The Bidder will send to each labor union or representative of workers, with which it has a collective bargaining agreement or other contract or understanding, a notice to be provided advising the said labor union or workers' representative of the Bidder's commitments under this section, and shall post copies of the notice in conspicuous places available to employees and applicants for employment.*
- (4) The Bidder will comply with all provisions of Executive Order 11246 of September 24, 1965, and the rules, regulations and relevant orders of the Secretary of Labor.*
- (5) The Bidder will furnish all information and reports required by Executive Order 11246 of September 24, 1965, and by rules, regulations, and orders of the Secretary of Labor, or pursuant thereto, and will permit access to its books, records, and accounts by the administering agency and the Secretary of Labor for purposes of investigation to ascertain compliance with such rules, regulations, and orders.*
- (6) In the event of the Bidder's noncompliance with the Equal Opportunity Clause of this Contract or with any of the said rules, regulations, or orders, this Contract may be canceled, terminated, or suspended in whole or in part, and the Bidder may be declared ineligible for further Government contracts or federally assisted construction contracts in accordance with procedures authorized in Executive Order 11246 of September 24, 1965, and such other sanctions may be imposed and remedies invoked as provided in Executive Order 11246 of*

September 24, 1965, or by rule, regulation, or order of the Secretary of Labor, or as provided by law.

(7) *The Bidder will include this Equal Opportunity Clause in every subcontract or purchase order unless exempted by the rules, regulations, or order of the Secretary of Labor issued pursuant to Section 204 of Executive Order 11246 of September 24, 1965, so that such provisions will be binding upon each subcontractor or vendor. The Bidder will take such action with respect to any subcontract or purchase order as the administering agency may direct as a means of enforcing such provisions, including sanctions for noncompliance; Provided, however, that in the event Bidder becomes involved in, or is threatened with, litigation with a subcontractor or vendor as a result of such direction by the administering agency, the Bidder may request the United States to enter into such litigation to protect the interests of the United States.*

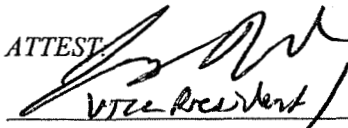
see attached EKPC additions page 1
c. *Certificate of Nonsegregated Facilities. The Bidder certifies that it does not maintain or provide for its employees any segregated facilities at any of its establishments, and that it does not permit its employees to perform their services at any location, under its control, where segregated facilities are maintained. The Bidder certifies further that it will not maintain or provide for its employees any segregated facilities at any of its establishments, and that it will not permit its employees to perform their services at any location, under its control, where segregated facilities are maintained. The Bidder agrees that a breach of this certification is a violation of the Equal Opportunity Clause in this Contract. As used in this certification, the term "segregated facilities" means any waiting rooms, work areas, restrooms and washrooms, restaurants and other eating areas, timeclocks, locker rooms and other storage or dressing areas, parking lots, drinking fountains, recreation or entertainment areas, transportation, and housing facilities provided for employees which are segregated by explicit directive or are in fact segregated on the basis of race, color, religion, or national origin, because of habit, local custom, or otherwise. The Bidder agrees that (except where it has obtained identical certifications from proposed subcontractors for specific time periods) it will obtain identical certifications from proposed subcontractors prior to the award of subcontracts exceeding \$10,000 which are not exempt from the provisions of the Equal Opportunity Clause, and that it will retain such certifications in its files.*

Section 6. Successors and Assigns. *Each and all of the covenants and agreements herein contained shall extend to and be binding upon the successors and assigns of the parties hereto. The Owner and Bidder acknowledge that this Contract is assigned to the Government, acting through the Administrator, for security purposes under the Owner's mortgage and security instrument.*

Section 7. Independent Contractor. *The Bidder shall perform the work as an independent contractor, not as a subcontractor, agent, or employee of the Owner. Upon acceptance of this Proposal, the successful Bidder shall be the Contractor and all references in the Proposal to the Bidder shall apply to the Contractor.*

Section 8. Approval by the Administrator: This contract does _____, does not X, require approval of the Administrator. No acceptance of a Proposal for a contract upon which approval of the Administrator is required shall become effective until the contract has been approved by the Administrator; provided that no obligation shall arise hereunder unless such approval is given within one-hundred twenty (120) days after the date set for the opening of the proposals. The acceptance of a Proposal for a contract upon which approval of the Administrator is not required shall become effective the date of acceptance by the Owner.

ATTEST

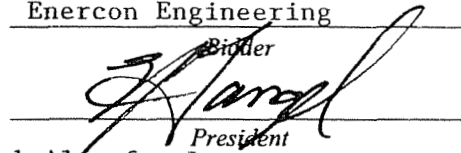

Vice President / Acting Secretary
Secretary

Dated

6/29/05

Enercon Engineering

Bidder



President

1 Alforfer Lane
East Peoria, IL 61610

Address

The Proposal must be signed with the full name of the Bidder. If the Bidder is a partnership, the Proposal must be signed in the partnership name by a partner. If the Bidder is a corporation, the Proposal must be signed in the corporate name by a duly authorized officer and the corporate seal affixed and attested by the Secretary of the Corporation.

ACCEPTANCE

Subject to the approval of the Administrator, if approval of the Administrator is required, the Owner hereby accepts the foregoing Proposal of the Bidder, Enercon Engineering

_____ for the following Equipment:

4160 Volt Switchgear, Controls, and Shipping to the Hardin County Landfill,
near Elizabethtown, Kentucky

_____ for a total contract price of \$ 334,275.00 Three Hundred Thirty-Four Thousand
(Two Hundred Seventy-Five _____ dollars.)

East Kentucky Power Cooperative, Inc.

By Ray M. Palk ^{Owner}
President and Chief Executive Officer

Della E. Dawson Forandon
Secretary
behalf of the Corporate Secretary

July 12, 2005
Date of Contract

EKPC Additions, Page 9 dated March 7, 2005

The Following Additional General Conditions Shall be Added to This Contract RUS Form 198:

Page 9, Article VI, Section 5, the following paragraph will be added as (8)

- "(8) When this order and contract refer to manufactured goods or to work or services, Seller warrants and agrees that it has complied and will comply with (1) Fair Labor Standards Act; (2) Social Security and Workman's Compensation Laws, if work is done on Purchaser's premises; and (3) all other applicable Federal, State and local laws, codes and regulations. It is the policy of Purchaser to provide equal opportunities in employment without regard to race, color, religion, sex, age, or national origin and to employ and advance qualified disabled veterans, handicapped or disabled persons and Vietnam era veterans. Purchaser complies with the requirements placed on government contractors and subcontractors by Executive Order 11246, Section 402 of the Vietnam Era Veterans Readjustment Assistance Act of 1974 and Section 503 of the Rehabilitation Act of 1973, and it is agreed that as a Subcontractor, vendor, or supplier, Seller will also comply with the Executive Order, laws, and applicable rules and regulations. Seller agrees to indemnify Purchaser and save Purchaser harmless if Seller fails to comply with the foregoing, and in the event of such failure Purchaser may, in addition, cancel this order and contract. Seller invoices for work or materials covered hereby shall state that Seller has complied with the requirements of the Fair Labor Standards Act of 1938 as amended."

U.S. Department of Agriculture
Rural Utilities Service

***Certification Regarding Debarment, Suspension, and Other Responsibility
Matters – Primary Covered Transactions***

This certification is required by the regulations implementing Executive Order 12549, Debarment and Suspension, 7 CFR Part 3017, Section 3017.510, Participants' Responsibilities. The regulations were published as Part IV of the January 30, 1989, Federal Register (pages 4722-4733). Copies of the regulations may be obtained by contacting the Department of Agriculture agency offering the proposed transaction.

- (1) The prospective primary participant certifies to the best of its knowledge and belief, that it and its principals:
- (a) are not presently debarred, suspended, proposed for Debarment, declared ineligible, or voluntarily excluded from covered transactions by any Federal department or agency;
 - (b) have not within a 3-year period preceding this proposal been convicted of or had a civil judgment rendered against them for commission of fraud or a criminal offense in connection with obtaining, attempting to obtain, or performing a public (Federal, State, or local) transaction or contract under a public transaction; violation of Federal or State antitrust statutes or commission of embezzlement, theft, forgery, bribery, falsification or destruction of records, making false statements, or receiving stolen property;
 - (c) are not presently indicted for or otherwise criminally or civilly charged by a governmental entity (Federal, State, or local) with commission of any of the offenses enumerated in paragraph (1)(b) of this certification; and
 - (d) have not within a 3-year period preceding this application/proposal had one or more public transactions (Federal, State, or local) terminated for cause or default.
- (2) Where the prospective primary participant is unable to certify to any of the statements in this certification, such prospective participant shall attach an explanation to this proposal.

ENERCON ENGINEERING

Organization Name

Dan Davis

Authorized Representative's Signature

6/30/05

Date

DAN DAVIS

Name Typed or Printed

(This is not an official Government form. It has been prepared to assist and expedite the application process and is only intended for use in the Rural Broadband Access Loan and Loan Guarantee Program.)

U.S. Department of Agriculture
Rural Utilities Service

***Certification Regarding Lobbying for Contracts, Grants,
Loans, and Cooperative Agreements***

The undersigned certifies, to the best of his or her knowledge and belief, that:

- (1) No Federal appropriated funds have been paid or will be paid, by or on behalf of the undersigned, to any person for influencing or attempting to influence an officer or employee of any agency, a Member of Congress, an officer or employee of Congress, or an employee of a Member of Congress in connection with the awarding of any Federal contract, the making of any Federal grant or loan, the entering into of any cooperative agreement, and the extension, continuation, renewal, amendment, or modification of any Federal contract, grant, loan, or cooperative agreement.
- (2) If any funds other than Federal appropriated funds have been paid or will be paid to any person for influencing or attempting to influence an officer or employee of any agency, a Member of Congress, an officer or employee of Congress, or an employee of a Member of Congress in connection with this Federal contract, grant, loan, or cooperative agreement, the undersigned shall complete and submit Standard Form-LLL, "Disclosure Form to Report Lobbying," in accordance with its instructions. (Copies of this form may be obtained from RUS.)
- (3) The undersigned shall require that the language of this certification be included in the award documents for all subawards at all tiers (including subcontracts, subgrants, and contracts under grants, loans, and cooperative agreements) and that all subrecipients shall certify and disclose accordingly.

This certification is a material representation of fact upon which reliance was placed when this transaction was made or entered into. Submission of this certification is a prerequisite for making or entering into this transaction imposed by section 1352, title 31, U.S. Code. Any person who fails to file the required certification shall be subject to a civil penalty of not less than \$10,000 and not more than \$100,000 for each such failure.

Organization Name ENERCON ENGINEERING

Authorized Representative's Signature Dan Davis Date 6/30/05

Name Typed or Printed DAN DAVIS

(This is not an official Government form. It has been prepared to assist and expedite the application process and is only intended for use in the Rural Broadband Access Loan and Loan Guarantee Program.)



9550 W. 55th Street • Suite A • McCook, IL 60525 • (708) 588-2500

March 15, 2005

Mr. Dan Davis
Enercon Engineering
No. 1 Altorfer Lane
East Peoria, IL 61611

RE: East Kentucky Power Cooperative Landfill Gas Energy Projects
Switchgear Equipment Bid Solicitation

Dear Mr. Davis:

The Meade Electric Company is issuing equipment bid solicitations for the East Kentucky Power Cooperative Landfill Gas Energy Projects at the Pearl Hollow Landfill, Hardin County, KY.

The following documentation should be utilized in the preparation of your bid:

- Specification sheets
- Equipment bid sheet
- Single Line Diagram RE5-E3

Please note that your bids should include the attached bid sheet, a list of any exceptions and clarifications, and any product descriptive literature that you believe is necessary to fully define your offering.

Bids are due by 2:00 p.m. March 30, 2005, and should be submitted to:

Ralph Tyree
East Kentucky Power Cooperative
4775 East Lexington Road
Winchester, KY 40391
Telephone: 859-744-4812
Fax: 859-744-6008

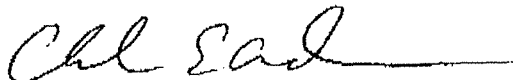
A copy of your proposal should be sent to my attention at the address indicated on this letterhead. Submission of bids by facsimile is acceptable. East Kentucky Power Cooperative will conduct a private bid opening and reserves the right to reject any and all bids.

Pearl Hollow
Switchgear Equipment
Page Two

Equipment delivery is being requested within approximately 150 days of receipt of order, which is anticipated to be released on or before April 15, 2005. Pricing should include delivery F.O.B. job site, and additional pricing information should be provided for extended warranty and start-up services. Contract terms will be RUS standard.

If you have any technical questions, please contact me in writing via fax at 708-588-2501 or via e-mail at canderson@meadcelectric.com

Sincerely,



Charles E. Anderson
Vice President

cc: R. Tyree
Enclosures

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Hardin County Landfill
Gas-to-Electric Plant

**LANDFILL GAS-TO-ELECTRIC PROJECT
ENGINE-GENERATOR SWITCHGEAR & CONTROLS
4.16KV - 3 PHASE - 60 HERTZ SERVICE**

I. System Introduction:

1. The project involves the installation of five (5) Caterpillar 3516 landfill gas engines driving Caterpillar 4.16kv permanent magnet excited, 6 lead, wye connected generators --each engine-generator set prime power rated 800kw, 0.80 power factor, 3 phase, 60 hertz, 4160 volts with output of 139 amperes. The engine-generator sets shall be paralleled with the local utility source and provide power as "sell-back" to the utility grid.
2. The station generator sets shall be connected to 4.16 KV metal-clad switchgear providing power to station auxiliary loads via a 4.16 KV-480V step-down transformer, with the balance of power exported to the utility grid via a 3 phase main power transformer which steps up the generated voltage to the utility high line voltage of 12.47 KV. The 4.16 KV switchgear shall include a utility tie breaker (52-T), which shall be closed by initiation of a station operator.
3. Before any of the station engine-generator sets can be started, the station fuel gas compressor system must be operative to provide the fuel supply to the engines. With the high voltage line interconnect device closed, closing of the utility tie breaker (52-T) provides 4.16 KV to the station bus, which then provides the required power for operation of the station gas compressor system via a fusible load-break switch and the now energized station auxiliary step-down transformer. The station engine-generator sets shall then be started by the station operator and paralleled to the live station 4.16 KV bus under control of synchronizing relay circuits. To provide power to the utility grid system, the station operator shall use the load control circuits to load each engine-generator set up to its KW rating. The station power from the engine-generator sets shall be "exported" to the utility grid via the closed utility tie breaker (52-T) and the closed 12.47 KV utility line interconnect device (52-U).

II. Line-up Construction:

1. The 4.16 KV station switchboard lineup shall be NEMA 1 metal enclosed for indoor service with internal steel barriers forming high / low voltage compartments, steel barriers between adjacent cubicles, steel barriers separating the main 3 phase bus bars from field cable connections to the breaker stabs, open bottom rear areas for field cable entrance with approximately 26 inches (660.4 mm) of clear vertical space available to the breaker stabs, screw secured and split rear sheets with lift off handles,

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hinged front doors with handles, removable top lifting facilities and comprised of the following cubicles, factory bolted together to form the switchboard lineup (facing front of lineup and left to right):

- 1 - Station Master Cubicle
- 1 - Utility Tie Breaker Cubicle (52-T).
- 5 - Engine-generator set Control / Breaker Cubicles (52-G) --- designated Gen #1, Gen #2, Gen #3, Gen #4 and Gen #5.
- 1 - Fusible Load Break Switch Cubicle.

2. The 4.16 KV switchgear lineup approximate overall dimensions and equipment location to be as follows:

- 1 - Station Master Cubicle --- with one (1) front accessible draw-out potential transformer tray (2X PT off the bus) plus space in rear of cubicle for three (3) draw-out ground detection PT's and for 3X station class arrestors with 3 pole capacitor.
- 1 - Utility Tie Breaker Cubicle --- with one (1) front accessible draw-out potential transformer tray (2X PT's off utility incoming line bus bars).
- 5 - Engine-generator set Control / Breaker Cubicles --- each with draw-out PT's (2) in rear of cubicle tapped off of breaker bus bars).
- 1 - Fusible Load Break Switch Cubicle

Overall dimensions, approximately 95 inches high by 86.25 inches deep by 288 inches (24 feet wide).

3. The lineup shall be shipped in a minimum of (2) sections with bus splice plates, wire harness inter-ties and hardware for installation contractor to field re-assemble plus removable top lifting facilities for ease of handling.

III. Protection & Control Systems:

1. A multi-function utility source protective relay shall be provided by others as part of the 12.47 KV utility line interconnect device (52-U). Three (3) potential transformers (7200-120V) shall be provided by others, on the high side of the step-up transformer for relaying and be connected wye/wye grounded. When power fails or voltage function or frequency disturbance occurs on the utility line, the event shall be detected by relay functions 27/59 for under/over-voltage plus device 81-0/U for over/under-frequency. The multi-function relay protection shall also provide, 3 phase overcurrent (50/51 functions), directional overcurrent (67 function), and 3 phase transformer differential protection (87T function). A current transformer (ratio 100/5A), as part of the step-up transformer and installed in the transformer primary wye ground bushing, shall provide secondary current for use with transformer ground fault overcurrent (50N/51N functions) as part of the multi-

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function relay. Activating of any of the relay functions shall energize the lockout relay, 86-T device, located in the 4.16kV switchgear, to cause tripping of the 4.16 KV utility tie breaker (52-T) and trip signal to remote 12.47 KV utility interconnect device (52-U).

2. The station 3 phase step-up transformer shall include monitoring devices for high temperature (26Q), low oil level (71 device) with output contacts to signal fault windows as part of the station annunciation, plus separate output contacts to energize the lock-out relay 86-T device to cause tripping of the 4.16 KV utility tie (52-T) and the 12.47 KV utility interconnect device.
3. Once the 4.16 KV utility tie breaker (52-T) has been closed, it shall remain closed. Should the utility tie breaker be opened intentionally or tripped open by action of a fault circuit, then the following shall occur:
 - (a) Opening of the tie breaker shall disconnect engine-generator set cubicle load control circuits, plus interconnect the governor modules for isochronous load share operation.
 - (b) Synchronizing circuits, as part of the 4.16 KV tie breaker (52-T) cubicle, shall allow manual initiated reclosing of the tie breaker provided the utility side of the tie breaker is live and conditions for paralleling are within acceptable tolerances.
 - (c) Closing of the tie breaker shall disconnect the governor modules and complete the circuits to activate the soft load controls --- load on each engine-generator set shall be determined by the last setting of the load control.
 - (d) An auxiliary circuit shall be provided and activated when the tie breaker (52-T) trips open. The circuit shall cause two (2) pre-selected running engine-generator sets to be removed from service. The on-line engine-generator sets shall remain in service to power the station auxiliary loads.
4. The control system shall be designed to keep the running engine-generator sets on the bus whenever the utility tie breaker (52-T) opens with load control circuits disconnected and governor modules interconnected for auto load share functions. The utility tie breaker circuits shall be designed for manually initiated reclosure under control of a speed matching synchronizing relay circuit which shall provide adjustment signals to the engine governor modules for speed and / or phase angle differences.
5. The control system shall incorporate an auto load control circuit to accomplish "soft loading" of the engine-generator sets. Opening of the utility tie breaker shall disconnect the load control circuit and reset the load control to the minimum setting. When the tie breaker recloses, under control of automatic speed matching

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synchronizing circuits --- the auto load control circuits shall activate to "soft load" the on-bus engine-generator sets up to their last individual settings with an upper limit being the full load for each engine-generator set. The operator shall have the option to manually reduce load on each engine-generator set individually and shall be able to manually increase the load on each engine-generator set up to the upper limit setting. The load control circuits shall include an adjustable ramp time for "soft loading". With the utility tie breaker closed and should an individual engine-generator set breaker be opened, the load control for that engine-generator set shall reset to its minimum setting so that when the breaker is reclosed, "soft loading" shall occur.

The auto load control circuits shall be accessible via a touch screen for a station operator to field change the percent of load on each engine-generator set to adjust the ramp time of all engine-generator sets and to assign on-line engine-generator sets should 52-T trip open.

The control system shall include circuits to monitor the KW load on each engine-generator set and to provide adjustment signals to the individual Woodward governor modules to hold the load capacity setting of the auto load control circuits.

6. Each 4.16 KV engine-generator set control cubicle shall be furnished with a generator automatic voltage regulator (furnished by engine manufacturer), a load share governor module (furnished by engine manufacturer) and an automatic power factor controller and a multi-function protective relay. The relay functions shall protect the generator against unbalanced current (46 function), instantaneous and time delay overcurrent (50/51 function), reverse power (32 function), reverse reactive current for leading VARs (32 RV) or loss of excitation (40 function), and faults that cause a flow of differential currents through the generator windings (87 function). Neutral grounding of each generator shall be achieved through a grounding resistor plus an overcurrent ground fault relay (51G) function. The protective relay functions shall activate the engine-generator set cubicle lock-out relay, 86-G device, to cause tripping of the engine-generator set 4.16 KV circuit breaker 52-G and engine-generator set shutdown.

IV. Cubicles, Power & Control Components:

1. The following components shall be located in the Station Master Cubicle:
 - 1 - Station automatic load control system to function as described in Section II, paragraph 5 --- energized when tie breaker (52-T) closed and activated to automatically soft load each engine-generator set to a preset KW power rating after the respective engine-generator set breaker closes onto the 4.16 KV bus --- control system shall also automatically soft unload each engine-generator set and

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open the engine-generator set circuit breaker when a engine-generator set is manually removed from service --- load control system shall be field adjustable for power output settings and for elapsed time to load / unload --- control system shall also monitor KW load on the engine-generator sets and provide adjustment signals to the governor modules to hold the load capacity settings --- automatic load control system shall be designed for a five (5) engine-generator set station and shall utilize programmable logic controller (PLC) with a touch screen display module, EEPROM, plus following indicating lamp windows:

- 1 - Low memory battery voltage lamp, alarm
- 1 - Processor failure lamp, alarm

Illumination of the processor failure window shall activate the individual manual load control in each engine-generator set cubicle with load level determined by the last setting of the manual potentiometer.

- 1 - Best battery diode system for common 24 VDC station circuits, with 30 ampere fuse in each engine-generator set cubicle and for 4.16 KV breaker 24 VDC shunt trip coils.
- 1 - Best battery diode system, 10 ampere / 24 VDC, and fused, wired to separate terminal and for customer's use.
- 1 - DC to DC regulated supply to provide 24 VDC power to the PLC should fluctuation of engine battery sources occur.
- 1 - Common auxiliary circuit with output contact to trip the utility tie breaker (52-T), trip the engine-generator set breakers (52-G's) and shutdown the engine-generator sets --- should the following station fault occur which shall be annunciated by an assigned fault window:
 - (1) Fire system operation - Control Room.
- 1 - Common auxiliary circuit with output contacts to trip the engine-generator set breakers (52-G's) and shutdown the engine-generator sets --- should any of the following station faults occur which are annunciated by an assigned fault window:
 - (1) High-high methane detection.
 - (2) Fuel Gas Blower failure.
 - (3) High-high oxygen in Landfill Gas.
 - (4) Fire system operation - Engine or Compressor Room.
- 1 - Station annunciation display with thirty (30) alarm points for both warning and shutdown functions --- except as noted, points activated by customer furnished

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normally open, voltage free contacts that close on fault with terminal boards points for field connections --- displays as follows:

1. Generator #1 summary alarm - activated by engine control relay contact.
2. Generator #1 shutdown - activated by engine-generator set cubicle 86 device.
3. Generator #2 summary alarm - activated by engine control relay contact.
4. Generator #2 shutdown - activated by engine-generator set cubicle 86 device.
5. Generator #3 summary alarm - activated by engine control relay contact.
6. Generator #3 shutdown - activated by engine-generator set cubicle 86 device.
7. Generator #4 summary alarm - activated by engine control relay circuits.
8. Generator #4 shutdown - activated by engine-generator set cubicle 86 device.
9. Generator #5 summary alarm - activated by engine control relay circuits.
10. Generator #5 shutdown - activated by engine-generator set cubicle 86 device.
11. Fuel Gas Blower failure - shutdown.
12. Air compressor low air pressure - alarm.
13. Tie breaker (52-T) trip-activated by tie cubicle 86-T device.
14. Main power transformer high oil temperature (26-Q) --- activated by contacts in remote customer's transformer.
15. Main power transformer low oil level (71) --- activated by contacts in remote customer's transformer.
16. Fire detection system operation - shutdown.
17. Fire detection system trouble - alarm.
18. High-high methane detection - shutdown.
19. Landfill fuel gas high-high oxygen - shutdown.
20. High methane detection - alarm.
21. Landfill fuel gas high oxygen - alarm --- plus circuits to disable individual engine-generator set "low KW output shutdown".
22. Methane detector sensor failure - alarm.
23. Oxygen detector sensor failure - alarm.
24. Security system operation - alarm.
25. Low 24 VDC battery source --- activated by control system low battery voltage monitor - alarm.
26. Utility trip --- activated by utility input signal closure contact.
27. Condensate tank high level - alarm.
28. Bus potential ground fault, activated by 59G device - alarm.
29. Spare.
30. Spare.

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Annunciation faults to be provided with one (1) spare normally open contact per point for remote requirements, plus sound the station alarm horn and to include lamp test push button, acknowledge push button to change flashing display to steady and silence horn plus reset push button to reset steady display once the external fault function has been corrected.

1 - Station display with three (3) display points for analog input functions --- activated by customer furnished 4-20mA transducer signals --- displays as follows:

1. Landfill Gas Vacuum.
2. Landfill Gas Flow.
3. Landfill Gas BTU Value.

1 - Station alarm horn, activated by signal contact from window annunciation circuits --- Federal manufacturer or equal.

1 - Control circuit activated by customer's "fire suppression system operation" --- with normal closed contact, 10 ampere rated at 120 VAC, for customer's use.

3 - Lighting arrestors (station class), 4.5 KV with one 3 pole capacitor and cable connected off the 4.16 KV bus.

2 - Bus potential transformer, fused disconnect type, draw-out tray mounted with primary connected off the 4.16kv bus --- for bus metering and synchronizing circuits.

1 - Ground bus bar, bare copper (silver plated).

1 - Mounting of Caterpillar furnished CCM --- customer shall provide data link (shielded) wire interconnects from each engine-generator set "EMCP II Plus" mounted panel.

1 - Utility Source Protection Multi-Function Relay for overcurrent (50/51) and transformer differential (87T) protection --- Schweitzer Model SEL-03875Y2X532X1X1 Current Differential Relay, fixed panel mount design, SEL protocol --- protection as follows (programmed as operational):

- 3 phase instantaneous / time overcurrent (50/51) functions monitored off 4.16 KV current transformers.
- 3 phase instantaneous / time overcurrent (50/51) functions monitored off 12.47 KV current transformers (remote mounted).
- 3 phase transformer current differential protection (87T) with protective zone determined by the 4.16 KV and 12.47KV current transformer locations.

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- 1 - Utility Relay Communications Module for use with the Schweitzer multi-function relays SEL protocol, a Schweitzer SEL-203033X20XE0M0 communications converter shall be provided with sufficient input ports -- output to be ModBus and DNP protocol.

Breaker position indications to be wired to the Multi-Function relay for data transmittal and for 4.16 KV tie breaker (52-T) plus remote 12.47 KV utility interconnect device (52-U).

Pick-up of any multi-function relay protective function shall activate lock-out relay, 86T, in the tie breaker cubicle, to cause tripping of the 4.16 KV tie breaker (52T) and the 12.47 KV utility interconnect device (52-U).

- 3 - Test switches, type FT, shall be provided for current and potential transformer secondary connections to the multi-function relays (Schweitzer relays) --- 2 poles for each current circuit, 1 pole for each potential circuit phase and neutral, and 1 pole for each trip circuit --- one (1) common current test plug and one (1) common potential test plug.

- 1 - Bus Ground Protection Scheme --- the following potential bus ground fault detection components shall be provided (functional when engine-generator sets off line and utility source only feeding the station auxiliary loads):

- 3 - Potential transformers, draw-out tray mounted, fused primary only and primary connected grounded wye off the 3 phase main bus.

- 1 - Ground fault potential relay, ABB model 410E1195-HF, as 59G device and for alarm purposes.

- 1 - Remote Control Switch, with positions indications (open / closed) of the 12.47 KV utility interconnect device (52-U), consisting of two (2) indicating lamps shall be activated by customer's auxiliary switch contacts plus a control switch with position of trip / lockout, close.

- 1 - Station "Auto-Dialer" function, 8 channel minimum, with battery back-up and local alarm contact. The Auto-Dialer is to be factory mounted in the Station Master Cubicle.

Space to be allocated in the Station Master Cubicle to accommodate a utility company furnished transfer trip device --- utility company to field install and wire the device with rack size approximately 19" W by 10" high by 14.5" deep.

2. The Tie Breaker Cubicle shall contain the following components:

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- 1 - Utility vacuum tie breaker (52-T), draw-out type, 3 pole, electric operated off utility potential with 5 cycle stored energy close mechanism, auxiliary switch contacts, 24 VDC shunt trip coil, breaker rated 1200 ampere continuous, 250 MVA nominal interrupting capacity (237 MVA / 33 KA at 4.16kv) --- rear bus stabs off breaker with 4 hole lug pattern for field cables (lugs, stress cones not included).
- 1 - Breaker control switch with positions open / close, plus position indicating lamps (24 VDC).
- 1 - Breaker control circuit, fused, to provide utility potential for breaker AC charging mechanism.
- 2 - Potential transformers, fuse disconnect type, mounted on draw-out tray for metering / relays / power for breaker (52-T) charge mechanism and connected off utility side of utility tie breaker (52-T).
- 3 - Current transformers, fixed mounted for metering relays, ratio 800/5 amperes and located on bus side of 52-T
- 1 - Lockout relay, hand reset, 86-T device activated by protective relays or by input contact or contacts that close on fault --- output contacts off 86-T device trips 4.16 KV tie breaker (52-T), the 12.47 KV utility interconnect device, and spare output contact for customer's use plus contact to signal station annunciation.

Note: 86T device to accept input contact signal from customer's remote device for tripping 4.16 KV tie (52-T) and 12.47 KV (52-U) utility interconnect device.

- 1 - Set of 3 phase, 3 wire main bus plus bus bar risers off the tie breaker to the main bus --- bus bar to be silver plated copper, insulated with insulated boots at joints --- bus rated 1200 amperes.
- 1 - Ground bus bar, silver-plated copper, non-insulated, 1/4 inch (6.35 mm) by 2 inch (50.8 mm).
- 1 - Synchronizing relay (Woodward SPM-A with 1/8 second match-up timer) to monitor voltage, frequency, phase angle of utility source compared to the engine-generator set main bus and provides automatic speed and / or phase angle correction signals to the engine-generator set cubicle governor modules --- with close signal provided to the utility breaker when conditions for parallel are correct --- circuit designed for tie breaker closing if utility side of tie breaker live and engine-generator set bus dead or if utility side live and engine-generator set bus live (tie breaker closing to be prevented if utility dead and engine-generator set bus live or if utility dead and engine-generator set bus dead) -- could be located in Master Cubicle.

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1 - Auxiliary circuit, energized when tie breaker open with control system to disconnect generator load controls, VAR/Power Factor controllers and interconnect the governor modules --- engine-generator sets to operate as "load share" and not "base load" --- located in Master Cubicle.

1 - Set of metering as follows:

1 - Digital Instrumentation Package, microprocessor based, Power Measurement #P7330-A6B0-B0A0-K0A, to continuously display voltage and amperes with phase selector to read voltage of each phase to phase and amperes in each of the three phases plus power function display with function selector to show 3 phase KW, 3 phase KVARs, KW demand, power factor, frequency and accumulative 3 phase kilowatt hours "export" to the utility grid and accumulative 3 phase kilowatt-hours "imported from the utility grid.

3. Each Engine-generator set Control/Breaker Cubicle shall contain the following components:

1 - Set of metering functions as follows:

1 - Metering display of generator voltage and amperes with phase selector to read voltage of each phase to phase and amperes in each of the three phases plus, power function display with function selector to show 3 phase KW, 3 phase KVARs, KW demand, power factor, frequency and accumulative 3 phase kilowatt-hours.

1 - Watt transducer signal, 3 phase, 3 wire for use in the load control system.

1 - Elapsed time meter, to indicate operating time in hours / minutes.

1 - Watt-transducer signal, 4 to 20 ma output, to be field wired, by others, for future engine air / fuel ratio controller.

2 - Alarm points for "low load" KW (to cause engine-generator set shutdown except if system "high oxygen" window activated then alarm only), and "high load" KW output (alarm only).

1 - VAR / Power Factor controller, Basler SCP-250 or equal, to function in conjunction with the generator auto voltage regulator when paralleled with the utility source.

1 - Mounting of automatic voltage regulator, (Caterpillar model DVR), furnished by generator manufacturer --- sensing for 120 volt input to regulator from metering potential transformers.

1 - Current transformer for use with the auto voltage regulator.

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- 1 - Mounting of Woodward electronic load share parallel governor module furnished by engine manufacturer, (Woodward 2301D).
- 1 - Manual speed adjust device for use with the electronic governor module (raise / lower switch).
- 1 - Manual voltage adjust device for use with the voltage regulator (raise / lower switch).
- 3 - Current transformers for use with generator differential protection --- shipped loose for mounting in generator neutrals (requires 6 lead generator with all 3 neutral cables brought out) --- current transformers ratio 200/5 amperes.
- 1 - Current transformer for use with the ground overcurrent relay --- ratio 100/5 amperes --- shipped loose for mounting in generator neutral ground cable.
- 1 - Lockout relay, hand reset, 86G device --- activated by programmed outputs of the Multi-Function Relay, and shall cause tripping of generator main circuit breaker plus engine-generator set shutdown --- spare contact of 86 device to signal annunciation.
- 3 - Auxiliary relay circuits, energized when engine runs, with contacts to signal the radiator fan motor starter, to disconnect the generator space heater and to signal crank case vent fan motor --- contacts 10 ampere rated at 120 VAC or 24 VDC --- contacts to signal radiator fan motor be be off generator available circuit.
- 1 - Generator vacuum circuit breaker, draw-out, 3 pole, electric operated off the engine-generator set potential with 5 cycle stored energy close mechanism, auxiliary switch contacts, 24 VDC shunt trip coil, breaker rated 1200 ampere continuous, 250 MVA nominal interrupting capacity (237 MVA/33 KA at 4.16 KV) rear stabs on breaker with 4 hole lug pattern for generator field cables (lugs, stress cones not included).
- 1 - Breaker control circuit, fused, to provide generator potential to breaker AC charging mechanism.
- 1 - Breaker control switch with position indicating lamps, open / close.
- 1 - Generator available circuit, to determine when engine-generator set up to 90 percent of nominal voltage before synchronizing circuits energized.

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- 1 - Set of 3 phase, 3 wire main bus plus bus bar risers off generator breaker to the main bus --- bus bar, silver plated copper and insulated --- main bus rated 1200 amperes.
- 1 - Ground bus bar --- minimum 1/4 inch by 2 inch bare copper.
- 3 - Current transformers, fixed mounted, ratio 200/5 amperes for metering, relays and governor system and located on bus side of generator circuit breaker.
- 2 - Potential transformers, fuse protected, draw-out tray mounted for metering, relays, governor system, sensing to generator automatic voltage regulator and power to breaker (52G) charge mechanism.
- 1 - Set of spare, normally open, voltage free contacts, 10 ampere rated at 120 VAC for following remote signals:
 - (1) Engine shutdown, breaker tripped --- contacts off device 86 --- for annunciation and remote signal purposes.
 - (2) Engine alarm only faults --- common signal contact for annunciation and customer's use.
- 1 - Emergency stop push button, twist-to-rest --- causes engine-generator set shutdown and tripping of generator breaker with lamp illumination --- lamp illumination window to also be activated should plant personnel engage the emergency stop switch on the local engine-generator set "EMCP-II Plus" panel.

Engine will be provided with a pre-lube pump, activated when plant personnel initiate starting with actual cranking signal off "EMCPII-Plus" logic when oil pressure established. Pre-lube pump circuit to be Caterpillar standard 24 VDC ordered with engine-generator set, and all control logic (initiating / disconnect) integral to the "EMCP-II Plus" panel.

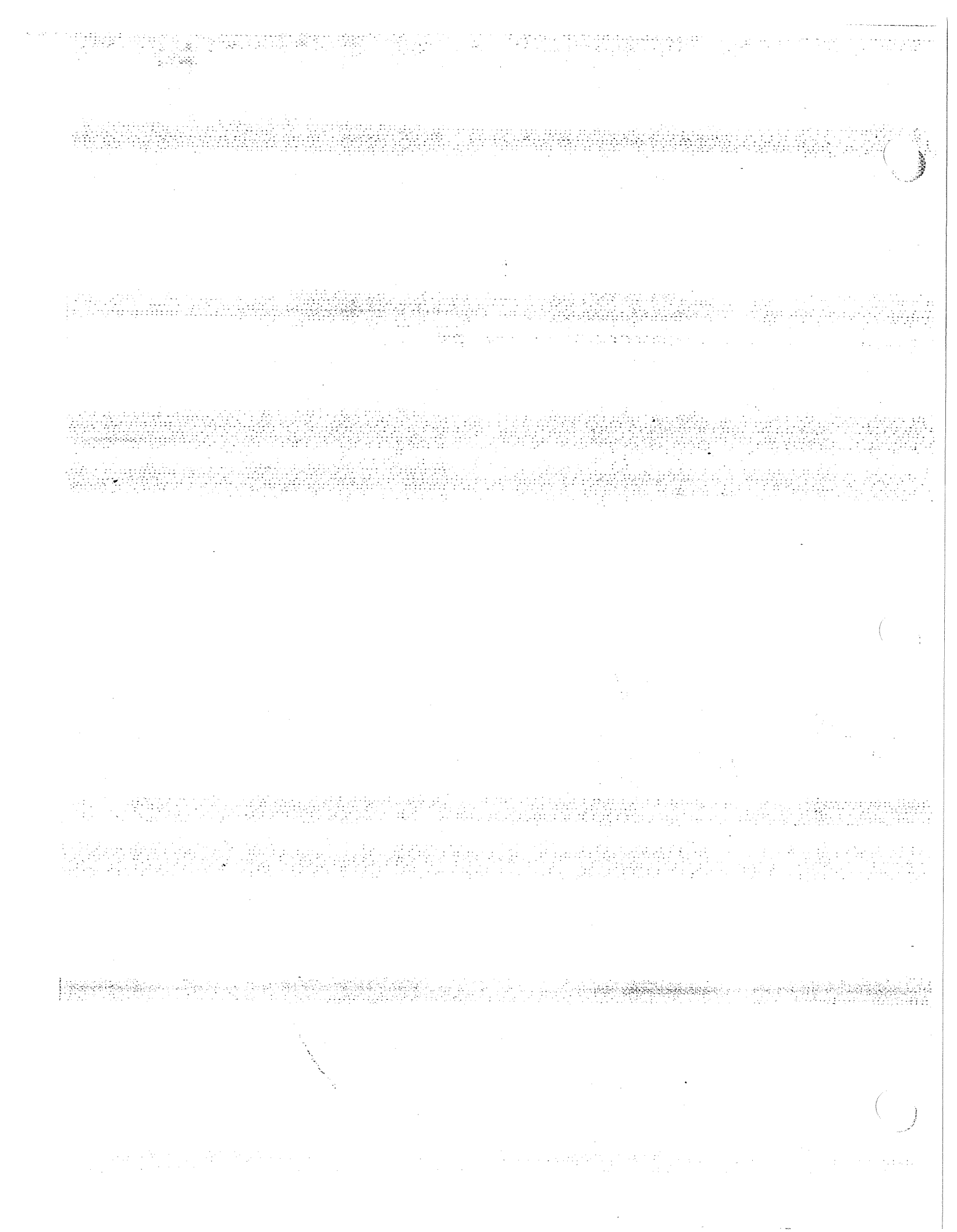
- 1 - Generator multi-function relay --- Beckwith model M3425 generator relay, fixed panel mount, ModBus protocol (interconnected to 2030 communication converter in Master Cubicle) ---to include the following programmed functions:
 - (a) Protective Relay Functions:
 - Three (3) phase voltage restraint time overcurrent (51V function) plus instantaneous overcurrent (50 function).
 - Three (3) phase negative phase sequence overcurrent (46 function).
 - Three (3) phase generator differential protection (87G function)
 - Ground overcurrent (50N/51N) functions --- off separate current transformer in generator neutral ground cable

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trip open. Should a running engine shutdown due to a monitored fault detected by the "Engine Local Panel" EMCP-II Plus, a common engine fault shutdown lamp shall illuminate and the circuit shall seal-in with seal-in circuit reset when engine controls switch is placed in "off-reset" position provided plant personnel first resets the "Local Engine Panel" fault shutdown circuit.

- 1 - Engine cooldown timer circuit, requires generator breaker to be closed and operative when cubicle engine control switch placed in "stop/cooldown" --- circuit external to EMCP-II Plus module & requires EMCP11 Plus internal cooldown timer to be set at its zero point.
- 1 - Fuse, 10 ampere, from battery positive and for use with 24 VDC control power circuit.
- 1 - Mounting of an interface module (designated C.I.M.), provided by the engine supplier, for interconnection with the "Local Engine Panel" --- to provide output contact signals for use in the control system logic circuit and to activate following fault lamp displays:
 - (a) - "Local Engine Panel" selector switch not in its remote "auto" position --- circuit shall activate control system logic to trip the generator main circuit breaker, if closed, or to block open generator main circuit breaker from being closed.
 - (b) Individual fault displays --- when illuminated, shall cause engine shutdown via the EMCP-II Plus devices and control system shall cause tripping of a closed generator main breaker:
 - 1 - Low engine oil pressure shutdown.
 - 1 - Overcrank (fail to start) shutdown.
 - 1 - Overspeed shutdown.
 - 1 - Diagnostic shutdown.
 - 1 - High lube oil temperature.
 - (c) Individual warning fault lamps --- when illuminated, via EMCP-II Plus devices, shall be for alarm only purposes:
 - 1 - Low lube oil pressure, alarm.
 - 1 - Low lube oil temperature, alarm.
- 1 - Set of additional engine fault circuits, which when activated, shall seal-in and external to the EMCP-II Plus devices:
 - (d) To cause engine-generator set shutdown and reset when the cubicle engine control switch turned to "off/reset" position:



EKPC

Hardin County Landfill
Gas-to-Electric Plant

5. Spare Parts --- spare parts shall be provided, consisting of:

- 3 - Boxes of low voltage fuses, (10 per box).
- 1 - Box of breaker position, alarm, and/or annunciator bulbs (min. 10 per box).
- 3 - 5 KV, 100E, fuses for Load Break Switch.
- 6 - 5 KV fuses for potential transformers.

VI. Miscellaneous Items:

1. Submittal drawings --- four (4) sets of submittal drawings shall be provided for customer's review and approval. Drawings shall consist of a one-line diagram, outlines showing switchboard layout with door components plus views showing cable entrance/exit area, AC/DC schematics, and a bill of material listing all components by manufacturer.
2. Switchgear factory testing --- the switchboard lineup and control system shall be factory tested prior to shipping to be sure all systems and components are operationally correct per the engineering designs.
3. Field Commissioning Services --- a switchgear/control system service technician shall be on site to assist during commissioning of the engine-generator sets and to provide basic operation instructions to the station personnel. An engine technician shall also be on site with the switchgear technician. Prior to arrival of the switchgear technician, the engine technician shall have started and run each engine-generator set individually and verified operation of the engine-generator set alarm/safety circuits. The cost for one (1) service technician with one (1) site visit and up to 4 weekdays on site to be included as part of the Engine-generator set Switchgear/Control System.
4. Warranty --- Equipment manufactured by the seller is warranted to be free from defects in material or workmanship under normal use, service, and indoor storage, for eighteen (18) months after date of shipment from seller's plant or twelve (12) months from date of customer's installation --- which ever occurs first --- subject to the following provisions. This warranty is limited to repair, replacement or issuing of credit, as seller may elect, and at seller's manufacturing plant, of such parts as shall appear to seller, upon inspection, to have been defective in material or workmanship, but does not include any installation, labor or transportation costs. This warranty does not apply to normal maintenance or normal replacement of serviceable items.

Replacement parts shall be warranted for six (6) months from date of shipment, subject to the terms and conditions as stated above for manufacture equipment.

The seller shall in no event be liable for any special or consequential charges for replacing or installation of warranty parts.

EKPC

Hardin County Landfill Gas-to-Energy Project

**EQUIPMENT BID SHEET
4160V GENERATOR SWITCHGEAR**

PHYSICAL DATA:

Dimensions: _____ L X _____ W X _____ H

Weight: _____ Lbs

Number of Shipping Splits: _____

ELECTRICAL DATA:

Main Bus Rating: Material = _____, _____ A Continuous, _____ A Withstand

Section Bus Rating: Material = _____, _____ A Continuous, _____ A Withstand

Breakers: Type = _____, _____ A Continuous, _____ A Interrupting

Feeder Switch: Type = _____, _____ A Continuous, _____ A Interrupting

PRICING QUOTATION:

Price for Switchgear: \$ _____

Shipping to Pearl Hollow Landfill site (Elizabethtown, KY): \$ _____

Total Price = Switchgear plus Shipping: \$ _____

MISCELLANEOUS INFORMATION:

Anticipated shop drawing date: _____ Days A.R.O.

Anticipated ship date: _____ Days A.R.O.

Standard Warranty Period: _____ after _____

Pricing for Extended Warranty (18 months after delivery): \$ _____

Pricing for additional Start-up and/or Troubleshooting Services: \$ _____ / Day
(Includes Labor, Equipment, Travel, Tools, and Vehicle Expenses)



No. 1 Altorfer Lane • East Peoria, IL 61610
Phone: 309-694-1418 • Fax: 309-694-3703
Email: ddavis@enercon-eng.com

29 March 2005

East Kentucky Power Cooperative
4775 East Lexington Road
Winchester, Kentucky 40391

Attention: Mr. Ralph Tyree

Subject: East Kentucky Power Cooperative Landfill
Gas Energy Project
Switchgear Equipment Bid Solicitation

Dear Mr. Tyree:

We are enclosing the completed "Equipment Bid Sheet" along with our Specification Conformance and Clarification document. There are no exceptions taken to the specification requirements and our clarifications (PLC/Touch screens, etc.) have been technically discussed with Mr. Charles Anderson to avoid any possible conflict.

The switchgear logic will interface with the Caterpillar G-3516 EMCP II Plus controls, per the specifications.

Our offer includes Square D 5kV equipment which are the long lead components for the delivery schedule calculations. ABB or Cutler-Hammer (C.H.) manufactured vacuum breakers, structures, load break switch have a shorter production time and could reduce the schedule by approximately 25 days with overall dimensions of 288 inches long by 95 inches high by 85 inches/86¼ inches deep, respectfully (load break switch integral to the lineup). The price schedule to remain the same.

Thank you for the opportunity to offer our products for this project. We look forward to being of service to your group.

Sincerely,

A handwritten signature in black ink, appearing to read "Dan Davis".

Dan Davis

Cc: Mr. Charles E. Anderson
Meade Electric Company Inc.
9550 W. 55th Street, Suite A
McCook, Illinois 60525



No. 1 Altorfer Lane • East Peoria, IL 61611
Phone: 309-694-1418 • Fax: 309-694-3703
Email: bsmall@enercon-eng.com

April 19, 2005

TO: Mr. Ken Lutes – East Kentucky Power Cooperative
C.C. Mr. Charles Anderson – Meade Electric
Mr. Rick Allison – Enercon Engineering, Inc
Mr. Dan Davis – Enercon Engineering, Inc

SUBJECT: Hardin County Landfill Gas-to-Energy Project

Dear Ken;

During your 13 April visit to the NiGas facility in Troy Grove, with Chuck Anderson, our Rick Allison agreed to a few modifications/additions to the Operator Input Module (OIM touch screen) for the Hardin County Project at no cost.

The enclosed presentation is submitted as a supplement to our bid document and provides an overview of the discussions.

Ken, hopefully we have covered all items. Please advise if any additional clarifications are needed.

Thank you for verbally advising us of the forthcoming purchase order. We look forward to being of service to you and your people.

Regards,

Bob Small

P.S. Our Dan Davis is out of town and I am his back up.



Specifications Conformance and Clarifications

Supplement to the bid documents based on discussions with Mr. Ken Lutes of East Kentucky Power Cooperative and Mr. Charles Anderson of Meade Electric during a 13 April visit to a NiGas facility.

- 5.4 Metering displays on Genset and System touch screens to include the standard digital metering readouts, plus a secondary metering screen (each touch screen) with bar graph displays of voltage (each phase), current (each phase), frequency, kilowatts and power factor.
- 5.5 Addition of a configuration screen (password accessible at supervisor level) to allow all system alarms to be programmed to any of eight (8) digital outputs to the station auto dialer for remote notification of alarm conditions. This would be in lieu of discrete relay contacts that previously served this function via hardwiring programming.
- 5.6 Structure the control and operator input screens to facilitate the familiarity of operations from existing sites to this site. This would entail, as much as possible, using legends and operating sequences along with location of and access to control and adjustment screens. A visit to the existing sites would be required with access to the existing screens.
 - 5.6.1 Preliminary OIM screen displays to be submitted with approval documents for review and prior to any existing site visits.
 - 5.6.2 Program costs of minor changes in PLC/OIM software to be absorbed by Enercon during the design/approval stages of the project. Major changes and/or field changes once the equipment is installed and operational to be reviewed with East Kentucky Power Cooperative before being instituted.
- 5.7 Enercon service personnel to provide training to East Kentucky Power Cooperative operating personnel during the site field commissioning visit.
- 5.8 East Kentucky Power Cooperative personnel would be welcomed at our facility during the factory testing and our staff would provide operation data of the PLC's/touch screen functions.

From: Ed Tangel/Enercon (etangel@enercon-eng.com)
Sent: 9 May 2005
To: Ralph Tyree (Ralph.tyree@ekpc.coop)
CC: Chuck Anderson (canderson@meadeelectric.com)
Dan Davis/ Steve Conrad/ Bob Small - Enercon
Subject: Hardin County Landfill Gas-to-Energy Project

1. Ralph, thank you for your 9 May e-mail confirming the contract covering the 4.16 KV switchgear lineup for the Hardin County Landfill project.
2. "Change 2" of the one-line diagram and out-line drawings was sent to Chuck Anderson on 27 April (drawing number DE-34212 sheets 1 through 3).
3. Based on this preliminary drawing submitted and your authorization, we will procure the long lead items -major item being the Square D 4.16KV structures, VCB's and the LBS.
4. AC/DC schematics along with a bill of material, will be prepared for Chuck Anderson and EXPC review prior to shop fabrication (Component wiring).

5. We appreciate the opportunity to be of service to EXPC and await your contract document.

Regards,

Ed Tangel



No. 1 Altorfer Lane • East Peoria, IL 61611
Phone: 309-694-1418 • Fax: 309-694-3703
Email: bsmall@enercon-eng.com

April 19, 2005

TO: Mr. Ken Lutes – East Kentucky Power Cooperative
C.C. Mr. Charles Anderson – Meade Electric
Mr. Rick Allison – Enercon Engineering, Inc
Mr. Dan Davis – Enercon Engineering, Inc

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Kenneth Lutes

From: Ralph Tyree
Sent: Monday, May 09, 2005 7:50 AM
To: 'Ed Tangel'; 'canderson@meadeelectric.com'
Cc: Kenneth Lutes; Dan Davis; Steve Conrad; Bob Small
Subject: RE: Hardin County Landfill Gas-to-Energy Project

Dan and Ed,

I have reviewed your comments as listed below and offer the following reply:

1. Article I, General Section 2, RUS Publication 202-1. I will forward a copy under a separate transmittal for your use.
2. Article III, Payment. Your comments are reasonable and will be incorporated into the contract.
3. Article V, Remedies, Section 1, liquidated damages. We propose to insert zero dollars into the blank space. We authorize Enercon to now release long lead items as previously discussed and anticipate a 150 day shipping schedule.
4. EKPC will incorporate Enercon's comments and re-distribute the contract documents.

Thanks and we look forward to working with you on this project.

Ralph

-----Original Message-----

From: Ed Tangel [mailto:etangel@enercon-eng.com]
Sent: Friday, April 22, 2005 12:06 PM
To: 'canderson@meadeelectric.com'
Cc: Ralph Tyree; Kenneth Lutes; Dan Davis; Steve Conrad; Bob Small
Subject: Hardin County Landfill Gas-to-Energy Project

From: Ed Tangel/Enercon (etangel@ienercon-eng.com)
Sent: 22 April 2005
To: Chuck Anderson (canderson@meadelectric.com)
Cc: ralph.tyree@ekpc.coop; ken.lutes@ekpc.coop
Cc: Enercon's Dan Davis/Steve Conrad/Bob Small
Subject: Hardin County Landfill Gas-to-Energy Project

Chuck, we received the documents sent with your 21 April e-mail and submit the following:

1. Article I - General Section 2 --- please advise content of "Rus Informational Publication 202-1"
2. Article III - Payment ----- 90% of invoice payable upon site delivery is good for us and ask you to consider same payment upon factory test acceptance should EKPC decide to hold Shipment. Request that 10% holdback be due within 90 days of site delivery or after site commissioning, which ever comes first.
3. Article V - Remedies, Section 1 "Liquidated Damages" --- pertaining to the equipment

delivery beyond the requested time period. The specification documents asked for an "anticipated ship date" of 150 days. A.R.O. to which we agreed but added that the purchase order to authorize procurement of long lead components. As discussed during our 21 April telephone conversation, the major long lead components are the Square D 5kV breakers/cell structures plus the fused load break switch and we are coordinating with Sq. D to reduce their in-factory production time.

3.1 Normally liquidated damages for late delivery, are not part of our contract documents. If this is a firm requirement of EXPC, we would like to discuss your thoughts on the dollar per day figure along with a possible fixed dollar amount for a specified extended time period.

Steve Conrad e-mailed a detailed one-line diagram on 21 April and this will be followed by a preliminary switchgear outline drawing. The objective of the pre-order drawing submittal is to help in expediting your review for release of the long lead components.

We await your comments along with any desired changes to the one-line.

Regards,

Ed Tangel

Kay & Kay Contracting, LLC

1355 Keavy Road
London, Kentucky 40744
606-864-7384; Fax 606-878-9225

July 15, 2005

PROPOSAL SUBMITTED TO:
East Kentucky Power Cooperative
4775 Lexington Road
Winchester, KY 40391
Attn: Mr. Ralph Tyree

WORK TO BE PERFORMED AT:
Pearl Hollow Landfill
Gas To Energy Project

As per drawings as prepared by LFG Technologies, Inc. 9/7/04

We hereby propose to strip topsoil to a depth of 8", then place and compact shot rock fill to line and grade as shown. Erosion control items as shown will also be installed. Thirty two feet (32') of 18" diameter slotted drain and/or pipe will be installed along with Rip Rap. Topsoil to be stockpiled within 500 l.f. of site. Maximum particle size of shot rock will be 12". No seeding is included.

Base Price (1 acre site).....\$39,875 00

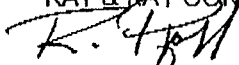
Alternate Price (2 acre site).....\$69,350.00

All materials are guaranteed to be as specified, and the work to be completed in accordance with the drawings submitted for the work and in a a substantial workmanlike manner for the amounts as specified. Billed monthly, payable within 10 days. No retainage to be deducted.

Any alteration or deviation from above specifications involving extra costs will be executed only upon written orders and will become an extra charge over and above the estimate. All agreements contingent upon strikes, accidents or delays beyond our control. Owner to carry fire, tornado and other necessary insurance necessary upon above work. Workman's Compensation on above work to be provided by Kay & Kay Contracting, LLC. This proposal may be withdrawn if not accepted within 30 days.

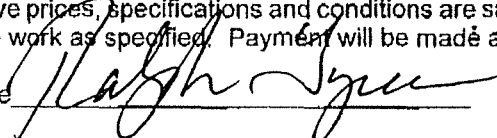
Respectfully submitted,

KAY & KAY CONTRACTING, LLC


Ron L. Pfaff
Vice President

ACCEPTANCE OF PROPOSAL

The above prices, specifications and conditions are satisfactory and are hereby accepted. You are authorized to do the work as specified. Payment will be made as outlined above.

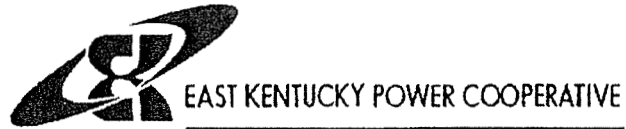
Signature  Date 7-18-05

It is our understanding that all work will be completed within 2 weeks of the date of this executed proposal. EKPC hereby approves the Base Price Bid (one acre site) in the total lump sum amount of \$39,875⁰⁰.

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4775 Lexington Road
Winchester, KY 40391

HARDIN COUNTY
LANDFILL GAS
TO
ELECTRIC PLANT

GENERAL CONSTRUCTION
CONTRACT

Set #3
www.kyepc.com

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FOR THE PROJECT TITLED:

**Pearl Hollow Gas-to-Energy Generation Plant
Hardin County, Kentucky**

To: Prospective Bidders

Project Contacts: East Kentucky Power Cooperative - Ken Lutes, 859.744.4812 x 298
Meade Electric - Chuck Anderson, 708.588.2514
JRA Architects - Chuck Witt, 859.252.6781 x 31

This Addendum will form a part of the Contract Documents and modifies the original Bidding Documents dated May, 2005.

Bidders must acknowledge receipt of this Addendum in the space provided on the Bid Form. Failure to do so may subject the bidder to disqualification.

Bidding Documents, including the Drawings and Specifications, are amended as described herein.

Attendees at the Pre-Bid Conference, August 3, 2005

Ken Lutes	East Kentucky Power
Vince Foushee	Lyons Company
Todd Pasdue	Lyons Company
Brian Senn	Hall Contracting of Kentucky
Mark Villier	Hall Contracting of Kentucky
Jessica Mudd	BCD, Inc.
James Watkins	Alliance Corporation
Richard Tingle	Gem Engineering
Lee McBrayer	Scott, Murphy & Daniel

ITEM NO. 1.01

The Contractor is to provide an alternate price for the project for extending the construction time to 160 days, in lieu of the 130 days specified.

ITEM NO. 1.02

The Contractor is to provide a unit price for machine removal of rock per cubic yard.

ITEM NO. 1.03

Refer to Drawing CS-1, note 12. The Contractor is to maintain an existing silt fence and to install additional silt fencing if required. Pricing should not include removal and replacement of silt fencing.

ITEM NO. 1.04

Refer to Drawing CS-1, note 13. The Contractor can use an existing construction entrance. Pricing shall not include installation of a new construction entrance.

ITEM NO. 1.05

Refer to Drawing CS-1, note 19. The Contractor will not be responsible for placing mulch in planting beds.

ITEM NO. 1.06

Refer to Drawing CS-1, note 20. The Contractor will not be responsible for seeding planting beds.

ITEM NO. 1.07

Refer to Drawing CS-1. The 18" drain line under the entrance drive is installed by others. Contractor is not to bid purchase or installation of this pipe.

ITEM NO. 1.08

Refer to Drawing M-1, Fuel Gas System Diagram. Contractor to allow 100 lineal feet for the 2" HDPE pipe and its 6" HDPE encasement. Its discharge will be into the Landfill Flare Pump Station.

ITEM NO. 1.09

Refer to Drawing E-4, Note 2. The Thermal Overload Units will be provided by the Motor Control Center vendor.

ITEM NO. 1.10

Refer to Drawing E-12, Plan Notes 3 and 4. The Contractor will be responsible for anchoring the Fault Interrupter and the Transformer to their respective pads.

ITEM NO. 1.11

Refer to Drawing E-12, General Note 2. Change both the 2000 gallon potable water and sewage holding tanks to 1500 gallon tanks.

ITEM NO. 1.12

Refer to Specification Section 09310 and Drawing AS5. Wall tile in shower to be 4" x 4". All floor tile to be 1" x 1".

ITEM NO. 1.13

Refer to Building Elevations, Drawing AS4 and Detail 4/AS6. The correct type of CMU for the rear wall is plain, not split face. All CMU shall be standard gray.

ITEM NO. 1.14

Refer to Drawing AS1. Note for Engine pad refers to Detail 1/AS2; this should be 1/AS1.

ITEM NO. 1.14

Refer to Drawings AS2, Coolant Tank Pad. Pad shall be 8" thick with 2 layers of #5 bars @ 12" o.c. e.w.

END OF ADDENDUM NO. 1.00

07/25/2005

ADVERTISEMENT FOR BIDS

For the Project Titled:

Landfill Gas-to-Electric Generation Plant

Pearl Hollow Landfill
Hardin County, Kentucky

The East Kentucky Power Cooperative will receive sealed bids for construction of the above named project until 1:00 p.m. Local Time, Thursday, August 24, 2005, at their offices located at 4775 Lexington Road, Winchester, Kentucky 40391. Bids will be privately opened.

The Project consists of the construction of a Landfill Gas-to-Electric Generation Plant.

The building structure will be concrete slab-on-grade and CMU foundation walls on concrete spread footings. The roof structure will be single ply membrane on steel deck with steel roof trusses.

Exterior walls will be a combination of architectural split face and common CMU block. Windows will be aluminum frame with insulating glass. Exterior doors will be painted metal, insulated. Finishes include vinyl composition tile, ceramic tile, acoustical ceilings and paint. Specialties include cabinetwork.

Site work includes walks, curbs, drives, parking area, utility work, fill to final grade, seeding and landscaping.

Heating and cooling will be air-to-air heat pump for control room and ventilation fans for equipment rooms.

Mechanical piping work includes the installation of owner furnished engine-generator sets, radiators and fuel gas compression skid.

Electrical work includes the setting and interconnection of owner furnished power and control equipment, including 15kV Fault Interrupter, 5000 KVA transformer, 4160V Switchgear, 500 KVA Transformer and 480V Motor Control center. Interior lighting will be HID and fluorescent fixtures. Emergency lighting will be self-contained battery self-packs. Other electrical work includes fire alarm, methane gas detection system and conduit and boxes for data and telephone systems.

Bidding Documents, including Drawings and Specifications, may be examined at the following places:

JRA Architects, 3225 Summit Square Place., Suite 200, Lexington, KY.

Bidding Documents, including Drawing and Specifications, may be obtained for the non-refundable amount of \$100.00 per set cash or check, payable to Lynn Imaging. Documents may be obtained from Lynn Imaging, 328 Old East Vine Street, Lexington, KY 40507, (859) 255-1021. If documents are to be mailed, a non-refundable charge may also be required, made payable directly to Lynn Imaging.

All bids shall be accompanied by a Bid Bond of not less than 10% of the amount of the total bid. A 100% Performance Bond and Payment Bond shall be required of the successful Bidder. All bonding and insurance requirements are contained in the Instructions to Bidders and/or the General and Supplementary Conditions of the Contract.

Bids must be submitted, on Bid Form included in the Project Manual. Mailed Bids shall be addressed to East Kentucky Power Cooperative's office, attention Ralph Tyree. Bid submitted by facsimile will not be accepted. Any bid received later than the time specified for receipt of bids or any bid which is not submitted in the proper form, shall not be considered.

The Owner reserves the right to reject any and all bids or to waive any formalities in the bidding. Bids received after the scheduled closing time for the receipt of bids will be returned unopened to the bidders. No bid may be withdrawn for a period of 30 days subsequent to the opening of bids without consent of the Owner.

Contractors wishing to submit a bid for this project may visit a similar project site by coordinating with East Kentucky Power Cooperative, Ken Lutes, (859) 745-9298. A formal pre-bid meeting is scheduled for Wednesday, August 3, 2005 at the project site.

END OF ADVERTISEMENT FOR BIDS

TABLE OF CONTENTS

PART I

RUS FORM 200

- Construction Contract -- Generating Notice and Instructions to Bidders
- Contractor's Proposal
- Debarment
- Lobbying

RUS FORM 307

- Bid Bond

RUS FORM 168B

- Contractor's Bond
- Lobbying Certification
- Certification Regarding Debarment, Suspension, Ineligibility and Voluntary Exclusion Lower Tier Covered Transactions

RUS FORM 224

- Waiver and Release of Lien

RUS FORM 187

- Certificate of Completion -- Contract Construction

RUS FORM 231

- Certificate of Contractor

U.S. Department of Agriculture
Rural Utilities Service

**CONSTRUCTION CONTRACT
GENERATING**

NOTICE AND INSTRUCTIONS TO BIDDERS

1. **Sealed proposals for the construction, including the supply of necessary labor, materials and equipment, of a rural electric project of** East Kentucky Power Co-op, Inc.,
RUS designation _____, (hereinafter called the "Owner") will be received by the Owner on or before 5 o'clock P M., June 30, 2005, at its office at 4775 Lexington, Winchester, KY 40391 at which time and place the proposals will be _____ publicly opened and read.
 privately opened. The Owner, subsequent to the bid opening, may elect to conduct clarifying discussions with the bidder to resolve any questions related to the substance of the bidder's proposal and to arrive at a final price for a responsive bid.
Any proposals received subsequent to the time specified will be promptly returned to the Bidder unopened.
2. **Obtaining Documents.** The Plans, Specifications and Construction Drawings, together with all necessary forms and other documents for bidders may be obtained from the Owner, or from the Engineer LFG Technologies, Inc. ("LFG Tech") at the latter's office at Lynn Imaging, 328 Old Vine St., Lexington, KY 40507 upon the payment of \$ 100.00, which payment will not be subject to refund. The Plans, Specifications, and Construction Drawings may be examined at the office of the Owner or at the office of the Engineer.
3. **Manner of Submitting Proposals.** Proposals and all supporting instruments must be submitted on the forms furnished by the Owner and must be delivered in a sealed envelope addressed to the Owner. The name and address of the Bidder, its license number if a license is required by the State, and the date and hour of the opening of bids must appear on the envelope in which the Proposal is submitted. Proposals must be completed in ink or typewritten. No alterations or interlineations will be permitted, unless made before submission, and initialed and dated. The successful Bidder will be required to execute two additional counterparts of the Proposal.
4. **Due Diligence.** Prior to the submission of the Proposal, the Bidder shall make and shall be deemed to have made a careful examination of the site of the project and of the Plans, Specifications, Construction Drawings, and forms of Contractor's Proposal and Contractor's Bond, and shall review the location and nature of the proposed construction, the transportation facilities, the kind and character of soil and terrain to be encountered, the kind of facilities required before and during the construction of the project, general local conditions, environmental and historic preservation considerations, and all other matters that may affect the cost and time of completion of the project. Bidder will be required to comply with all federal, state, and local laws, rules, and regulations applicable to its performance, including those pertaining to the licensing of contractors, and the Anti Kick-Back Act of 1986 (41 U.S.C. 51 et seq).
5. **Proposals will be accepted only from those prequalified bidders invited by the Owner to submit a proposal.**

6. **The Time for Completion of Construction** of the project is of the essence of the Contract and shall be as specified by the Engineer in the Proposal.
7. **Bid Bond.** Each Proposal must be accompanied by a Bid Bond in the form attached hereto or a certified check on a bank that is a member of the Federal Deposit Insurance Corporation, payable to the order of the Owner, in an amount equal to ten percent (10%) of the maximum bid price. Each Bidder agrees, provided its Proposal is one of the three low Proposals, that, by filing its Proposal together with such Bid Bond or check in consideration of the Owner's receiving and considering such Proposals, said Proposal shall be firm and binding upon each such Bidder and such Bid Bond or check shall be held by the Owner until a Proposal is accepted and a satisfactory Contractor's Bond is furnished (where required) by the successful Bidder and such acceptance has been approved by the Administrator, or for a period not to exceed sixty (60) days from the date hereinbefore set for the opening of Proposals, whichever period shall be the shorter. If such Proposal is not one of the three low Proposals, the Bid Bond or check will be returned in each instance within a period of ten (10) days to the Bidder furnishing same.
8. **Contractor's Bond.** For a Contract in excess of \$100,000, the Bidder agrees to furnish a Contractor's Bond in triplicate in the form attached hereto with sureties listed by the United States Treasury Department as Acceptable Sureties, in a penal sum not less than the contract price.
9. **Failure to Furnish Contractor's Bond.** Should the successful Bidder fail or refuse to execute such counterparts or to furnish a Contractor's Bond (where required) within ten (10) days after written notification of the acceptance of the Proposal by the Owner, the Bidder will be considered to have abandoned the Proposal. In such event, the Owner shall be entitled (a) to enforce the Bid Bond in accordance with its terms, or (b) if a certified check has been delivered with the Proposal, to retain from the proceeds of the certified check, the difference (not exceeding the amount of the certified check) between the amount of the Proposal and such larger amount for which the Owner may in good faith contract with another party to construct the project. The term "Successful Bidder" shall be deemed to include any Bidder whose Proposal is accepted after another Bidder has previously refused or has been unable to execute the counterparts or to furnish a satisfactory Contractor's Bond (where required.)
10. **Evaluation Factors.** In estimating the lowest cost to the Owner as one of the factors in deciding the award of the Contract, the Owner will consider, in addition to the price quoted in the Proposals, the following:

11. **Debarment Certification.** The Bidder must provide to the Owner a suspension and debarment certificate in the form attached hereto.
12. **Contract is Entire Agreement.** The Contract to be effected by the acceptance of the Proposal shall be deemed to include the entire agreement between the parties thereto, and the Bidder shall not claim any modifications thereof resulting from any representation or promise made at any time by any officer, agent or employee of the Owner or by any other person.
13. **Minor Irregularities.** The Owner reserves the right to waive minor irregularities or minor errors in any Proposal, if it appears to the Owner that such irregularities or errors were made through inadvertence. Any such irregularities or errors so waived must be corrected on the Proposal in which they occur prior to the acceptance thereof by the Owner.
14. **Bid Rejection.** The Owner reserves the right to reject any or all Proposals.
15. **Definition of Terms.** The terms "Administrator," "Engineer," "Completion of Construction," and "Completion of the Project" as used throughout this Contract shall be as defined in Article VI, Section 1, of the Proposal.

16. The Owner Represents:

- a. *If by provisions of the Proposal the Owner shall have undertaken to furnish any materials for the construction of the project, such materials are on hand at locations specified or if such materials are not on hand they will be made available by the Owner to the successful Bidder at the locations specified before the time such materials are required for construction.*
- b. *All funds necessary for prompt payment for the construction of the project will be available.*

If the Owner shall fail to comply with any of the undertakings contained in the foregoing representation or if any of such representations shall be incorrect, the Bidder will be entitled to an extension of time of completion for a period equal to the delay, if any, caused by the failure of the Owner to comply with such undertakings or by any such incorrect representation; provided the Bidder shall have promptly notified the Owner in writing of its desire to extend the time of completion in accordance with the foregoing; provided, however, that such extension, if any, of the time of completion shall be the sole remedy of the Bidder for the Owner's failure, because of conditions beyond the control and without the fault of the Owner, to furnish materials in accordance with subparagraph a. above.

East Kentucky Power Coop, Inc.
Owner
By Roy M. Falk
President + CEO
Title
August 31, 2005
Date

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PROPOSAL

TO:

East Kentucky Power Cooperative, Inc. ("EKPC")

(hereinafter called the "Owner").

ARTICLE I—GENERAL

Section 1. Offer to Construct. *The undersigned (hereinafter called the "Bidder") hereby proposes to receive and install such materials and equipment as may hereinafter be specified to be furnished by the Owner, and to furnish all other materials and equipment, all machinery, tools, labor, transportation and other means required to construct the project in strict accordance with the Plans, Specifications and Construction Drawings for the prices hereinafter stated.*

Item: _____ Price: _____

Item: _____ Price: _____

Item: _____ Price: _____

Item: _____ Price: _____

Section 2. Purchase of Materials. *The Bidder will purchase all materials and equipment (other than Owner Furnished Materials) outright and not subject to any conditional sales agreements, bailment, lease or other agreement reserving unto the seller any right, title or interest therein. All such materials and equipment shall be new and become the property of the Owner when erected in place.*

Section 3. Description of Contract. *The Notice and Instructions to Bidders, Plans, Specifications, and Construction Drawings, which by this reference are incorporated herein, together with the Proposal and Acceptance constitute the Contract. The Plans, Specifications, and Construction Drawings, including maps, special drawings, and approved modifications in standard specifications are attached hereto and identified as follows:*

Section 4. Due Diligence. *The Bidder has made a careful examination of the site of the project to be constructed and of the Plans, Specifications, Construction Drawings, and form of Contractor's Bond attached hereto, and has become informed as to the location and nature of the proposed construction, the transportation facilities, the kind and character of soil and terrain to be encountered, and the kind of facilities required before and during the construction of the project, and has become acquainted with the labor conditions, federal, state, and local laws, rules, and regulations applicable to its performance.*

Section 5. License. *The Bidder warrants that a Contractor's License is _____, is not required, and if required,*

it possesses Contractor's License No. _____ for the State of _____
in which the project is located and said license expires on _____, 20____.

Section 6. Warranty of Good Faith. *The Bidder warrants that this Proposal is made in good faith and without collusion or connection with any person or persons bidding for the same work.*

Section 7. Financial Resources.

- a. *The Bidder warrants that it has or will obtain the financial resources necessary to ensure completion of the project.*
- b. *The Bidder agrees that in the event this Proposal is accepted and a Contractor's Bond is required, it will furnish a Contractor's Bond in the form attached hereto, in a penal sum not less than the maximum Contract price, with a surety or sureties listed by the United States Department of Treasury as Acceptable Sureties.*

Section 8. Taxes. *The prices in this Proposal include provisions for the payment of all monies which will be payable by the Bidder or the Owner in connection with the construction of the project on account of taxes imposed by any taxing authority upon the sale, purchase or use of materials, supplies and equipment, or services or labor of installation thereof, to be incorporated in the project. The Bidder agrees to pay all such taxes, except taxes upon the sale, purchase or use of Owner Furnished Materials. The Bidder will furnish to the appropriate taxing authorities all required information and reports pertaining to the project, except as to the Owner Furnished Materials.*

ARTICLE II—CONSTRUCTION

Section 1. Time and Manner of Construction.

- a. *The Bidder agrees to commence construction of the project on a date (hereinafter called the "Commencement Date") which shall be determined by the Engineer after notice to the bidder in writing of approval of the contract by the Administrator, if approval of the Administrator is required, and notice in writing from the Bidder that the Bidder has sufficient materials to warrant commencement and continuation of construction, but in no event will the Commencement Date be later than 10 calendar days after date of approval of the contract by the Administrator, if approval of the Administrator is required. The Bidder further agrees to prosecute diligently and to complete construction in strict accordance with the Plans, Specifications and Construction Drawings within 130 calendar days after Commencement Date.*
- b. *The time for Completion of Construction shall be extended for the period of any reasonable delay which is due exclusively to causes beyond the control and without the fault of the Bidder, including Acts of God, fires, floods, inability to obtain materials and acts or omissions of the Owner with respect to matters for which the Owner is solely responsible: Provided, however that no such extension of time for completion shall be granted the Bidder unless within ten (10) days after the happening of any event relied upon by the Bidder for such an extension of time the Bidder shall have made a request therefore in writing to the Owner, and provided further that no delay in such time of completion or in the progress of the work which results from any of the above causes except acts or omissions of the Owner, shall result in any liability on the part of the Owner.*
- c. *The Owner, acting through the Engineer with the approval of the Administrator, if approval of the Administrator is required, may from time to time during the progress of the construction of the project make such changes, additions or subtractions from the Plans, Specifications, Construction Drawings, and sequence of construction as conditions may warrant: Provided, however, that if*

any change in the construction to be done shall require an extension of time, a reasonable extension will be granted if the Bidder shall make a written request therefore to the Owner within (10) days after any such change is made. And provided further, that if the cost to the Bidder of construction of the project shall be materially increased by any such change or addition, the Owner shall pay the Bidder for the reasonable cost thereof in accordance with a Construction Contract Amendment signed by the Owner and the Bidder and approved by the Administrator, if approval by the Administrator is required, but no claim for additional compensation for any such change or addition will be considered unless the Bidder shall have made a written request therefore to the Owner prior to the commencement of work in connection with such change or addition.

Section 2. Environmental Protection. *The Bidder shall perform the work in compliance with all applicable Federal, State, and local Environmental Laws. For purposes of this Agreement, the term "Environmental Laws" shall mean all Federal, state, and local laws including statutes, regulations, ordinances, codes, rules, and other governmental restriction and requirements relating to the environment or solid waste, hazardous substances, hazardous waste, toxic or hazardous material, pollutants or contaminants including, but not limited to the Comprehensive Environmental Response, Compensation, and Liability Act, as amended, 42 U.S.C. §§ 9601, et seq., the Federal Water Pollution Control Act, as amended, 33 U.S.C. §§ 1251, et seq., and the Solid Waste Disposal Act, as amended, 42 U.S.C. §§ 6901, et seq., now or at any time hereafter in effect.*

Section 3. Tools, Equipment, and Qualified Personnel. *The Bidder agrees that in the event this Proposal is accepted it will make available for use in connection with the proposed construction all necessary tools and equipment and qualified supervisors and workers.*

Section 4. Supervision and Inspection.

- a. *The Bidder shall give sufficient supervision to the work, using its best skill and attention. The Bidder will carefully study and compare all drawings, specifications and other instructions and will at once report to the Owner any error, inconsistency or omission which it may discover. The Bidder shall cause the construction work on the project to receive constant supervision by a competent superintendent (hereinafter called the "Superintendent") who shall be present at all times during working hours where construction is being carried on. The Bidder shall also employ, in connection with the construction of the project, capable, experienced and reliable supervisors and such skilled workers as may be required for the various classes of work to be performed. The Bidder shall be solely responsible for the means and methods of construction and for the supervision of the Bidder's employees.*
- b. *The Owner reserves the right to require the removal from the project of any employee of the Bidder if in the judgment of the Owner such removal shall be necessary in order to protect the interest of the Owner. The Owner shall have the right to require the Bidder to increase the number of its employees and to increase or change the amount or kind of tools and equipment if at any time the progress of the work shall be unsatisfactory to the Owner; but the failure of the Owner to give any such directions shall not relieve the Bidder of its obligations to complete the work within the time and in the manner specified in this Proposal.*
- c. *The construction of the project and all materials and equipment used therein, shall be subject to the inspection, tests, and acceptance by the Owner and the Administrator and the Bidder shall furnish all information required by the Owner or by the Administrator concerning the nature or source of any materials incorporated or to be incorporated in the project. All Bidder procedures and records pertaining to the work shall be made available to the Owner and the Administrator for review prior to such inspections and tests. The Bidder shall provide all reasonable facilities necessary for such inspection and tests and shall maintain an office at the site of the project, with telephone service where obtainable and at least one office employee to whom communications from the Owner may be delivered. Delivery of such communications in writing to the employee of the Bidder at such office shall constitute delivery to the Bidder. The Bidder shall have an authorized agent accompany the Engineer when final inspection is made and, if requested by the Owner, when any other inspection is made. The performance of such inspections or tests by the*

Owner or the Administrator shall not relieve the Bidder of its obligations to perform the work in accordance with the requirements of this Contract.

- d. *In the event that the Owner, or the Administrator, shall determine that the construction contains or may contain numerous defects, it shall be the duty of the Bidder and the Bidder's Surety or Sureties, if any, to have an inspection made by an engineer approved by the Owner and the Administrator, if approval by the Administrator is required, for the purpose of determining the exact nature, extent and location of such defects.*
- e. *The Engineer may recommend to the Owner that the Bidder suspend the work wholly or in part for such period or periods as the Engineer may deem necessary due to unsuitable weather or such other conditions as are considered unfavorable for satisfactory prosecution of the work or because of the failure of the Bidder to comply with any of the provisions of the Contract: Provided, however, that the Bidder shall not suspend work pursuant to this provision without written authority from the Owner so to do. The time of completion hereinabove set forth shall be increased by the number of days of any such suspension, except when such suspension is due to the failure of the Bidder to comply with any of the provisions of this Contract. In the event that work is suspended by the Bidder with the consent of the Owner, the Bidder before resuming work shall give the Owner at least twenty-four (24) hours notice thereof in writing.*

Section 5. Defective Materials and Workmanship.

- a. *The acceptance of any materials, equipment (except Owner Furnished Materials) or any workmanship by the Owner or the Engineer shall not preclude the subsequent rejection thereof if such materials, equipment, or workmanship shall be found to be defective after delivery or installation, and any such materials, equipment or workmanship found defective before final acceptance of the construction shall be replaced or remedied, as the case may be, by and at the expense of the Bidder. Any such condemned material or equipment shall be immediately removed from the site of the project by the Bidder at the Bidder's expense. The Bidder shall not be entitled to any payment hereunder so long as any defective materials, equipment or workmanship in respect to the project, of which the Bidder shall have had notice, shall not have been replaced or remedied, as the case may be.*
- b. *Notwithstanding any certificate which may have been given by the Owner or the Engineer, if any materials, equipment (except Owner Furnished Materials) or any workmanship which does not comply with the requirements of this Contract shall be discovered within one (1) year after Completion of Construction of the project, the Bidder shall replace such defective materials or equipment or remedy any such defective workmanship within thirty (30) days after notice in writing of the existence thereof shall have been given by the Owner. If any such defective materials, equipment, or workmanship so replaced or repaired is found to be defective within one year after the completion of the replacement or repair, the Bidder shall replace or remedy such defective materials, equipment, or workmanship. In the event of failure by the Bidder so to do, the Owner may replace such defective materials or equipment or remedy such defective workmanship, as the case may be, and in such event the Bidder shall pay to the Owner the cost and expense thereof.*

ARTICLE III—PAYMENTS AND RELEASE OF LIENS

Section 1. Payments to Bidder.

- a. *On or before the fifth (5) day of each calendar month, the Bidder will make application for payment, and the Owner, on or before the fifteenth (15) day of such month, shall make partial payment to the Bidder for construction accomplished during the preceding calendar month and certified to by the Bidder, recommended by the Engineer and approved by the Owner solely for the purposes of payment: Provided, however, that such approval shall not be deemed approval of the workmanship or materials. Only ninety percent (90%) of each such estimate approved during the construction of the project shall be paid by the Owner to the Bidder prior to Completion of the*

project. Upon completion by the Bidder of the construction of the project, the Engineer will inspect the work performed hereunder. If the Engineer finds the work acceptable and all provisions hereunder fully performed, the Engineer will so certify to the Owner. Upon the approval by the Owner and the Administrator, if the approval of the Administrator is required, of a Certificate of Completion in the form attached hereto, showing the total cost of the construction performed, the Owner shall make payment to the Bidder of all amounts to which the Bidder shall be entitled thereunder which shall not have been paid: Provided, however, that such final payment shall be made not later than ninety (90) days after the date of Completion of Construction of the project, as specified in the Certificate of Completion, unless withheld because of the fault of the Bidder.

- b. Interest at the rate of $\frac{\text{NY prime plus 2\%}}{\text{percent}}$ (_____%) per annum shall be paid by the Owner to the Bidder on all unpaid balances due on monthly estimates, commencing fifteen (15) days after the due date; provided the delay in payment beyond the due date is not caused by any condition within the control of the Bidder. The due date for purposes of such monthly payment or interest on all unpaid balances shall be the fifteenth (15) day of each calendar month provided (1) the Bidder on or before the fifth (5) day of such month shall have submitted its certification of Construction Units completed during the preceding month and (2) the Owner on or before the fifteenth (15) day of such month shall have approved such certification. If, for reasons not due to the Bidder's fault, such approval shall not have been given on or before the fifteenth (15) day of such month, the due date for purposes of this subsection b shall be the fifteenth (15) day of such month notwithstanding the absence of the approval of the certification.
- c. Interest at the rate of $\frac{\text{NY prime plus 2\%}}{\text{percent}}$ (_____%) per annum shall be paid by the Owner to the Bidder on the final payment for the project, commencing fifteen (15) days after the due date. The due date for purposes of such final payment or interest on all unpaid balances shall be the date of approval by the Owner of all of the documents requiring such approval, as a condition precedent to the making of final payment, or ninety (90) days after the date of Completion of Construction of the project, as specified in the Certificate of Completion, whichever date is earlier.
- d. No payment shall be made to the Bidder for materials or labor involved in correcting errors or omissions on the part of the Bidder which result in construction not in accordance with the Plans and Specifications.
- e. No payment shall be due while the Bidder is in default in respect of any of the provisions of this Contract and the Owner may withhold from the Bidder the amount of any claim by a third party against either the Bidder or the Owner based upon an alleged failure of the Bidder to perform the work hereunder in accordance with the provisions of this Contract.
- f. The Owner and the Administrator shall have the right to inspect all payrolls, invoices of materials, and other data and records of the Bidder and of any subcontractor, relevant to the construction of the project.

Section 2. Release of Liens and Certificate of Contractor. Upon the completion by the Bidder of the construction of the project but prior to final payment to the Bidder, the Bidder shall deliver to the Owner, in duplicate, releases of all liens and of rights to claim any lien, in the form attached hereto from all manufacturers, material suppliers, and subcontractors furnishing services or materials for the project and a certificate in the form attached hereto to the effect that all labor used on or for the project has been paid and that all such releases have been submitted to the Owner.

Section 3. Payments to Material Suppliers and Subcontractors. The Bidder shall pay each material supplier, if any, within five (5) days after receipt of any payment from the Owner, the amount thereof allowed

¹ The Owner shall insert a rate equal to the lowest "Prime Rate" listed in the "Money Rates" section of the Wall Street Journal on the date such invitation to bid is issued.

² See Footnote 1.

the Bidder for and on account of materials furnished or construction performed by each material supplier or each subcontractor.

ARTICLE IV—PARTICULAR UNDERTAKINGS OF THE BIDDER

Section 1. Protection to Persons and Property. *The Bidder shall at all times take all reasonable precautions for the safety of employees on the work and of the public, and shall comply with all applicable provisions of federal, state, and local laws, rules, and regulations and building and construction codes, in addition to the safety rules and procedures of the Owner.*

The following provisions shall not limit the generality of the above requirements:

- a. *The Bidder shall at all times keep the premises free from accumulations of waste materials or rubbish caused by its employees or work, and at the completion of the work the Bidder shall remove all rubbish from and about the Project and all its tools, scaffolding and surplus materials and shall leave the work "broom clean". The Bidder shall dispose of waste material by burying it on the work site or in a manner approved by local authorities, but shall not dispose of any waste materials or rubbish by open burning. The Bidder shall provide chemical sanitary facilities which may be required.*
- b. *The Bidder shall transport and store all material in facilities and vehicles which are designed to protect the material from damage. The Bidder shall ensure that all vehicles, trailers, and other equipment used comply with all applicable licensing, traffic, and highway requirements.*
- c. *The Bidder shall provide and maintain all such guard lights and other protection for the public as may be required by applicable statutes, ordinances and regulations or by local conditions.*
- d. *The project, from the commencement of work to completion, or to such earlier date or dates when the Owner may take possession and control in whole or in part as hereinafter provided shall be under the charge and control of the Bidder and during such period of control by the Bidder all risks in connection with the construction of the project and the materials to be used therein shall be borne by the Bidder. The Bidder shall make good and fully repair all injuries and damages to the project or any portion thereof under the control of the Bidder by reason of any act of God or other casualty or cause whether or not the same shall have occurred by reason of the Bidder's negligence.*
 - (i) *To the maximum extent permitted by law, Bidder shall defend, indemnify, and hold harmless Owner and Owner's directors, officers, and employees from all claims, causes of action, losses, liabilities, and expenses (including reasonable attorney's fees) for personal loss, injury, or death to persons (including but not limited to Bidder's employees) and loss, damage to or destruction of Owner's property or the property of any other person or entity (including but not limited to Bidder's property) in any manner arising out of or connected with the Contract, or the materials or equipment supplied or services performed by Bidder, its subcontractors and suppliers of any tier. But nothing herein shall be construed as making Bidder liable for any injury, death, loss, damage, or destruction caused by the sole negligence of Owner.*
 - (ii) *To the maximum extent permitted by law, Bidder shall defend, indemnify, and hold harmless Owner and Owner's directors, officers, and employees from all liens and claims filed or asserted against Owner, its directors, officers, and employees, or Owner's property or facilities, for services performed or materials or equipment furnished by Bidder, its subcontractors and suppliers of any tier, and from all losses, demands, and causes of action arising out of any such lien or claim. Bidder shall promptly discharge or remove any such lien or claim by bonding, payment, or otherwise and shall notify Owner promptly when it has done so. If Bidder does not cause such lien or claim to be discharged or released by payment, bonding, or otherwise, Owner shall have the right (but shall not be obligated) to*

pay all sums necessary to obtain any such discharge or release and to deduct all amounts so paid from the amount due Bidder.

- (iii) Bidder shall provide to Owner's satisfaction evidence of Bidder's ability to comply with the indemnification provisions of subparagraphs i and ii above, which evidence may include but may not be limited to a bond or liability insurance policy obtained for this purpose through a licensed surety or insurance company.*
- e. Upon violation by the Bidder of any of the provisions of this section, after written notice of such violation given to the Bidder by the Engineer or the Owner, the Bidder shall immediately correct such violation. Upon failure of the Bidder so to do the Owner may correct such violation at the Bidder's expense: Provided, however, that the Owner may, if it deems it necessary or advisable, correct such violation at the Bidder's expense without such prior notice to the Bidder.*
- f. The Bidder shall submit to the Owner monthly reports in duplicate of all accidents, giving such data as may be prescribed by the Owner.*

Section 2. Insurance. *The Bidder shall take out and maintain throughout the period of this Agreement the following types and minimum amounts of insurance:*

- a. Workers' compensation and employers' liability insurance, as required by law, covering all its employees who perform any of the obligations of the Bidder under the contract. If any employer or employee is not subject to the workers' compensation laws of the governing state, then insurance shall be obtained voluntarily to extend to the employer and employee coverage to the same extent as though the employer or employee were subject to the workers' compensation laws.*
- b. Public liability insurance covering all operations under the contract shall have limits for bodily injury or death of not less than \$1 million each occurrence, limits for property damage of not less than \$1 million each occurrence, and \$1 million aggregate for accidents during the policy period. A single limit of \$1 million of bodily injury and property damage is acceptable. This required insurance may be in a policy or policies of insurance, primary and excess including the umbrella or catastrophe form.*
- c. Automobile liability insurance on all motor vehicles used in connection with the contract, whether owned, nonowned, or hired, shall have limits for bodily injury or death of not less than \$1 million per person and \$1 million each occurrence, and property damage limits of \$1 million for each occurrence. A single limit of \$1 million of bodily injury and property damage is acceptable. This required insurance may be in a policy or policies of insurance, primary and excess including the umbrella or catastrophe form.*

The Owner shall have the right at any time to require public liability insurance and property damage liability insurance greater than those required in subsection "b" and "c" of this Section. In any such event, the additional premium or premiums payable solely as the result of such additional insurance shall be added to the Contract price.

The Owner shall be named as Additional Insured on all policies of insurance required in subsections "b" and "c" of this Section.

The policies of insurance shall be in such form and issued by such insurer as shall be satisfactory to the Owner. The Bidder shall furnish the Owner a certificate evidencing compliance with the foregoing requirements which shall provide not less than (30) days prior written notice to the Owner of any cancellation or material change in the insurance.

Section 3. Delivery of Possession and Control to Owner. *Upon written request of the Owner the Bidder shall deliver to the Owner full possession and control of any portion of the project provided the Bidder shall have been paid at least ninety percent (90%) of the cost of construction of such portion. Upon such delivery of the possession and control of any portion of the project to the Owner, the risk and obligations of the Bidder as set forth in Article IV, Section 1.d hereof with respect to such portion of*

the project so delivered to the Owner shall be terminated; Provided, however, that nothing herein contained shall relieve the Bidder of any liability with respect to defective materials and workmanship as contained in Article II, Section 5 hereof.

Section 4. Assignment of Guarantees. *All guarantees of materials and workmanship running in favor of the Bidder shall be transferred and assigned to the Owner prior to the time the Bidder receives final payment.*

ARTICLE V--REMEDIES

Section 1. Completion on Bidder's Default. *If default shall be made by the Bidder or by any subcontractor in the performance of any of the terms of this Proposal, the Owner, without in any manner limiting its legal and equitable remedies in the circumstances, may serve upon the Bidder and the Surety or Sureties, if any, upon the Contractor's Bond or Bonds a written notice requiring the Bidder to cause such default to be corrected forthwith. Unless within twenty (20) days after the service of such notice upon the Bidder such default shall be corrected or arrangements for the correction thereof satisfactory to both the Owner and the Administrator shall be made by the Bidder or its Surety or Sureties, if any, the Owner may take over the construction of the project and prosecute the same to completion by Contract or otherwise for the account and at the expense of the Bidder, and the Bidder and its Surety or Sureties, if any, shall be liable to the Owner for any cost or expense in excess of the Contract price occasioned thereby. In such event the Owner may take possession of and utilize, in completing the construction of the project, any materials, tools, supplies, equipment, appliances, and plant belonging to the Bidder or any of its subcontractors, which may be situated at the site of the project. The Owner in such contingency may exercise any rights, claims or demands which the Bidder may have against third persons in connection with this Contract and for such purpose the Bidder does hereby assign, transfer and set over unto the Owner all such rights, claims and demands.*

Section 2. Liquidated Damages. *The time of the Completion of Construction of the project is of the essence of the Contract. Should the Bidder neglect, refuse or fail to complete the construction within the time herein agreed upon, after giving effect to extensions of time, if any, herein provided, then, in that event and in view of the difficulty of estimating with exactness damages caused by such delay, the Owner shall have the right to deduct from and retain out of such moneys which may be then due, or which may become due and payable to the Bidder the sum of three hundred dollars (\$300.00) per day for each and every day that such construction is delayed in its completion beyond the specified time, as liquidated damages and not as a penalty; if the amount due and to become due from the Owner to the Bidder is insufficient to pay in full any such liquidated damages, the Bidder shall pay to the Owner the amount necessary to effect such payment in full: Provided, however, that the Owner shall promptly notify the Bidder in writing of the manner in which the amount retained, deducted or claimed as liquidated damages was computed.*

Section 3. Cumulative Remedies. *Every right or remedy herein conferred upon or reserved to the Owner or the Government or the Administrator shall be cumulative, shall be in addition to every right and remedy now or hereafter existing at law or in equity or by statute and the pursuit of any right or remedy shall not be construed as an election: Provided, however, that the provisions of Section 2 of this Article shall be the exclusive measure of damages for failure by the Bidder to complete the construction of the project within the time herein agreed upon.*

ARTICLE VI--MISCELLANEOUS

Section 1. Definitions.

- a. *The term "Administrator" shall mean the Administrator of the Rural Utilities Service of the United States of America and his or her duly authorized representative or any other person in whom or authority in which may be vested the duties and functions which the Administrator is now authorized by law to perform.*

- b. *The term "Engineer" shall mean the Engineer employed by the Owner, to provide engineering services for the project and said Engineer's duly authorized assistants and representatives.*
- c. *The term "Completion of Construction" shall mean full performance by the Bidder of the Bidder's obligations under the Contract and all amendments and revisions thereof except the Bidder's obligations in respect of Releases of Liens and Certificate of Contractor under Article III, Section 2 hereof and other final documents. The term "Completion of the Project" shall mean full performance by the Bidder of the Bidder's obligations under the Contract and all amendments and revisions thereof. The Certificate of Completion, signed by the Engineer and approved in writing by the Owner and the Administrator, if approval by the Administrator is required, shall be the sole and conclusive evidence as to the date of Completion of Construction and as to the fact of Completion of the Project.*

Section 2. Materials and Supplies. *In the performance of this contract there shall be furnished only such unmanufactured articles, materials, and supplies as have been mined or produced in the United States or in any eligible country, and only such manufactured articles, materials, and supplies as have been manufactured in the United States or in any eligible country substantially all from articles, materials, or supplies mined, produced or manufactured, as the case may be, in the United States or in any eligible country; provided that other articles, materials, or supplies may be used in the event and to the extent that the Administrator shall expressly in writing authorize such use pursuant to the provisions of the Rural Electrification Act of 1938, being Title IV of Public Resolution No. 122, 75th Congress, approved June 21, 1938. For the purposes of this section, an "eligible country" is any country that applies with respect to the United States an agreement ensuring reciprocal access for United States products and services and suppliers to the markets of that country, as determined by the United States Trade Representative. The Bidder agrees to submit to the Owner such certificates with respect to compliance with the foregoing provision as the Administrator from time to time may require.*

Section 3. Patent Infringement. *The Bidder shall hold harmless and indemnify the Owner from any and all claims, suits and proceedings for the infringement of any patent or patents covering any materials or equipment used in construction of the project.*

Section 4. Permits for Explosives. *All permits necessary for the handling or use of dynamite or other explosives in connection with the construction of the project shall be obtained by and at the expense of the Bidder.*

Section 5. Compliance with Laws. *The Bidder shall comply with all federal, state, and local laws, rules, and regulations applicable to its performance under the contract and the construction of the project. The Bidder acknowledges that it is familiar with the Rural Electrification Act of 1936, as amended, the Anti Kick-Back Act of 1986 (41 U.S.C. 51 et seq), and 18 U.S.C. §§ 286, 287, 641, 661, 874, 1001, and 1366, as amended.*

The Bidder represents that to the extent required by Executive Orders 12549 (3 CFR, 1985-1988 Comp., p. 189) and 12689 (3 CFR, 1989 Comp., p. 235), Debarment and Suspension, and 7 CFR part 3017, it has submitted to the Owner a duly executed certification in the form prescribed in 7 CFR part 3017.

The Bidder represents that, to the extent required, it has complied with the requirements of Pub. L. 101-121, Section 319, 103 Stat. 701, 750-765 (31 U.S.C. 1352), entitled "Limitation on use of appropriated funds to influence certain Federal contracting and financial transactions," and any rules and regulations issued pursuant thereto.

Section 6. Equal Opportunity Provisions.

a. Bidder's Representations.

The Bidder represents that:

It has __, does not have X, 100 or more employees, and if it has, that it has __, has not __, furnished the Equal Employment Opportunity-Employers Information Report EEO-1, Standard Form 100, required of employers with 100 or more employees pursuant to Executive Order 11246 of September 24, 1965, and Title VII of the Civil Rights Act of 1964.

The Bidder agrees that it will obtain, prior to the award of any subcontract for more than \$10,000 hereunder to a subcontractor with 100 or more employees, a statement, signed by the proposed subcontractor, that the proposed subcontractor has filed a current report on Standard Form 100.

The Bidder agrees that if it has 100 or more employees and has not submitted a report on Standard Form 100 for the current reporting year and that if this Contract will amount to more than \$10,000, the Bidder will file such report, as required by law, and notify the owner in writing of such filing prior to the Owner's acceptance of this Proposal.

b. Equal Opportunity Clause. During the performance of this Contract, the Bidder agrees as follows:

- (1) The Bidder will not discriminate against any employee or applicant for employment because of race, color, religion, sex or national origin. The Bidder will take affirmative action to ensure that applicants are employed, and that employees are treated during employment without regard to their race, color, religion, sex or national origin. Such action shall include, but not be limited to, the following: Employment, upgrading, demotions or transfer; recruitment or recruitment advertising; layoff or termination; rates of pay or other forms of compensation; and selection of training, including apprenticeship. The Bidder agrees to post in conspicuous places, available to employees and applicants for employment, notices to be provided setting forth the provisions of this Equal Opportunity Clause.*
- (2) The Bidder will, in all solicitations or advertisements for employees placed by or on behalf of the Bidder, state that all qualified applicants will receive consideration for employment without regard to race, color, religion, sex or national origin.*
- (3) The Bidder will send to each labor union or representative of workers, with which it has a collective bargaining agreement or other contract or understanding, a notice to be provided advising the said labor union or workers' representative of the Bidder's commitments under this section, and shall post copies of the notice in conspicuous places available to employees and applicants for employment.*
- (4) The Bidder will comply with all provisions of Executive Order 11246 of September 24, 1965, and the rules, regulations and relevant orders of the Secretary of Labor.*
- (5) The Bidder will furnish all information and reports required by Executive Order 11246 of September 24, 1965, and by rules, regulations, and orders of the Secretary of Labor, or pursuant thereto, and will permit access to its books, records, and accounts by the administering agency and the Secretary of Labor for purposes of investigation to ascertain compliance with such rules, regulations, and orders.*
- (6) In the event of the Bidder's noncompliance with the Equal Opportunity Clause of this Contract or with any of the said rules, regulations, or orders, this Contract may be canceled, terminated, or suspended in whole or in part, and the Bidder may be declared ineligible for further Government contracts or federally assisted construction contracts in accordance with procedures authorized in Executive Order 11246 of September 24, 1965, and such other sanctions may be imposed and remedies invoked as provided in Executive Order 11246 of*

September 24, 1965, or by rule, regulation, or order of the Secretary of Labor, or as provided by law.

(7) The Bidder will include this Equal Opportunity Clause in every subcontract or purchase order unless exempted by the rules, regulations, or order of the Secretary of Labor issued pursuant to Section 204 of Executive Order 11246 of September 24, 1965, so that such provisions will be binding upon each subcontractor or vendor. The Bidder will take such action with respect to any subcontract or purchase order as the administering agency may direct as a means of enforcing such provisions, including sanctions for noncompliance; Provided, however, that in the event Bidder becomes involved in, or is threatened with, litigation with a subcontractor or vendor as a result of such direction by the administering agency, the Bidder may request the United States to enter into such litigation to protect the interests of the United States.

c. **Certificate of Nonsegregated Facilities.** The Bidder certifies that it does not maintain or provide for its employees any segregated facilities at any of its establishments, and that it does not permit its employees to perform their services at any location, under its control, where segregated facilities are maintained. The Bidder certifies further that it will not maintain or provide for its employees any segregated facilities at any of its establishments, and that it will not permit its employees to perform their services at any location, under its control, where segregated facilities are maintained. The Bidder agrees that a breach of this certification is a violation of the Equal Opportunity Clause in this Contract. As used in this certification, the term "segregated facilities" means any waiting rooms, work areas, restrooms and washrooms, restaurants and other eating areas, timeclocks, locker rooms and other storage or dressing areas, parking lots, drinking fountains, recreation or entertainment areas, transportation, and housing facilities provided for employees which are segregated by explicit directive or are in fact segregated on the basis of race, color, religion, or national origin, because of habit, local custom, or otherwise. The Bidder agrees that (except where it has obtained identical certifications from proposed subcontractors for specific time periods) it will obtain identical certifications from proposed subcontractors prior to the award of subcontracts exceeding \$10,000 which are not exempt from the provisions of the Equal Opportunity Clause, and that it will retain such certifications in its files.

Section 7. Nonassignment of Contract. The Bidder shall perform directly and without subcontracting not less than twenty-five percent (25%) of the construction of the project, to be calculated on the basis of the total Contract price. The Bidder shall not assign the Contract effected by an acceptance of this Proposal or any interest in any funds that may be due or become due hereunder or enter into any contract with any person, firm or corporation for the performance of the Bidder's obligations hereunder or any part thereof, without the approval in writing of the Owner and of the Surety or Sureties, if any, on any bond furnished by the Bidder for the faithful performance of the Bidder's obligations hereunder. If the Bidder, with the consent of the Owner and any Surety or Sureties on the Contractor's Bond or Bonds, shall enter into a subcontract with any subcontractor for the performance of any part of this Contract, the Bidder shall be as fully responsible to the Owner and the Government for the acts and omissions of such subcontractor and of persons employed by such subcontractor as the Bidder would be for its own acts and omissions and those of persons directly employed by it.

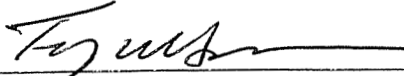
Section 8. Successors and Assigns. Each and all of the covenants and agreements herein contained shall extend to and be binding upon the successors and assigns of the parties hereto. The Owner and Bidder acknowledge that this Contract is assigned to the Government, acting through the Administrator, for security purposes under the Owner's mortgage and security instrument.

Section 9. Independent Contractor. The Bidder shall perform the work as an independent contractor, not as a subcontractor, agent, or employee of the Owner. Upon acceptance of this Proposal, the successful Bidder shall be the Contractor and all references in the Proposal to the Bidder shall apply to the Contractor.

Section 10. Approval by the Administrator: This contract does X, does not X, require approval of the Administrator. No acceptance of a Proposal for a contract upon which approval of the Administrator

is required shall become effective until the contract has been approved by the Administrator; provided that no obligation shall arise hereunder unless such approval is given within one-hundred twenty (120) days after the date set for the opening of the proposals. The acceptance of a Proposal for a contract upon which approval of the Administrator is not required shall become effective the date of acceptance by the Owner.

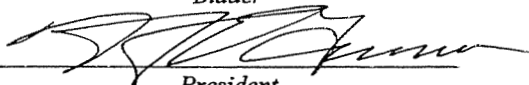
ATTEST:



Secretary

Dated 8/24/05

Alliance Corporation

Bidder


President

116 E. College St., Glasgow, KY 42141
Address

The Proposal must be signed with the full name of the Bidder. If the Bidder is a partnership, the Proposal must be signed in the partnership name by a partner. If the Bidder is a corporation, the Proposal must be signed in the corporate name by a duly authorized officer and the corporate seal affixed and attested by the Secretary of the Corporation.

ACCEPTANCE

Subject to the approval of the Administrator, if approval of the Administrator is required, the Owner hereby accepts the foregoing Proposal of the Bidder, Alliance Corporation

_____ , for the construction of the following:

Landfill Gas-to-Electric Generation Plant, Pearl Hollow Landfill,
Hardin County, Kentucky

for a total contract price of \$ 1,267,973 (one million two hundred sixty seven thousand nine hundred seventy three dollars.)

East Kentucky Power Coop, Inc.
Owner

By Roy M. Falk
President + CEO

Della E. Damon, Forand
Secretary
behalf of the Corporate Secretary

August 31, 2005
Date of Contract



U.S. Department of Agriculture
Rural Utilities Service

CONSTRUCTION CONTRACT GENERATING

NOTICE AND INSTRUCTIONS TO BIDDERS

- 1. Sealed proposals for the construction, including the supply of necessary labor, materials and equipment, of a rural electric project of East Kentucky Power Co-op, Inc.**

RUS designation _____, (hereinafter called the "Owner") will be received by the Owner on or before 5 o'clock P M., June 8, 2006, at its office at 4775 Lexington, Winchester, KY 40391 at which time and place the proposals will be _____ publicly opened and read.

privately opened. The Owner, subsequent to the bid opening, may elect to conduct clarifying discussions with the bidder to resolve any questions related to the substance of the bidder's proposal and to arrive at a final price for a responsive bid.

Any proposals received subsequent to the time specified will be promptly returned to the Bidder unopened.
- 2. Obtaining Documents.** The Plans, Specifications and Construction Drawings, together with all necessary forms and other documents for bidders may be obtained from the Owner, or from the Engineer LFG Technologies, Inc ("LFG Tech") at the latter's office at Lynn Imaging, 328 Old Vine St., Lexington, KY 40507 upon the payment of \$ 100.00, which payment will not be subject to refund. The Plans, Specifications, and Construction Drawings may be examined at the office of the Owner or at the office of the Engineer.
- 3. Manner of Submitting Proposals.** Proposals and all supporting instruments must be submitted on the forms furnished by the Owner and must be delivered in a sealed envelope addressed to the Owner. The name and address of the Bidder, its license number if a license is required by the State, and the date and hour of the opening of bids must appear on the envelope in which the Proposal is submitted. Proposals must be completed in ink or typewritten. No alterations or interlineations will be permitted, unless made before submission, and initialed and dated. The successful Bidder will be required to execute two additional counterparts of the Proposal.
- 4. Due Diligence.** Prior to the submission of the Proposal, the Bidder shall make and shall be deemed to have made a careful examination of the site of the project and of the Plans, Specifications, Construction Drawings, and forms of Contractor's Proposal and Contractor's Bond, and shall review the location and nature of the proposed construction, the transportation facilities, the kind and character of soil and terrain to be encountered, the kind of facilities required before and during the construction of the project, general local conditions, environmental and historic preservation considerations, and all other matters that may affect the cost and time of completion of the project. Bidder will be required to comply with all federal, state, and local laws, rules, and regulations applicable to its performance, including those pertaining to the licensing of contractors, and the Anti Kick-Back Act of 1986 (41 U.S.C. 51 et seq).
- 5. Proposals will be accepted only from those prequalified bidders invited by the Owner to submit a proposal.**

6. **The Time for Completion of Construction** of the project is of the essence of the Contract and shall be as specified by the Engineer in the Proposal.
7. **Bid Bond.** Each Proposal must be accompanied by a Bid Bond in the form attached hereto or a certified check on a bank that is a member of the Federal Deposit Insurance Corporation, payable to the order of the Owner, in an amount equal to ten percent (10%) of the maximum bid price. Each Bidder agrees, provided its Proposal is one of the three low Proposals, that, by filing its Proposal together with such Bid Bond or check in consideration of the Owner's receiving and considering such Proposals, said Proposal shall be firm and binding upon each such Bidder and such Bid Bond or check shall be held by the Owner until a Proposal is accepted and a satisfactory Contractor's Bond is furnished (where required) by the successful Bidder and such acceptance has been approved by the Administrator, or for a period not to exceed sixty (60) days from the date hereinbefore set for the opening of Proposals, whichever period shall be the shorter. If such Proposal is not one of the three low Proposals, the Bid Bond or check will be returned in each instance within a period of ten (10) days to the Bidder furnishing same.
8. **Contractor's Bond.** For a Contract in excess of \$100,000, the Bidder agrees to furnish a Contractor's Bond in triplicate in the form attached hereto with sureties listed by the United States Treasury Department as Acceptable Sureties, in a penal sum not less than the contract price.
9. **Failure to Furnish Contractor's Bond.** Should the successful Bidder fail or refuse to execute such counterparts or to furnish a Contractor's Bond (where required) within ten (10) days after written notification of the acceptance of the Proposal by the Owner, the Bidder will be considered to have abandoned the Proposal. In such event, the Owner shall be entitled (a) to enforce the Bid Bond in accordance with its terms, or (b) if a certified check has been delivered with the Proposal, to retain from the proceeds of the certified check, the difference (not exceeding the amount of the certified check) between the amount of the Proposal and such larger amount for which the Owner may in good faith contract with another party to construct the project. The term "Successful Bidder" shall be deemed to include any Bidder whose Proposal is accepted after another Bidder has previously refused or has been unable to execute the counterparts or to furnish a satisfactory Contractor's Bond (where required.)
10. **Evaluation Factors.** In estimating the lowest cost to the Owner as one of the factors in deciding the award of the Contract, the Owner will consider, in addition to the price quoted in the Proposals, the following:

11. **Debarment Certification.** The Bidder must provide to the Owner a suspension and debarment certificate in the form attached hereto.
12. **Contract is Entire Agreement.** The Contract to be effected by the acceptance of the Proposal shall be deemed to include the entire agreement between the parties thereto, and the Bidder shall not claim any modifications thereof resulting from any representation or promise made at any time by any officer, agent or employee of the Owner or by any other person.
13. **Minor Irregularities.** The Owner reserves the right to waive minor irregularities or minor errors in any Proposal, if it appears to the Owner that such irregularities or errors were made through inadvertence. Any such irregularities or errors so waived must be corrected on the Proposal in which they occur prior to the acceptance thereof by the Owner.
14. **Bid Rejection.** The Owner reserves the right to reject any or all Proposals.
15. **Definition of Terms.** The terms "Administrator," "Engineer," "Completion of Construction," and "Completion of the Project" as used throughout this Contract shall be as defined in Article VI, Section 1, of the Proposal.

16. The Owner Represents:

- a. *If by provisions of the Proposal the Owner shall have undertaken to furnish any materials for the construction of the project, such materials are on hand at locations specified or if such materials are not on hand they will be made available by the Owner to the successful Bidder at the locations specified before the time such materials are required for construction.*
- b. *All funds necessary for prompt payment for the construction of the project will be available.*

If the Owner shall fail to comply with any of the undertakings contained in the foregoing representation or if any of such representations shall be incorrect, the Bidder will be entitled to an extension of time of completion for a period equal to the delay, if any, caused by the failure of the Owner to comply with such undertakings or by any such incorrect representation; provided the Bidder shall have promptly notified the Owner in writing of its desire to extend the time of completion in accordance with the foregoing; provided, however, that such extension, if any, of the time of completion shall be the sole remedy of the Bidder for the Owner's failure, because of conditions beyond the control and without the fault of the Owner, to furnish materials in accordance with subparagraph a. above.

Owner

By _____

Title

_____, 20____
Date

PROPOSAL

TO:

East Kentucky Power Cooperative, Inc. ("EKPC")

(hereinafter called the "Owner").

ARTICLE I--GENERAL

Section 1. Offer to Construct. *The undersigned (hereinafter called the "Bidder") hereby proposes to receive and install such materials and equipment as may hereinafter be specified to be furnished by the Owner, and to furnish all other materials and equipment, all machinery, tools, labor, transportation and other means required to construct the project in strict accordance with the Plans, Specifications and Construction Drawings for the prices hereinafter stated.*

Item: _____ Price: _____

Item: _____ Price: _____

Item: _____ Price: _____

Item: _____ Price: _____

Section 2. Purchase of Materials. *The Bidder will purchase all materials and equipment (other than Owner Furnished Materials) outright and not subject to any conditional sales agreements, bailment, lease or other agreement reserving unto the seller any right, title or interest therein. All such materials and equipment shall be new and become the property of the Owner when erected in place.*

Section 3. Description of Contract. *The Notice and Instructions to Bidders, Plans, Specifications, and Construction Drawings, which by this reference are incorporated herein, together with the Proposal and Acceptance constitute the Contract. The Plans, Specifications, and Construction Drawings, including maps, special drawings, and approved modifications in standard specifications are attached hereto and identified as follows:*

Plans are by LFG Technologies/Meade Electric Company, Inc.,

dated March 20, 2006

Section 4. Due Diligence. *The Bidder has made a careful examination of the site of the project to be constructed and of the Plans, Specifications, Construction Drawings, and form of Contractor's Bond attached hereto, and has become informed as to the location and nature of the proposed construction, the transportation facilities, the kind and character of soil and terrain to be encountered, and the kind of facilities required before and during the construction of the project, and has become acquainted with the labor conditions, federal, state, and local laws, rules, and regulations applicable to its performance.*

Section 5. License. *The Bidder warrants that a Contractor's License is _____, is not required, and if required,*

it possesses Contractor's License No. _____ for the State of _____
in which the project is located and said license expires on _____, 20_____.

Section 6. Warranty of Good Faith. *The Bidder warrants that this Proposal is made in good faith and without collusion or connection with any person or persons bidding for the same work.*

Section 7. Financial Resources.

- a. *The Bidder warrants that it has or will obtain the financial resources necessary to ensure completion of the project.*
- b. *The Bidder agrees that in the event this Proposal is accepted and a Contractor's Bond is required, it will furnish a Contractor's Bond in the form attached hereto, in a penal sum not less than the maximum Contract price, with a surety or sureties listed by the United States Department of Treasury as Acceptable Sureties.*

Section 8. Taxes. *The prices in this Proposal include provisions for the payment of all monies which will be payable by the Bidder or the Owner in connection with the construction of the project on account of taxes imposed by any taxing authority upon the sale, purchase or use of materials, supplies and equipment, or services or labor of installation thereof, to be incorporated in the project. The Bidder agrees to pay all such taxes, except taxes upon the sale, purchase or use of Owner Furnished Materials. The Bidder will furnish to the appropriate taxing authorities all required information and reports pertaining to the project, except as to the Owner Furnished Materials.*

ARTICLE II--CONSTRUCTION

Section 1. Time and Manner of Construction.

- a. *The Bidder agrees to commence construction of the project on a date (hereinafter called the "Commencement Date") which shall be determined by the Engineer after notice to the bidder in writing of approval of the contract by the Administrator, if approval of the Administrator is required, and notice in writing from the Bidder that the Bidder has sufficient materials to warrant commencement and continuation of construction, but in no event will the Commencement Date be later than ten (10) calendar days after date of approval of the contract by the Administrator, if approval of the Administrator is required. The Bidder further agrees to prosecute diligently and to complete construction in strict accordance with the Plans, Specifications and Construction Drawings within two hundred ten (210) calendar days after Commencement Date.*
- b. *The time for Completion of Construction shall be extended for the period of any reasonable delay which is due exclusively to causes beyond the control and without the fault of the Bidder, including Acts of God, fires, floods, inability to obtain materials and acts or omissions of the Owner with respect to matters for which the Owner is solely responsible: Provided, however that no such extension of time for completion shall be granted the Bidder unless within ten (10) days after the happening of any event relied upon by the Bidder for such an extension of time the Bidder shall have made a request therefore in writing to the Owner, and provided further that no delay in such time of completion or in the progress of the work which results from any of the above causes except acts or omissions of the Owner, shall result in any liability on the part of the Owner.*
- c. *The Owner, acting through the Engineer with the approval of the Administrator, if approval of the Administrator is required, may from time to time during the progress of the construction of the project make such changes, additions or subtractions from the Plans, Specifications, Construction Drawings, and sequence of construction as conditions may warrant: Provided, however, that if*

any change in the construction to be done shall require an extension of time, a reasonable extension will be granted if the Bidder shall make a written request therefore to the Owner within (10) days after any such change is made. And provided further, that if the cost to the Bidder of construction of the project shall be materially increased by any such change or addition, the Owner shall pay the Bidder for the reasonable cost thereof in accordance with a Construction Contract Amendment signed by the Owner and the Bidder and approved by the Administrator, if approval by the Administrator is required, but no claim for additional compensation for any such change or addition will be considered unless the Bidder shall have made a written request therefore to the Owner prior to the commencement of work in connection with such change or addition.

Section 2. Environmental Protection. *The Bidder shall perform the work in compliance with all applicable Federal, State, and local Environmental Laws. For purposes of this Agreement, the term "Environmental Laws" shall mean all Federal, state, and local laws including statutes, regulations, ordinances, codes, rules, and other governmental restriction and requirements relating to the environment or solid waste, hazardous substances, hazardous waste, toxic or hazardous material, pollutants or contaminants including, but not limited to the Comprehensive Environmental Response, Compensation, and Liability Act, as amended, 42 U.S.C. §§ 9601, et seq., the Federal Water Pollution Control Act, as amended, 33 U.S.C. §§ 1251, et seq., and the Solid Waste Disposal Act, as amended, 42 U.S.C. §§ 6901, et seq., now or at any time hereafter in effect.*

Section 3. Tools, Equipment, and Qualified Personnel. *The Bidder agrees that in the event this Proposal is accepted it will make available for use in connection with the proposed construction all necessary tools and equipment and qualified supervisors and workers.*

Section 4. Supervision and Inspection.

- a. *The Bidder shall give sufficient supervision to the work, using its best skill and attention. The Bidder will carefully study and compare all drawings, specifications and other instructions and will at once report to the Owner any error, inconsistency or omission which it may discover. The Bidder shall cause the construction work on the project to receive constant supervision by a competent superintendent (hereinafter called the "Superintendent") who shall be present at all times during working hours where construction is being carried on. The Bidder shall also employ, in connection with the construction of the project, capable, experienced and reliable supervisors and such skilled workers as may be required for the various classes of work to be performed. The Bidder shall be solely responsible for the means and methods of construction and for the supervision of the Bidder's employees.*
- b. *The Owner reserves the right to require the removal from the project of any employee of the Bidder if in the judgment of the Owner such removal shall be necessary in order to protect the interest of the Owner. The Owner shall have the right to require the Bidder to increase the number of its employees and to increase or change the amount or kind of tools and equipment if at any time the progress of the work shall be unsatisfactory to the Owner; but the failure of the Owner to give any such directions shall not relieve the Bidder of its obligations to complete the work within the time and in the manner specified in this Proposal.*
- c. *The construction of the project and all materials and equipment used therein, shall be subject to the inspection, tests, and acceptance by the Owner and the Administrator and the Bidder shall furnish all information required by the Owner or by the Administrator concerning the nature or source of any materials incorporated or to be incorporated in the project. All Bidder procedures and records pertaining to the work shall be made available to the Owner and the Administrator for review prior to such inspections and tests. The Bidder shall provide all reasonable facilities necessary for such inspection and tests and shall maintain an office at the site of the project, with telephone service where obtainable and at least one office employee to whom communications from the Owner may be delivered. Delivery of such communications in writing to the employee of the Bidder at such office shall constitute delivery to the Bidder. The Bidder shall have an authorized agent accompany the Engineer when final inspection is made and, if requested by the Owner, when any other inspection is made. The performance of such inspections or tests by the*

Owner or the Administrator shall not relieve the Bidder of its obligations to perform the work in accordance with the requirements of this Contract.

- d. In the event that the Owner, or the Administrator, shall determine that the construction contains or may contain numerous defects, it shall be the duty of the Bidder and the Bidder's Surety or Sureties, if any, to have an inspection made by an engineer approved by the Owner and the Administrator, if approval by the Administrator is required, for the purpose of determining the exact nature, extent and location of such defects.*
- e. The Engineer may recommend to the Owner that the Bidder suspend the work wholly or in part for such period or periods as the Engineer may deem necessary due to unsuitable weather or such other conditions as are considered unfavorable for satisfactory prosecution of the work or because of the failure of the Bidder to comply with any of the provisions of the Contract: Provided, however, that the Bidder shall not suspend work pursuant to this provision without written authority from the Owner so to do. The time of completion hereinabove set forth shall be increased by the number of days of any such suspension, except when such suspension is due to the failure of the Bidder to comply with any of the provisions of this Contract. In the event that work is suspended by the Bidder with the consent of the Owner, the Bidder before resuming work shall give the Owner at least twenty-four (24) hours notice thereof in writing.*

Section 5. Defective Materials and Workmanship.

- a. The acceptance of any materials, equipment (except Owner Furnished Materials) or any workmanship by the Owner or the Engineer shall not preclude the subsequent rejection thereof if such materials, equipment, or workmanship shall be found to be defective after delivery or installation, and any such materials, equipment or workmanship found defective before final acceptance of the construction shall be replaced or remedied, as the case may be, by and at the expense of the Bidder. Any such condemned material or equipment shall be immediately removed from the site of the project by the Bidder at the Bidder's expense. The Bidder shall not be entitled to any payment hereunder so long as any defective materials, equipment or workmanship in respect to the project, of which the Bidder shall have had notice, shall not have been replaced or remedied, as the case may be.*
- b. Notwithstanding any certificate which may have been given by the Owner or the Engineer, if any materials, equipment (except Owner Furnished Materials) or any workmanship which does not comply with the requirements of this Contract shall be discovered within one (1) year after Completion of Construction of the project, the Bidder shall replace such defective materials or equipment or remedy any such defective workmanship within thirty (30) days after notice in writing of the existence thereof shall have been given by the Owner. If any such defective materials, equipment, or workmanship so replaced or repaired is found to be defective within one year after the completion of the replacement or repair, the Bidder shall replace or remedy such defective materials, equipment, or workmanship. In the event of failure by the Bidder so to do, the Owner may replace such defective materials or equipment or remedy such defective workmanship, as the case may be, and in such event the Bidder shall pay to the Owner the cost and expense thereof.*

ARTICLE III--PAYMENTS AND RELEASE OF LIENS

Section 1. Payments to Bidder.

- a. On or before the fifth (5) day of each calendar month, the Bidder will make application for payment, and the Owner, on or before the fifteenth (15) day of such month, shall make partial payment to the Bidder for construction accomplished during the preceding calendar month and certified to by the Bidder, recommended by the Engineer and approved by the Owner solely for the purposes of payment: Provided, however, that such approval shall not be deemed approval of the workmanship or materials. Only ninety percent (90%) of each such estimate approved during the construction of the project shall be paid by the Owner to the Bidder prior to Completion of the*

project. Upon completion by the Bidder of the construction of the project, the Engineer will inspect the work performed hereunder. If the Engineer finds the work acceptable and all provisions hereunder fully performed, the Engineer will so certify to the Owner. Upon the approval by the Owner and the Administrator, if the approval of the Administrator is required, of a Certificate of Completion in the form attached hereto, showing the total cost of the construction performed, the Owner shall make payment to the Bidder of all amounts to which the Bidder shall be entitled thereunder which shall not have been paid: Provided, however, that such final payment shall be made not later than ninety (90) days after the date of Completion of Construction of the project, as specified in the Certificate of Completion, unless withheld because of the fault of the Bidder.

- b. Interest at the rate of prime percent¹ (_____%) per annum shall be paid by the Owner to the Bidder on all unpaid balances due on monthly estimates, commencing fifteen (15) days after the due date; provided the delay in payment beyond the due date is not caused by any condition within the control of the Bidder. The due date for purposes of such monthly payment or interest on all unpaid balances shall be the fifteenth (15) day of each calendar month provided (1) the Bidder on or before the fifth (5) day of such month shall have submitted its certification of Construction Units completed during the preceding month and (2) the Owner on or before the fifteenth (15) day of such month shall have approved such certification. If, for reasons not due to the Bidder's fault, such approval shall not have been given on or before the fifteenth (15) day of such month, the due date for purposes of this subsection b shall be the fifteenth (15) day of such month notwithstanding the absence of the approval of the certification.
- c. Interest at the rate of prime percent² (_____%) per annum shall be paid by the Owner to the Bidder on the final payment for the project, commencing fifteen (15) days after the due date. The due date for purposes of such final payment or interest on all unpaid balances shall be the date of approval by the Owner of all of the documents requiring such approval, as a condition precedent to the making of final payment, or ninety (90) days after the date of Completion of Construction of the project, as specified in the Certificate of Completion, whichever date is earlier.
- d. No payment shall be made to the Bidder for materials or labor involved in correcting errors or omissions on the part of the Bidder which result in construction not in accordance with the Plans and Specifications.
- e. No payment shall be due while the Bidder is in default in respect of any of the provisions of this Contract and the Owner may withhold from the Bidder the amount of any claim by a third party against either the Bidder or the Owner based upon an alleged failure of the Bidder to perform the work hereunder in accordance with the provisions of this Contract.
- f. The Owner and the Administrator shall have the right to inspect all payrolls, invoices of materials, and other data and records of the Bidder and of any subcontractor, relevant to the construction of the project.

Section 2. Release of Liens and Certificate of Contractor. Upon the completion by the Bidder of the construction of the project but prior to final payment to the Bidder, the Bidder shall deliver to the Owner, in duplicate, releases of all liens and of rights to claim any lien, in the form attached hereto from all manufacturers, material suppliers, and subcontractors furnishing services or materials for the project and a certificate in the form attached hereto to the effect that all labor used on or for the project has been paid and that all such releases have been submitted to the Owner.

Section 3. Payments to Material Suppliers and Subcontractors. The Bidder shall pay each material supplier, if any, within five (5) days after receipt of any payment from the Owner, the amount thereof allowed

¹ The Owner shall insert a rate equal to the lowest "Prime Rate" listed in the "Money Rates" section of the Wall Street Journal on the date such invitation to bid is issued.

² See Footnote 1.

the Bidder for and on account of materials furnished or construction performed by each material supplier or each subcontractor.

ARTICLE IV--PARTICULAR UNDERTAKINGS OF THE BIDDER

Section 1. Protection to Persons and Property. *The Bidder shall at all times take all reasonable precautions for the safety of employees on the work and of the public, and shall comply with all applicable provisions of federal, state, and local laws, rules, and regulations and building and construction codes, in addition to the safety rules and procedures of the Owner.*

The following provisions shall not limit the generality of the above requirements:

- a. *The Bidder shall at all times keep the premises free from accumulations of waste materials or rubbish caused by its employees or work, and at the completion of the work the Bidder shall remove all rubbish from and about the Project and all its tools, scaffolding and surplus materials and shall leave the work "broom clean". The Bidder shall dispose of waste material by burying it on the work site or in a manner approved by local authorities, but shall not dispose of any waste materials or rubbish by open burning. The Bidder shall provide chemical sanitary facilities which may be required.*
- b. *The Bidder shall transport and store all material in facilities and vehicles which are designed to protect the material from damage. The Bidder shall ensure that all vehicles, trailers, and other equipment used comply with all applicable licensing, traffic, and highway requirements.*
- c. *The Bidder shall provide and maintain all such guard lights and other protection for the public as may be required by applicable statutes, ordinances and regulations or by local conditions.*
- d. *The project, from the commencement of work to completion, or to such earlier date or dates when the Owner may take possession and control in whole or in part as hereinafter provided shall be under the charge and control of the Bidder and during such period of control by the Bidder all risks in connection with the construction of the project and the materials to be used therein shall be borne by the Bidder. The Bidder shall make good and fully repair all injuries and damages to the project or any portion thereof under the control of the Bidder by reason of any act of God or other casualty or cause whether or not the same shall have occurred by reason of the Bidder's negligence.*
 - (i) *To the maximum extent permitted by law, Bidder shall defend, indemnify, and hold harmless Owner and Owner's directors, officers, and employees from all claims, causes of action, losses, liabilities, and expenses (including reasonable attorney's fees) for personal loss, injury, or death to persons (including but not limited to Bidder's employees) and loss, damage to or destruction of Owner's property or the property of any other person or entity (including but not limited to Bidder's property) in any manner arising out of or connected with the Contract, or the materials or equipment supplied or services performed by Bidder, its subcontractors and suppliers of any tier. But nothing herein shall be construed as making Bidder liable for any injury, death, loss, damage, or destruction caused by the sole negligence of Owner.*
 - (ii) *To the maximum extent permitted by law, Bidder shall defend, indemnify, and hold harmless Owner and Owner's directors, officers, and employees from all liens and claims filed or asserted against Owner, its directors, officers, and employees, or Owner's property or facilities, for services performed or materials or equipment furnished by Bidder, its subcontractors and suppliers of any tier, and from all losses, demands, and causes of action arising out of any such lien or claim. Bidder shall promptly discharge or remove any such lien or claim by bonding, payment, or otherwise and shall notify Owner promptly when it has done so. If Bidder does not cause such lien or claim to be discharged or released by payment, bonding, or otherwise, Owner shall have the right (but shall not be obligated) to*

pay all sums necessary to obtain any such discharge or release and to deduct all amounts so paid from the amount due Bidder.

(iii) Bidder shall provide to Owner's satisfaction evidence of Bidder's ability to comply with the indemnification provisions of subparagraphs i and ii above, which evidence may include but may not be limited to a bond or liability insurance policy obtained for this purpose through a licensed surety or insurance company.

- e. Upon violation by the Bidder of any of the provisions of this section, after written notice of such violation given to the Bidder by the Engineer or the Owner, the Bidder shall immediately correct such violation. Upon failure of the Bidder so to do the Owner may correct such violation at the Bidder's expense: Provided, however, that the Owner may, if it deems it necessary or advisable, correct such violation at the Bidder's expense without such prior notice to the Bidder.*
- f. The Bidder shall submit to the Owner monthly reports in duplicate of all accidents, giving such data as may be prescribed by the Owner.*

Section 2. Insurance. *The Bidder shall take out and maintain throughout the period of this Agreement the following types and minimum amounts of insurance:*

- a. Workers' compensation and employers' liability insurance, as required by law, covering all its employees who perform any of the obligations of the Bidder under the contract. If any employer or employee is not subject to the workers' compensation laws of the governing state, then insurance shall be obtained voluntarily to extend to the employer and employee coverage to the same extent as though the employer or employee were subject to the workers' compensation laws.*
- b. Public liability insurance covering all operations under the contract shall have limits for bodily injury or death of not less than \$1 million each occurrence, limits for property damage of not less than \$1 million each occurrence, and \$1 million aggregate for accidents during the policy period. A single limit of \$1 million of bodily injury and property damage is acceptable. This required insurance may be in a policy or policies of insurance, primary and excess including the umbrella or catastrophe form.*
- c. Automobile liability insurance on all motor vehicles used in connection with the contract, whether owned, nonowned, or hired, shall have limits for bodily injury or death of not less than \$1 million per person and \$1 million each occurrence, and property damage limits of \$1 million for each occurrence. A single limit of \$1 million of bodily injury and property damage is acceptable. This required insurance may be in a policy or policies of insurance, primary and excess including the umbrella or catastrophe form.*

The Owner shall have the right at any time to require public liability insurance and property damage liability insurance greater than those required in subsection "b" and "c" of this Section. In any such event, the additional premium or premiums payable solely as the result of such additional insurance shall be added to the Contract price.

The Owner shall be named as Additional Insured on all policies of insurance required in subsections "b" and "c" of this Section.

The policies of insurance shall be in such form and issued by such insurer as shall be satisfactory to the Owner. The Bidder shall furnish the Owner a certificate evidencing compliance with the foregoing requirements which shall provide not less than (30) days prior written notice to the Owner of any cancellation or material change in the insurance.

Section 3. Delivery of Possession and Control to Owner. *Upon written request of the Owner the Bidder shall deliver to the Owner full possession and control of any portion of the project provided the Bidder shall have been paid at least ninety percent (90%) of the cost of construction of such portion. Upon such delivery of the possession and control of any portion of the project to the Owner, the risk and obligations of the Bidder as set forth in Article IV, Section 1.d hereof with respect to such portion of*

the project so delivered to the Owner shall be terminated; Provided, however, that nothing herein contained shall relieve the Bidder of any liability with respect to defective materials and workmanship as contained in Article II, Section 5 hereof.

- Section 4. Assignment of Guarantees.** *All guarantees of materials and workmanship running in favor of the Bidder shall be transferred and assigned to the Owner prior to the time the Bidder receives final payment.*

ARTICLE V--REMEDIES

- Section 1. Completion on Bidder's Default.** *If default shall be made by the Bidder or by any subcontractor in the performance of any of the terms of this Proposal, the Owner, without in any manner limiting its legal and equitable remedies in the circumstances, may serve upon the Bidder and the Surety or Sureties, if any, upon the Contractor's Bond or Bonds a written notice requiring the Bidder to cause such default to be corrected forthwith. Unless within twenty (20) days after the service of such notice upon the Bidder such default shall be corrected or arrangements for the correction thereof satisfactory to both the Owner and the Administrator shall be made by the Bidder or its Surety or Sureties, if any, the Owner may take over the construction of the project and prosecute the same to completion by Contract or otherwise for the account and at the expense of the Bidder, and the Bidder and its Surety or Sureties, if any, shall be liable to the Owner for any cost or expense in excess of the Contract price occasioned thereby. In such event the Owner may take possession of and utilize, in completing the construction of the project, any materials, tools, supplies, equipment, appliances, and plant belonging to the Bidder or any of its subcontractors, which may be situated at the site of the project. The Owner in such contingency may exercise any rights, claims or demands which the Bidder may have against third persons in connection with this Contract and for such purpose the Bidder does hereby assign, transfer and set over unto the Owner all such rights, claims and demands.*
- Section 2. Liquidated Damages.** *The time of the Completion of Construction of the project is of the essence of the Contract. Should the Bidder neglect, refuse or fail to complete the construction within the time herein agreed upon, after giving effect to extensions of time, if any, herein provided, then, in that event and in view of the difficulty of estimating with exactness damages caused by such delay, the Owner shall have the right to deduct from and retain out of such moneys which may be then due, or which may become due and payable to the Bidder the sum of three hundred dollars (300.00) per day for each and every day that such construction is delayed in its completion beyond the specified time, as liquidated damages and not as a penalty; if the amount due and to become due from the Owner to the Bidder is insufficient to pay in full any such liquidated damages, the Bidder shall pay to the Owner the amount necessary to effect such payment in full: Provided, however, that the Owner shall promptly notify the Bidder in writing of the manner in which the amount retained, deducted or claimed as liquidated damages was computed.*
- Section 3. Cumulative Remedies.** *Every right or remedy herein conferred upon or reserved to the Owner or the Government or the Administrator shall be cumulative, shall be in addition to every right and remedy now or hereafter existing at law or in equity or by statute and the pursuit of any right or remedy shall not be construed as an election: Provided, however, that the provisions of Section 2 of this Article shall be the exclusive measure of damages for failure by the Bidder to complete the construction of the project within the time herein agreed upon.*

ARTICLE VI--MISCELLANEOUS

Section 1. Definitions.

- a. *The term "Administrator" shall mean the Administrator of the Rural Utilities Service of the United States of America and his or her duly authorized representative or any other person in whom or authority in which may be vested the duties and functions which the Administrator is now authorized by law to perform.*

- b. The term "Engineer" shall mean the Engineer employed by the Owner, to provide engineering services for the project and said Engineer's duly authorized assistants and representatives.
- c. The term "Completion of Construction" shall mean full performance by the Bidder of the Bidder's obligations under the Contract and all amendments and revisions thereof except the Bidder's obligations in respect of Releases of Liens and Certificate of Contractor under Article III, Section 2 hereof and other final documents. The term "Completion of the Project" shall mean full performance by the Bidder of the Bidder's obligations under the Contract and all amendments and revisions thereof. The Certificate of Completion, signed by the Engineer and approved in writing by the Owner and the Administrator, if approval by the Administrator is required, shall be the sole and conclusive evidence as to the date of Completion of Construction and as to the fact of Completion of the Project.

Section 2. Materials and Supplies. *In the performance of this contract there shall be furnished only such unmanufactured articles, materials, and supplies as have been mined or produced in the United States or in any eligible country, and only such manufactured articles, materials, and supplies as have been manufactured in the United States or in any eligible country substantially all from articles, materials, or supplies mined, produced or manufactured, as the case may be, in the United States or in any eligible country; provided that other articles, materials, or supplies may be used in the event and to the extent that the Administrator shall expressly in writing authorize such use pursuant to the provisions of the Rural Electrification Act of 1938, being Title IV of Public Resolution No. 122, 75th Congress, approved June 21, 1938. For the purposes of this section, an "eligible country" is any country that applies with respect to the United States an agreement ensuring reciprocal access for United States products and services and suppliers to the markets of that country, as determined by the United States Trade Representative. The Bidder agrees to submit to the Owner such certificates with respect to compliance with the foregoing provision as the Administrator from time to time may require.*

Section 3. Patent Infringement. *The Bidder shall hold harmless and indemnify the Owner from any and all claims, suits and proceedings for the infringement of any patent or patents covering any materials or equipment used in construction of the project.*

Section 4. Permits for Explosives. *All permits necessary for the handling or use of dynamite or other explosives in connection with the construction of the project shall be obtained by and at the expense of the Bidder.*

Section 5. Compliance with Laws. *The Bidder shall comply with all federal, state, and local laws, rules, and regulations applicable to its performance under the contract and the construction of the project. The Bidder acknowledges that it is familiar with the Rural Electrification Act of 1936, as amended, the Anti Kick-Back Act of 1986 (41 U.S.C. 51 et seq), and 18 U.S.C. §§ 286, 287, 641, 661, 874, 1001, and 1366, as amended.*

The Bidder represents that to the extent required by Executive Orders 12549 (3 CFR, 1985-1988 Comp., p. 189) and 12689 (3 CFR, 1989 Comp., p. 235), Debarment and Suspension, and 7 CFR part 3017, it has submitted to the Owner a duly executed certification in the form prescribed in 7 CFR part 3017.

The Bidder represents that, to the extent required, it has complied with the requirements of Pub. L. 101-121, Section 319, 103 Stat. 701, 750-765 (31 U.S.C. 1352), entitled "Limitation on use of appropriated funds to influence certain Federal contracting and financial transactions," and any rules and regulations issued pursuant thereto.

Section 6. Equal Opportunity Provisions.

a. *Bidder's Representations.*

The Bidder represents that:

It has __, does not have X, 100 or more employees, and if it has, that it has __, has not __, furnished the Equal Employment Opportunity-Employers Information Report EEO-1, Standard Form 100, required of employers with 100 or more employees pursuant to Executive Order 11246 of September 24, 1965, and Title VII of the Civil Rights Act of 1964.

The Bidder agrees that it will obtain, prior to the award of any subcontract for more than \$10,000 hereunder to a subcontractor with 100 or more employees, a statement, signed by the proposed subcontractor, that the proposed subcontractor has filed a current report on Standard Form 100.

The Bidder agrees that if it has 100 or more employees and has not submitted a report on Standard Form 100 for the current reporting year and that if this Contract will amount to more than \$10,000, the Bidder will file such report, as required by law, and notify the owner in writing of such filing prior to the Owner's acceptance of this Proposal.

b. *Equal Opportunity Clause. During the performance of this Contract, the Bidder agrees as follows:*

- (1) The Bidder will not discriminate against any employee or applicant for employment because of race, color, religion, sex or national origin. The Bidder will take affirmative action to ensure that applicants are employed, and that employees are treated during employment without regard to their race, color, religion, sex or national origin. Such action shall include, but not be limited to, the following: Employment, upgrading, demotions or transfer; recruitment or recruitment advertising; layoff or termination; rates of pay or other forms of compensation; and selection of training, including apprenticeship. The Bidder agrees to post in conspicuous places, available to employees and applicants for employment, notices to be provided setting forth the provisions of this Equal Opportunity Clause.*
- (2) The Bidder will, in all solicitations or advertisements for employees placed by or on behalf of the Bidder, state that all qualified applicants will receive consideration for employment without regard to race, color, religion, sex or national origin.*
- (3) The Bidder will send to each labor union or representative of workers, with which it has a collective bargaining agreement or other contract or understanding, a notice to be provided advising the said labor union or workers' representative of the Bidder's commitments under this section, and shall post copies of the notice in conspicuous places available to employees and applicants for employment.*
- (4) The Bidder will comply with all provisions of Executive Order 11246 of September 24, 1965, and the rules, regulations and relevant orders of the Secretary of Labor.*
- (5) The Bidder will furnish all information and reports required by Executive Order 11246 of September 24, 1965, and by rules, regulations, and orders of the Secretary of Labor, or pursuant thereto, and will permit access to its books, records, and accounts by the administering agency and the Secretary of Labor for purposes of investigation to ascertain compliance with such rules, regulations, and orders.*
- (6) In the event of the Bidder's noncompliance with the Equal Opportunity Clause of this Contract or with any of the said rules, regulations, or orders, this Contract may be canceled, terminated, or suspended in whole or in part, and the Bidder may be declared ineligible for further Government contracts or federally assisted construction contracts in accordance with procedures authorized in Executive Order 11246 of September 24, 1965, and such other sanctions may be imposed and remedies invoked as provided in Executive Order 11246 of*

September 24, 1965, or by rule, regulation, or order of the Secretary of Labor, or as provided by law.

(7) *The Bidder will include this Equal Opportunity Clause in every subcontract or purchase order unless exempted by the rules, regulations, or order of the Secretary of Labor issued pursuant to Section 204 of Executive Order 11246 of September 24, 1965, so that such provisions will be binding upon each subcontractor or vendor. The Bidder will take such action with respect to any subcontract or purchase order as the administering agency may direct as a means of enforcing such provisions, including sanctions for noncompliance; Provided, however, that in the event Bidder becomes involved in, or is threatened with, litigation with a subcontractor or vendor as a result of such direction by the administering agency, the Bidder may request the United States to enter into such litigation to protect the interests of the United States.*

c. *Certificate of Nonsegregated Facilities. The Bidder certifies that it does not maintain or provide for its employees any segregated facilities at any of its establishments, and that it does not permit its employees to perform their services at any location, under its control, where segregated facilities are maintained. The Bidder certifies further that it will not maintain or provide for its employees any segregated facilities at any of its establishments, and that it will not permit its employees to perform their services at any location, under its control, where segregated facilities are maintained. The Bidder agrees that a breach of this certification is a violation of the Equal Opportunity Clause in this Contract. As used in this certification, the term "segregated facilities" means any waiting rooms, work areas, restrooms and washrooms, restaurants and other eating areas, timeclocks, locker rooms and other storage or dressing areas, parking lots, drinking fountains, recreation or entertainment areas, transportation, and housing facilities provided for employees which are segregated by explicit directive or are in fact segregated on the basis of race, color, religion, or national origin, because of habit, local custom, or otherwise. The Bidder agrees that (except where it has obtained identical certifications from proposed subcontractors for specific time periods) it will obtain identical certifications from proposed subcontractors prior to the award of subcontracts exceeding \$10,000 which are not exempt from the provisions of the Equal Opportunity Clause, and that it will retain such certifications in its files.*

Section 7. Nonassignment of Contract. *The Bidder shall perform directly and without subcontracting not less than twenty-five percent (25%) of the construction of the project, to be calculated on the basis of the total Contract price. The Bidder shall not assign the Contract effected by an acceptance of this Proposal or any interest in any funds that may be due or become due hereunder or enter into any contract with any person, firm or corporation for the performance of the Bidder's obligations hereunder or any part thereof, without the approval in writing of the Owner and of the Surety or Sureties, if any, on any bond furnished by the Bidder for the faithful performance of the Bidder's obligations hereunder. If the Bidder, with the consent of the Owner and any Surety or Sureties on the Contractor's Bond or Bonds, shall enter into a subcontract with any subcontractor for the performance of any part of this Contract, the Bidder shall be as fully responsible to the Owner and the Government for the acts and omissions of such subcontractor and of persons employed by such subcontractor as the Bidder would be for its own acts and omissions and those of persons directly employed by it.*

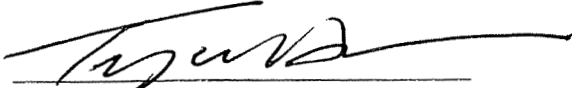
Section 8. Successors and Assigns. *Each and all of the covenants and agreements herein contained shall extend to and be binding upon the successors and assigns of the parties hereto. The Owner and Bidder acknowledge that this Contract is assigned to the Government, acting through the Administrator, for security purposes under the Owner's mortgage and security instrument.*

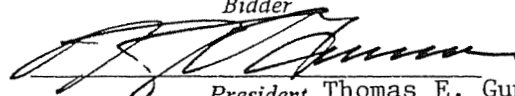
Section 9. Independent Contractor. *The Bidder shall perform the work as an independent contractor, not as a subcontractor, agent, or employee of the Owner. Upon acceptance of this Proposal, the successful Bidder shall be the Contractor and all references in the Proposal to the Bidder shall apply to the Contractor.*

Section 10. Approval by the Administrator: *This contract does _____, does not _____, require approval of the Administrator. No acceptance of a Proposal for a contract upon which approval of the Administrator*

is required shall become effective until the contract has been approved by the Administrator; provided that no obligation shall arise hereunder unless such approval is given within one-hundred twenty (120) days after the date set for the opening of the proposals. The acceptance of a Proposal for a contract upon which approval of the Administrator is not required shall become effective the date of acceptance by the Owner.

ATTEST:


Secretary

Alliance Corporation
Bidder

President Thomas E. Gumm

Dated 5/25/06

116 E. College St., Glasgow, KY 42141
Address

The Proposal must be signed with the full name of the Bidder. If the Bidder is a partnership, the Proposal must be signed in the partnership name by a partner. If the Bidder is a corporation, the Proposal must be signed in the corporate name by a duly authorized officer and the corporate seal affixed and attested by the Secretary of the Corporation.

ACCEPTANCE

Subject to the approval of the Administrator, if approval of the Administrator is required, the Owner hereby accepts the foregoing Proposal of the Bidder, _____, for the construction of the following:

for a total contract price of \$ _____ (_____ dollars.)

Owner

By _____
President

Secretary

_____, 20____
Date of Contract

U.S. Department of Agriculture
Rural Utilities Service

*Certification Regarding Debarment, Suspension, and Other Responsibility
Matters – Primary Covered Transactions*

This certification is required by the regulations implementing Executive Order 12549, Debarment and Suspension, 7 CFR Part 3017, Section 3017.510, Participants' Responsibilities. The regulations were published as Part IV of the January 30, 1989, *Federal Register* (pages 4722-4733). Copies of the regulations may be obtained by contacting the Department of Agriculture agency offering the proposed transaction.

- (1) The prospective primary participant certifies to the best of its knowledge and belief, that it and its principals:
- (a) are not presently debarred, suspended, proposed for Debarment, declared ineligible, or voluntarily excluded from covered transactions by any Federal department or agency;
 - (b) have not within a 3-year period preceding this proposal been convicted of or had a civil judgment rendered against them for commission of fraud or a criminal offense in connection with obtaining, attempting to obtain, or performing a public (Federal, State, or local) transaction or contract under a public transaction; violation of Federal or State antitrust statutes or commission of embezzlement, theft, forgery, bribery, falsification or destruction of records, making false statements, or receiving stolen property;
 - (c) are not presently indicted for or otherwise criminally or civilly charged by a governmental entity (Federal, State, or local) with commission of any of the offenses enumerated in paragraph (1)(b) of this certification; and
 - (d) have not within a 3-year period preceding this application/proposal had one or more public transactions (Federal, State, or local) terminated for cause or default.
- (2) Where the prospective primary participant is unable to certify to any of the statements in this certification, such prospective participant shall attach an explanation to this proposal.

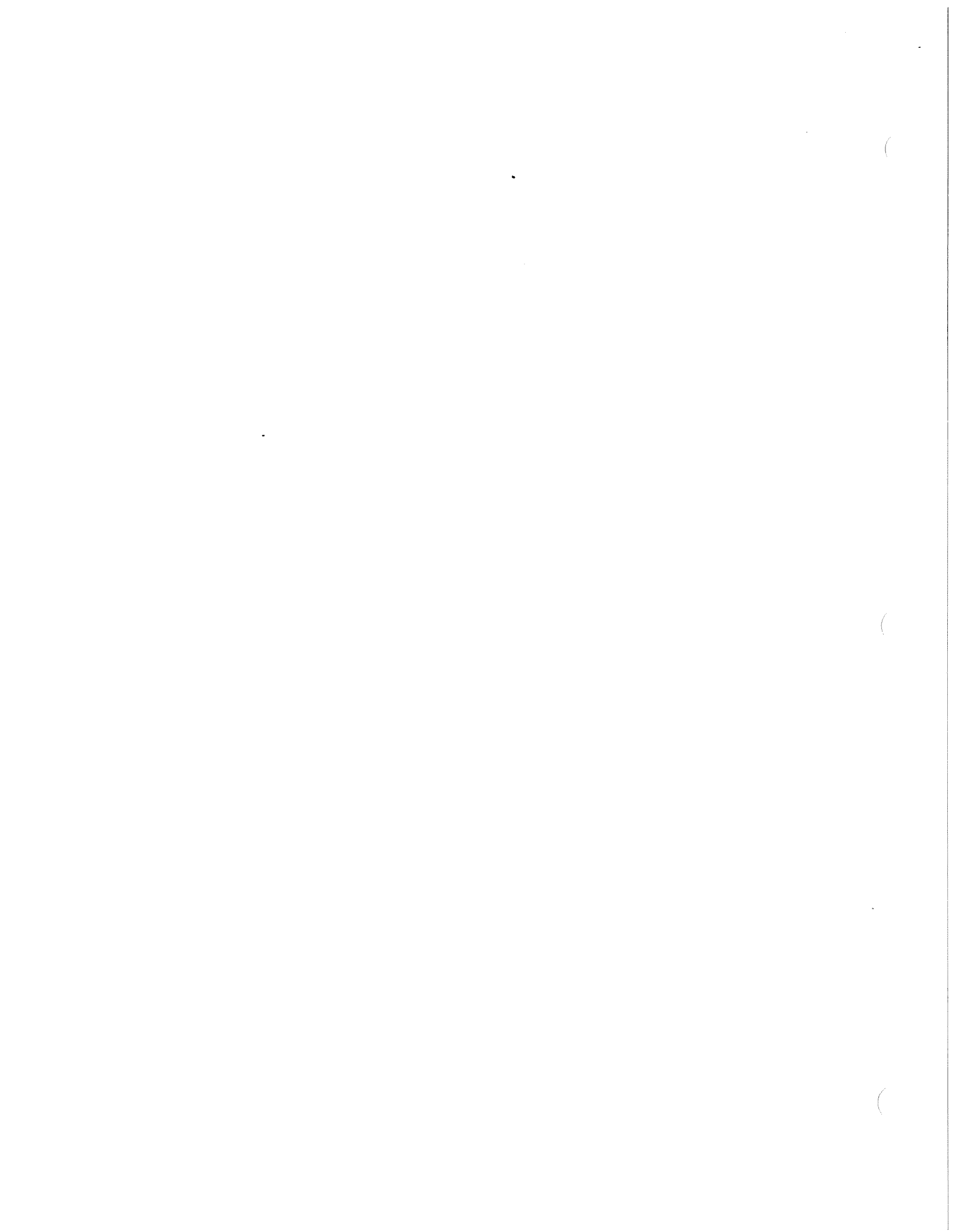
Organization Name

Authorized Representative's Signature

Date

Name Typed or Printed

(This is not an official Government form. It has been prepared to assist and expedite the application process and is only intended for use in the Rural Broadband Access Loan and Loan Guarantee Program.)



U.S. Department of Agriculture
Rural Utilities Service

*Certification Regarding Lobbying for Contracts, Grants,
Loans, and Cooperative Agreements*

The undersigned certifies, to the best of his or her knowledge and belief, that:

- (1) No Federal appropriated funds have been paid or will be paid, by or on behalf of the undersigned, to any person for influencing or attempting to influence an officer or employee of any agency, a Member of Congress, an officer or employee of Congress, or an employee of a Member of Congress in connection with the awarding of any Federal contract, the making of any Federal grant or loan, the entering into of any cooperative agreement, and the extension, continuation, renewal, amendment, or modification of any Federal contract, grant, loan, or cooperative agreement.
- (2) If any funds other than Federal appropriated funds have been paid or will be paid to any person for influencing or attempting to influence an officer or employee of any agency, a Member of Congress, an officer or employee of Congress, or an employee of a Member of Congress in connection with this Federal contract, grant, loan, or cooperative agreement, the undersigned shall complete and submit Standard Form-LLL, "Disclosure Form to Report Lobbying," in accordance with its instructions. (Copies of this form may be obtained from RUS.)
- (3) The undersigned shall require that the language of this certification be included in the award documents for all subawards at all tiers (including subcontracts, subgrants, and contracts under grants, loans, and cooperative agreements) and that all subrecipients shall certify and disclose accordingly.

This certification is a material representation of fact upon which reliance was placed when this transaction was made or entered into. Submission of this certification is a prerequisite for making or entering into this transaction imposed by section 1352, title 31, U.S. Code. Any person who fails to file the required certification shall be subject to a civil penalty of not less than \$10,000 and not more than \$100,000 for each such failure.

Organization Name

Authorized Representative's Signature

Date

Name Typed or Printed

(This is not an official Government form. It has been prepared to assist and expedite the application process and is only intended for use in the Rural Broadband Access Loan and Loan Guarantee Program.)

U.S. Department of Agriculture
Rural Utilities Service

BID BOND

1. ~~KNOW ALL PERSONS~~ that we, ALLIANCE CORPORATION
_____ as Principal, and

WESTERN SURETY COMPANY

as Surety, are held and firmly bound unto EAST KENTUCKY POWER CO-OP, INC.

4775 LEXINGTON, WINCHESTER KY 40391 (hereafter called the "Owner")
in the penal sum of ten percent (10%) of the amount of the bid referred to in paragraph 2 below, but not to

exceed TEN PERCENT OF BID dollars (\$ 10%), as
hereinafter set forth and for the payment of which sum well and truly to be made we bind ourselves, our
executors, administrators, successors and assigns, jointly and severally, by these presents;

2. ~~WHEREAS~~, the Principal has submitted a bid to the Owner for the construction of the Rural Utilities Service
project known as PENDLETON COUNTY LANDFILL GAS TO ELECTRIC PLANT, BUTLER KY

3. ~~NOW, THEREFORE~~, the condition of this obligation is such that if the Owner shall accept the bid of the
Principal, and

a. the Principal shall execute such contract documents, if any, as may be required by the terms of the bid and
give such Contractor's Bond or Bonds for the performance of the contract and for the prompt payment of
labor and material furnished for the project as may be specified in the bid, or

b. in the event of the failure of the Principal to execute such contract documents, if any, and give such
Contractor's Bond or Bonds, if the Principal shall pay to the Owner the difference, not to exceed the penal
sum hereof, between the amount specified in the bid and such larger amount for which the Owner may in
good faith contract with another party to construct the project, then this obligation shall be void, otherwise
to remain in full force and effect.

IN WITNESS WHEREOF, the undersigned have caused this instrument to be executed and their respective
corporate seals to be affixed and attested by their duly authorized representatives this

25TH day of MAY, 2006

ALLIANCE CORPORATION (Seal)
Principle

By [Signature]

President
Title

ATTEST:

[Signature]
Secretary

WESTERN SURETY COMPANY (Seal)
Surety

By [Signature]

ATTORNEY-IN-FACT
Title

ATTEST:

[Signature]
Secretary

WITNESS



Western Surety Company

POWER OF ATTORNEY APPOINTING INDIVIDUAL ATTORNEY-IN-FACT

Know All Men By These Presents, That WESTERN SURETY COMPANY, a South Dakota corporation, is a duly organized and existing corporation having its principal office in the City of Sioux Falls, and State of South Dakota, and that it does by virtue of the signature and seal herein affixed hereby make, constitute and appoint

Charles Cecil Martin, Bruce A Barrick, Individually

of Bowling Green, KY, its true and lawful Attorney(s)-in-Fact with full power and authority hereby conferred to sign, seal and execute for and on its behalf bonds, undertakings and other obligatory instruments of similar nature

- In Unlimited Amounts -

and to bind it thereby as fully and to the same extent as if such instruments were signed by a duly authorized officer of the corporation and all the acts of said Attorney, pursuant to the authority hereby given, are hereby ratified and confirmed.

This Power of Attorney is made and executed pursuant to and by authority of the By-Law printed on the reverse hereof, duly adopted, as indicated, by the shareholders of the corporation.

In Witness Whereof, WESTERN SURETY COMPANY has caused these presents to be signed by its Senior Vice President and its corporate seal to be hereto affixed on this 12th day of December, 2005.



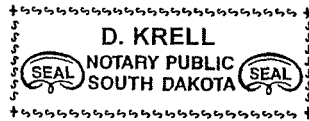
WESTERN SURETY COMPANY

Paul T. Bruflat, Senior Vice President

State of South Dakota }
County of Minnehaha } ss

On this 12th day of December, 2005, before me personally came Paul T. Bruflat, to me known, who, being by me duly sworn, did depose and say: that he resides in the City of Sioux Falls, State of South Dakota; that he is the Senior Vice President of WESTERN SURETY COMPANY described in and which executed the above instrument; that he knows the seal of said corporation; that the seal affixed to the said instrument is such corporate seal; that it was so affixed pursuant to authority given by the Board of Directors of said corporation and that he signed his name thereto pursuant to like authority, and acknowledges same to be the act and deed of said corporation.

My commission expires
November 30, 2006



D. Krell, Notary Public

CERTIFICATE

I, L. Nelson, Assistant Secretary of WESTERN SURETY COMPANY do hereby certify that the Power of Attorney hereinabove set forth is still in force, and further certify that the By-Law of the corporation printed on the reverse hereof is still in force. In testimony whereof I have hereunto subscribed my name and affixed the seal of the said corporation this 25TH day of MAY, 2006.



WESTERN SURETY COMPANY

L. Nelson, Assistant Secretary

Authorizing By-Law

ADOPTED BY THE SHAREHOLDERS OF WESTERN SURETY COMPANY

This Power of Attorney is made and executed pursuant to and by authority of the following By-Law duly adopted by the shareholders of the Company.

Section 7. All bonds, policies, undertakings, Powers of Attorney, or other obligations of the corporation shall be executed in the corporate name of the Company by the President, Secretary, and Assistant Secretary, Treasurer, or any Vice President, or by such other officers as the Board of Directors may authorize. The President, any Vice President, Secretary, any Assistant Secretary, or the Treasurer may appoint Attorneys in Fact or agents who shall have authority to issue bonds, policies, or undertakings in the name of the Company. The corporate seal is not necessary for the validity of any bonds, policies, undertakings, Powers of Attorney or other obligations of the corporation. The signature of any such officer and the corporate seal may be printed by facsimile.

U.S. Department of Agriculture
Rural Utilities Service

CONTRACTOR'S BOND

1. Know all persons that we, _____, as Principal, and _____, as Surety, are held and firmly bound unto _____ (hereinafter called the "Owner") and unto the United States of America (hereinafter called the "Government") and unto all persons, firms and corporations who or which may furnish materials for or perform labor on a Rural Utilities Service project known as _____ and to their successors and assigns, in the penal sum of _____ dollars (\$ _____), as hereinafter set forth and for the payment of which sum well and truly to be made we bind ourselves, our executors, administrators, successors and assigns jointly and severally by these presents. Said project is described in a certain construction contract (hereinafter called the "Construction Contract") between the Owner and the Principal, dated _____, 20____ pursuant and subject to a certain loan contract (hereinafter called the "Loan Contract") between the Owner and the Government, acting through the Administrator of the Rural Utilities Service (hereinafter called the "Administrator").
2. The condition of this obligation is such that if the Principal shall well and truly perform and fulfill all the undertakings, covenants, terms, conditions and agreements of the Construction Contract and any amendments thereto, whether such amendments are for additions, decreases, or changes in materials, their quantity, kind or price, labor costs, mileage, routing or any other purpose whatsoever, and whether such amendments are made with or without notice to the Surety, and shall fully indemnify and save harmless the Owner and the Government from all costs and damages which they, or either of them, shall suffer or incur by reason of any failure so to do, and shall fully reimburse and repay the Owner and the Government for all outlay and expense which they, or either of them shall incur in making good any such failure of performance on the part of the Principal, and shall promptly make payment to all persons working on or supplying labor or materials for use in the construction of the project contemplated in the Construction Contract and any amendments thereto, in respect of such labor or materials furnished and used therein, to the full extent thereof, and in respect of such labor or materials furnished but not so used, to the extent of the quantities estimated in the Construction Contract and any amendments thereto to be required for the construction of the project, and shall well and truly reimburse the Owner and the Government, as their respective interests may appear, for any excess in cost of construction of said project over the cost of such construction as provided in the Construction Contract and any amendments thereto, occasioned by any default of the Principal under the Construction Contract and any amendments thereto, then this obligation shall be null and void, but otherwise shall remain in full force and effect.
3. It is expressly agreed that this bond shall be deemed amended automatically and immediately, without formal and separate amendments hereto, upon any amendment to the Construction Contract, so as to bind the Principal and the Surety to the full and faithful performance of the Construction Contract as so amended, provided only that the total amount of all increases in the cost of construction shall not exceed 20 percent of the amount of the maximum price set forth in the Construction Contract. The term "Amendment," wherever used in this bond, and whether referring to this bond, the Construction Contract or the Loan Contract shall include any alteration, addition, extension, modification, amendment, rescission, waiver, release or annulment, of any character whatsoever.
4. It is expressly agreed that any amendment which may be made by agreement or otherwise between the Principal and the Owner in the terms, provisions, covenants and conditions of the Construction Contract, or in the terms, provisions, covenants and conditions of the Loan Contract (including, without limitation, the granting by the Administrator to the Owner of any extension of time for the performance of the obligations of

the Owner under the Loan Contract or the granting by the Administrator or the Owner to the Principal of any extension of time for the performance of the obligations of the Principal under the Construction Contract, or the failure or refusal of the Administrator or the Owner to take any action, proceeding or step to enforce any remedy or exercise any right under either the Construction Contract or the Loan Contract, or the taking of any action, proceeding or step by the Administrator or the Owner, acting in good faith upon the belief that the same is permitted by the provisions of the Construction Contract or the Loan Contract) shall not in any way release the Principal and the Surety, or either of them or their respective executors, administrators, successors or assigns, from liability hereunder. The Surety hereby acknowledges receipt of notice of any amendment, indulgence or forbearance, made, granted or permitted.

5. This bond is made for the benefit of all persons, firms and corporations who or which may furnish any materials or perform any labor for or on account of the construction to be performed under the Construction Contract and any amendments thereto, and they, and each of them, are hereby made obligees hereunder with the same force and effect as if their names were written herein as such, and they and each of them may sue hereon.

In witness whereof, the undersigned have caused this instrument to be executed and their respective corporate seals to be affixed and attested by their duly authorized representatives this

_____ day of _____, 20_____.

Principal (Seal)

ATTEST:

By _____

Secretary

Surety (Seal)

ATTEST:

By _____

Secretary

Address of Surety's Home Office

By _____
Resident Agent of Surety

Signatures: The Contractor's Bond must be signed with the full name of the Contractor. If the Contractor is a partnership the Contractor's Bond must be signed in the partnership name by a partner. If the Contractor is a corporation the Contractor's Bond must be signed in the corporate name by a duly authorized officer and the corporate seal affixed and attested by the Secretary of the corporation. A typewritten copy of all such names and signatures shall be appended.

Power of Attorney: The Contractor's Bond must be accompanied by a power of attorney authorizing execution on behalf of the Surety and, in jurisdictions so requiring should be countersigned by a duly authorized resident agent of the Surety.

FOR INFORMATIONAL PURPOSES

According to the Paperwork Reduction Act of 1995, an agency may not conduct or sponsor, and a person is not required to respond to, a collection of information unless it displays a valid OMB control number. The valid OMB control number for this information collection is 0572-0107. The time required to complete this information collection is estimated to average 1 minute per response, including the time for reviewing instructions, searching existing data sources, gathering and maintaining the data needed, and completing and reviewing the collection of information.

U.S. Department of Agriculture
Rural Utilities Service

WAIVER AND RELEASE OF LIEN

WHEREAS the undersigned, _____
NAME OF MANUFACTURER, MATERIAL SUPPLIER, OR SUBCONTRACTOR

has furnished to _____ the following:
NAME OF CONTRACTOR

_____ for
KIND OF MATERIAL AND SERVICES FURNISHED

use in the construction of a project belonging to _____
NAME OF BORROWER

and designated by the Rural Utilities Service as _____
RUS DESIGNATION

NOW, THEREFORE, the undersigned, _____
NAME OF MANUFACTURER, MATERIAL SUPPLIER, OR SUBCONTRACTOR

for and in consideration of \$ _____ and other good and valuable consideration, the receipt whereof is hereby acknowledged, do(es) hereby waive and release any and all liens, or right to or claim of lien, on the above described project and premises, under any law, common or statutory, on account of labor or materials, or both, heretofore or hereafter furnished by the undersigned to or for the account of said _____ for said project.
NAME OF CONTRACTOR

Given under my(our) hand(s) and seal(s) this _____ day of _____, 20_____.

Name of Manufacturer, Material Supplier, or Subcontractor

By _____
President

This Waiver and Release of Lien must be signed with the full name of the Manufacturer, Material Supplier, or Subcontractor. If the Manufacturer, Material Supplier, or Subcontractor is a partnership, this Waiver and Release of Lien must be signed in the partnership name by a partner. If the Manufacturer, Material Supplier, or Subcontractor is a corporation, this Waiver and Release of Lien must be signed in the corporate name by a duly authorized officer and the corporate seal affixed and attested by the Secretary of the Corporation.



FOR INFORMATIONAL PURPOSES

According to the Paperwork Reduction Act of 1995, an agency may not conduct or sponsor, and a person is not required to respond to, a collection of information unless it displays a valid OMB control number. The valid OMB control number for this information collection is 0572-0107. The time required to complete this information collection is estimated to average 1 minute per response, including the time for reviewing instructions, searching existing data sources, gathering and maintaining the data needed, and completing and reviewing the collection of information.

U.S. Department of Agriculture
Rural Utilities Service

CERTIFICATE OF COMPLETION - CONTRACT CONSTRUCTION

I, the undersigned Architect or Engineer of the following Rural Utilities Service project, do hereby certify that:

1. The construction provided for pursuant to Construction Contract No. _____, dated _____, 20____, including all approved amendments, between East Kentucky Power Cooperative, RUS designation _____ ("Owner") and _____ ("Contractor") has been completed as of _____, 20____, and is in compliance with the provisions of the Construction Contract, including all plans, specifications, maps, and drawings and all modifications thereof.
2. Payment in full has been made to all persons who have furnished labor for the project.
3. The Contractor has obtained valid releases of lien from all manufacturers, material suppliers, and subcontractors furnishing services or materials which were employed by the Contractor in the performance of the Construction Contract, and that such releases have been delivered by the Contractor to the Owner.
4. If applicable, the Final Inventory attached hereto and made a part hereof is a complete and accurate summary of all units of construction in the project and of all work performed in accordance with the Construction Contract.
5. If applicable, the staking sheets and tabulation of staking sheets upon which the Final Inventory is based show the accurate location, number, and kind of all units of construction of the project and show all work performed in accordance with the Construction Contract.
6. All defects in workmanship and materials reported during the period of construction of the project have been corrected.
7. The total cost of the project as completed is _____ dollars (\$ _____).

Dated this _____ day of _____, 20____.

Name of Architect or Engineer

By _____

Date

Title

**CERTIFICATE OF COMPLETION
CONTRACT CONSTRUCTION**

(continued)

We, the undersigned Owner and Contractor, do hereby certify that:

- 1. The project has been completed in accordance with the provisions of the Construction Contract, dated _____, 20____, provided, however, that acceptance of the project by the Owner shall not be deemed to relieve the Contractor of its obligations contained in the Construction Contract with respect to defective workmanship or, materials discovered within one year after the date of completion.*

- 2. If applicable, the Final Inventory attached hereto and made a part hereof is a complete and accurate summary of all units of construction in the project and of work performed in accordance with the Construction Contract.*

Date

Date

Owner

By _____
President

Name of Contractor

By _____

Title

According to the Paperwork Reduction Act of 1995, an agency may not conduct or sponsor, and a person is not required to respond to, a collection of information unless it displays a valid OMB control number. The valid OMB control number for this information collection is 0572-0107. The time required to complete this information collection is estimated to average 1 minute per response, including the time for reviewing instructions, searching existing data sources, gathering and maintaining the data needed, and completing and reviewing the collection of information.

U.S. Department of Agriculture
Rural Utilities Service

CERTIFICATE OF CONTRACTOR

_____ certifies that he or she is the
_____ of _____,
TITLE NAME OF CONTRACTOR

the Contractor, in a Construction Contract No. _____,
dated _____, 20____, entered into between the Contractor and
East Kentucky Power Cooperative, Inc. _____, RUS designation _____,
NAME OF RUS BORROWER

the Owner, and that he or she is authorized to and does make this certification on behalf of said Contractor in order to induce the Owner to make payment to the Contractor, in accordance with the provisions of said Construction Contract.

Undersigned further says that all persons who have furnished labor in connection with said construction have been paid in full, that the names of manufacturers, material suppliers, and subcontractors that furnished material or services or both in connection with such construction and the kind or kinds of material or services or both so furnished are:

NAME	KIND OF MATERIAL OR SERVICES
_____	_____
_____	_____
_____	_____
_____	_____
_____	_____
_____	_____
_____	_____
_____	_____

and that the releases of liens executed by all such manufacturers, material suppliers, and subcontractors have been furnished the Owner.

_____ Date By _____ President

This Certificate must be signed with the full name of the Contractor. If the Contractor is a partnership, this Certificate must be signed in the partnership name by a partner. If the Contractor is a corporation, this Certificate must be signed in the corporate name by a duly authorized officer.

U.S. Department of Agriculture
Rural Utilities Service

CERTIFICATE

With respect to compliance with the second paragraph of the Rural Electrification Act of 1938, being Title IV of the Work Relief and Public Works Appropriation Act of 1938 (Public Resolution No. 122, 75th Congress, approved June 21, 1938).

Rural Utilities Service Project _____

The undersigned, being, the _____¹,

in a certain contract No. _____ dated _____, _____, between the undersigned

and East Kentucky Power Cooperative, Inc.²,

does hereby certify that in the performance of the said contract there have been used or furnished no unmanufactured articles, materials or supplies which have not been mined or produced in the United States³ or in any eligible country and no manufactured articles, materials or supplies which have not been manufactured in the United States or in any eligible country substantially all from articles, materials or supplies mined, produced or manufactured, as the case may be, in the United States or in any eligible country, except to the extent that compliance with the second paragraph of the Rural Electrification Act of 1938, being Title IV of the Work Relief and Public Works Appropriation Act of 1938 (Public Resolution No. 122, 75th Congress, approved June 21, 1938) has been waived by the Administrator of the Rural Utilities Service. For purposes of this certificate, an "eligible country" is any country that applies with respect to the United States an agreement ensuring reciprocal access for United States products and services and suppliers to the markets of that country, as determined by the United States Trade Representative.⁴

By _____

Date _____, 20____

¹ Insert "Contractor," "Subcontractor," "Seller," Or "Material Supplier," as the case may be.

² Insert the name of the RUS Borrower.

³ United States means United States, its territories and possessions.

⁴ A current list of eligible countries may be obtained by contacting RUS.

East Kentucky Power Cooperative
Pendleton County Landfill Gas-to-Energy Project
Pendleton County, Kentucky

Bid Breakdown Sheet

Project Subcontractors or Self-Performance Listing

Civil/Site Work
• Excavation, Grading & Backfill ALLIANCE CORP
• Paving MAGO PAVING

Building Structure
• Concrete ALLIANCE CORP.
• Masonry CROSS ROADS MASONRY
• Steel, Roof Deck & Misc. Metals FEDERATED STEEL
• Roofing TRI-STATE ROOFING
• Painting and Finishes MCKINNEY PTG / PRECISION WALLS

Mechanical Installation
• HVAC LYONS Co
• Piping LYONS Co.
• Plumbing LYONS Co.

Electrical Installation WILSON & SON ELECTRIC

Other Trades (List)

Base Bid

Civil/Site Work \$ 145,200

Building Structure and Finishes \$ 579,425

Mechanical Installation
• HVAC \$ 129,600
• Piping \$ 479,375
• Plumbing \$ 41,000

Electrical Installation \$ 335,000

TOTAL BASE BID \$ 1,709,600

Alternate Bid Items

Alternate A – Price adder for furnishing and installing fans, EF-5 and SF-5 \$ N/A

Alternate B - Price deduct if condensate knockout and pump station are furnished and installed by others \$ _____

Voluntary Alternate #1 – DEDUCT \$ < 12,000
~~FOR NOT PROVIDING TOPSOIL & SEEDING~~
~~AT AREAS LABELED GRASS~~

Voluntary Alternate #2 – _____ \$ _____

Voluntary Alternate #3 -- _____ \$ _____

Unit Prices

Excavation – Native Soil (per Cubic Yard) \$ 15.00

Excavation – Rock (per Cubic Yard) \$ 450.00

Backfill & Compaction – Cohesive Soil (per Cubic Yard) \$ 20.00

Backfill & Compaction – Top Soil (per Cubic Yard) \$ 25.00

Backfill & Compaction – Soil (per Cubic Yard) \$ 20.00

Backfill & Compaction – Granular Fill A57 Stone (per Cubic Yard) \$ 35.00

Concrete – Forming, Pouring and Finishing (per Cubic Yard) \$ 450.00

Start-up and Testing Assistance – Mechanic or Pipe Fitter (per Straight Time Man-hour) \$ 65.00

Start-up and Testing Assistance – Mechanic or Pipe Fitter (per Over Time Man-hour) \$ 79.00

Start-up and Testing Assistance – Mechanic or Pipe Fitter (per Double Time Man-hour) \$ 100.00

Start-up and Testing Assistance – Electrician (per Straight Time Man-hour) \$ 50.00



**East Kentucky Power Cooperative
Hardin County Landfill Gas-to-Energy Project
Pearl Hollow Landfill, Hardin County, Kentucky**

Bid Breakdown Sheet

Project Subcontractors or Self-Performance Listing

Civil/Site Work

- Excavation, Grading & Backfill
- Paving

Alliance
Scotty's

Building Structure

- Concrete
- Masonry
- Steel, Roof Deck & Misc. Metals
- Roofing
- Painting and Finishes

Alliance
Kenneth Roberts
Hickey Steel
Gerryegan
Maas Brothers

Mechanical Installation

- HVAC
- Piping
- Plumbing

Lyons / Climate Control of KY
"
"

Electrical Installation

Gene Ray Elec.

Other Trades (List)

N/A
N/A
N/A

Base Bid

Civil/Site Work

\$ 30,058

Building Structure and Finishes

\$ 528,205

Mechanical Installation

- HVAC
- Piping
- Plumbing

\$ 92,919
\$ 333,259
\$ 34,532

Electrical Installation

\$ 249,000

TOTAL BASE BID

\$ ~~5,2~~ 528,205
1,267,973

(

(

(

Alternate Bid Items

Alternate A – Price adder for furnishing and installing fans EF-4, SF-4, EF-5 and SF-5

\$ 19,900

Alternate B - Price deduct if condensate knockout and pump station are furnished and installed by others

\$ <26,000><60,000>

Voluntary Alternate #1 – Add to extend schedule to 160 days

\$ 7,000

Voluntary Alternate #2 – _____

\$ N/A

Voluntary Alternate #3 – _____

\$ N/A

Unit Prices

Excavation – Native Soil (per Cubic Yard)

\$ 4.00

Excavation – Rock (per Cubic Yard)

\$ 225.00

Backfill & Compaction – Cohesive Soil (per Cubic Yard)

\$ 10.00

Backfill & Compaction – Top Soil (per Cubic Yard)

\$ 20.00

Backfill & Compaction – Soil (per Cubic Yard)

\$ 10.00

Backfill & Compaction – Granular Fill A57 Stone (per Cubic Yard)

\$ 7.50

Concrete – Forming, Pouring and Finishing (per Cubic Yard)

\$ 195.00

Start-up and Testing Assistance – Mechanic or Pipe Fitter (per Straight Time Man-hour)

\$ 55.00

Start-up and Testing Assistance – Mechanic or Pipe Fitter (per Over Time Man-hour)

\$ 70.00

Start-up and Testing Assistance – Mechanic or Pipe Fitter (per Double Time Man-hour)

\$ 87.00

Start-up and Testing Assistance – Electrician (per Straight Time Man-hour)

\$ 49.00

Start-up and Testing Assistance – Electrician
(per Over Time Man-hour)

\$ 74.00

Start-up and Testing Assistance – Electrician
(per Double Time Man-hour)

\$ 100.00

Bid Exceptions or Clarifications (Attach additional sheets as necessary)

- Two mobilizations of rigging equipment for off-loading and setting of generators, coolers and gas compressor are provided based on the anticipated delivery of this owner-furnished equipment. Additional mobilizations, if required by staggered equipment deliveries, will be at additional cost.
- Rock excavation, as it relates to exterior utilities is excluded.
- We do acknowledge receipt of Addendum No. 1, dated 8/16/05.
- Exclude testing of equipment & materials supplied by the owner.

**U.S. Department of Agriculture
Rural Utilities Service**

***Certification Regarding Debarment, Suspension, and Other Responsibility
Matters – Primary Covered Transactions***

This certification is required by the regulations implementing Executive Order 12549, Debarment and Suspension, 7 CFR Part 3017, Section 3017.510, Participants' Responsibilities. The regulations were published as Part IV of the January 30, 1989, Federal Register (pages 4722-4733). Copies of the regulations may be obtained by contacting the Department of Agriculture agency offering the proposed transaction.

- (1) The prospective primary participant certifies to the best of its knowledge and belief, that it and its principals:
- (a) are not presently debarred, suspended, proposed for Debarment, declared ineligible, or voluntarily excluded from covered transactions by any Federal department or agency;
 - (b) have not within a 3-year period preceding this proposal been convicted of or had a civil judgment rendered against them for commission of fraud or a criminal offense in connection with obtaining, attempting to obtain, or performing a public (Federal, State, or local) transaction or contract under a public transaction; violation of Federal or State antitrust statutes or commission of embezzlement, theft, forgery, bribery, falsification or destruction of records, making false statements, or receiving stolen property;
 - (c) are not presently indicted for or otherwise criminally or civilly charged by a governmental entity (Federal, State, or local) with commission of any of the offenses enumerated in paragraph (1)(b) of this certification; and
 - (d) have not within a 3-year period preceding this application/proposal had one or more public transactions (Federal, State, or local) terminated for cause or default.
- (2) Where the prospective primary participant is unable to certify to any of the statements in this certification, such prospective participant shall attach an explanation to this proposal.

Alliance Corporation

Organization Name



8/24/05

Authorized Representative's Signature

Date

Thomas E. Gumm, President

Name Typed or Printed

(This is not an official Government form. It has been prepared to assist and expedite the application process and is only intended for use in the Rural Broadband Access Loan and Loan Guarantee Program.)

**U.S. Department of Agriculture
Rural Utilities Service**

***Certification Regarding Lobbying for Contracts, Grants,
Loans, and Cooperative Agreements***

The undersigned certifies, to the best of his or her knowledge and belief, that:

- (1) No Federal appropriated funds have been paid or will be paid, by or on behalf of the undersigned, to any person for influencing or attempting to influence an officer or employee of any agency, a Member of Congress, an officer or employee of Congress, or an employee of a Member of Congress in connection with the awarding of any Federal contract, the making of any Federal grant or loan, the entering into of any cooperative agreement, and the extension, continuation, renewal, amendment, or modification of any Federal contract, grant, loan, or cooperative agreement.
- (2) If any funds other than Federal appropriated funds have been paid or will be paid to any person for influencing or attempting to influence an officer or employee of any agency, a Member of Congress, an officer or employee of Congress, or an employee of a Member of Congress in connection with this Federal contract, grant, loan, or cooperative agreement, the undersigned shall complete and submit Standard Form-LLL, "Disclosure Form to Report Lobbying," in accordance with its instructions. (Copies of this form may be obtained from RUS.)
- (3) The undersigned shall require that the language of this certification be included in the award documents for all subawards at all tiers (including subcontracts, subgrants, and contracts under grants, loans, and cooperative agreements) and that all subrecipients shall certify and disclose accordingly.

This certification is a material representation of fact upon which reliance was placed when this transaction was made or entered into. Submission of this certification is a prerequisite for making or entering into this transaction imposed by section 1352, title 31, U.S. Code. Any person who fails to file the required certification shall be subject to a civil penalty of not less than \$10,000 and not more than \$100,000 for each such failure.

Alliance Corporation

Organization Name

Authorized Representative's Signature

Thomas E. Gumm, President

8/24/05

Date

Name Typed or Printed

(This is not an official Government form. It has been prepared to assist and expedite the application process and is only intended for use in the Rural Broadband Access Loan and Loan Guarantee Program.)

(1) (2) (3) (4) (5) (6) (7) (8) (9) (10) (11) (12) (13) (14) (15) (16) (17) (18) (19) (20) (21) (22) (23) (24) (25) (26) (27) (28) (29) (30) (31) (32) (33) (34) (35) (36) (37) (38) (39) (40) (41) (42) (43) (44) (45) (46) (47) (48) (49) (50) (51) (52) (53) (54) (55) (56) (57) (58) (59) (60) (61) (62) (63) (64) (65) (66) (67) (68) (69) (70) (71) (72) (73) (74) (75) (76) (77) (78) (79) (80) (81) (82) (83) (84) (85) (86) (87) (88) (89) (90) (91) (92) (93) (94) (95) (96) (97) (98) (99) (100)

U.S. Department of Agriculture
Rural Utilities Service

BID BOND

1. *KNOW ALL PERSONS* that we, _____

_____ as Principal, and

as Surety, are held and firmly bound unto _____
_____ (hereafter called the "Owner")
in the penal sum of ten percent (10%) of the amount of the bid referred to in paragraph 2 below, but not to
exceed _____ dollars (\$ _____), as
hereinafter set forth and for the payment of which sum well and truly to be made we bind ourselves, our
executors, administrators, successors and assigns, jointly and severally, by these presents;
2. *WHEREAS*, the Principal has submitted a bid to the Owner for the construction of the Rural Utilities Service
project known as _____.
3. *NOW, THEREFORE*, the condition of this obligation is such that if the Owner shall accept the bid of the
Principal, and
- a. the Principal shall execute such contract documents, if any, as may be required by the terms of the bid and
give such Contractor's Bond or Bonds for the performance of the contract and for the prompt payment of
labor and material furnished for the project as may be specified in the bid, or
 - b. in the event of the failure of the Principal to execute such contract documents, if any, and give such
Contractor's Bond or Bonds, if the Principal shall pay to the Owner the difference, not to exceed the penal
sum hereof, between the amount specified in the bid and such larger amount for which the Owner may in
good faith contract with another party to construct the project, then this obligation shall be void, otherwise
to remain in full force and effect.

IN WITNESS WHEREOF, the undersigned have caused this instrument to be executed and their respective
corporate seals to be affixed and attested by their duly authorized representatives this

_____ day of _____, 20_____.

Principle (Seal)

ATTEST: By _____

Secretary Title

Surety (Seal)

ATTEST: By _____

Secretary Title

U.S. Department of Agriculture
Rural Utilities Service

CONTRACTOR'S BOND

1. Know all persons that we, _____, as Principal, and _____, as Surety, are held and firmly bound unto _____ (hereinafter called the "Owner") and unto the United States of America (hereinafter called the "Government") and unto all persons, firms and corporations who or which may furnish materials for or perform labor on a Rural Utilities Service project known as _____ and to their successors and assigns, in the penal sum of _____ dollars (\$ _____), as hereinafter set forth and for the payment of which sum well and truly to be made we bind ourselves, our executors, administrators, successors and assigns jointly and severally by these presents. Said project is described in a certain construction contract (hereinafter called the "Construction Contract") between the Owner and the Principal, dated _____, 20____, pursuant and subject to a certain loan contract (hereinafter called the "Loan Contract") between the Owner and the Government, acting through the Administrator of the Rural Utilities Service (hereinafter called the "Administrator").
2. The condition of this obligation is such that if the Principal shall well and truly perform and fulfill all the undertakings, covenants, terms, conditions and agreements of the Construction Contract and any amendments thereto, whether such amendments are for additions, decreases, or changes in materials, their quantity, kind or price, labor costs, mileage, routing or any other purpose whatsoever, and whether such amendments are made with or without notice to the Surety, and shall fully indemnify and save harmless the Owner and the Government from all costs and damages which they, or either of them, shall suffer or incur by reason of any failure so to do, and shall fully reimburse and repay the Owner and the Government for all outlay and expense which they, or either of them shall incur in making good any such failure of performance on the part of the Principal, and shall promptly make payment to all persons working on or supplying labor or materials for use in the construction of the project contemplated in the Construction Contract and any amendments thereto, in respect of such labor or materials furnished and used therein, to the full extent thereof, and in respect of such labor or materials furnished but not so used, to the extent of the quantities estimated in the Construction Contract and any amendments thereto to be required for the construction of the project, and shall well and truly reimburse the Owner and the Government, as their respective interests may appear, for any excess in cost of construction of said project over the cost of such construction as provided in the Construction Contract and any amendments thereto, occasioned by any default of the Principal under the Construction Contract and any amendments thereto, then this obligation shall be null and void, but otherwise shall remain in full force and effect.
3. It is expressly agreed that this bond shall be deemed amended automatically and immediately, without formal and separate amendments hereto, upon any amendment to the Construction Contract, so as to bind the Principal and the Surety to the full and faithful performance of the Construction Contract as so amended, provided only that the total amount of all increases in the cost of construction shall not exceed 20 percent of the amount of the maximum price set forth in the Construction Contract. The term "Amendment," wherever used in this bond, and whether referring to this bond, the Construction Contract or the Loan Contract shall include any alteration, addition, extension, modification, amendment, rescission, waiver, release or annulment, of any character whatsoever.
4. It is expressly agreed that any amendment which may be made by agreement or otherwise between the Principal and the Owner in the terms, provisions, covenants and conditions of the Construction Contract, or in the terms, provisions, covenants and conditions of the Loan Contract (including, without limitation, the granting by the Administrator to the Owner of any extension of time for the performance of the obligations of

the Owner under the Loan Contract or the granting by the Administrator or the Owner to the Principal of any extension of time for the performance of the obligations of the Principal under the Construction Contract, or the failure or refusal of the Administrator or the Owner to take any action, proceeding or step to enforce any remedy or exercise any right under either the Construction Contract or the Loan Contract, or the taking of any action, proceeding or step by the Administrator or the Owner, acting in good faith upon the belief that the same is permitted by the provisions of the Construction Contract or the Loan Contract) shall not in any way release the Principal and the Surety, or either of them or their respective executors, administrators, successors or assigns, from liability hereunder. The Surety hereby acknowledges receipt of notice of any amendment, indulgence or forbearance, made, granted or permitted.

5. This bond is made for the benefit of all persons, firms and corporations who or which may furnish any materials or perform any labor for or on account of the construction to be performed under the Construction Contract and any amendments thereto, and they, and each of them, are hereby made obligees hereunder with the same force and effect as if their names were written herein as such, and they and each of them may sue hereon.

In witness whereof, the undersigned have caused this instrument to be executed and their respective corporate seals to be affixed and attested by their duly authorized representatives this

_____ day of _____, 20_____.

Principal (Seal)

ATTEST:

By _____

Secretary

Surety (Seal)

ATTEST:

By _____

Secretary

Address of Surety's Home Office

By _____
Resident Agent of Surety

Signatures: The Contractor's Bond must be signed with the full name of the Contractor. If the Contractor is a partnership the Contractor's Bond must be signed in the partnership name by a partner. If the Contractor is a corporation the Contractor's Bond must be signed in the corporate name by a duly authorized officer and the corporate seal affixed and attested by the Secretary of the corporation. A typewritten copy of all such names and signatures shall be appended.

Power of Attorney: The Contractor's Bond must be accompanied by a power of attorney authorizing execution on behalf of the Surety and, in jurisdictions so requiring should be countersigned by a duly authorized resident agent of the Surety.

FOR INFORMATIONAL PURPOSES

According to the Paperwork Reduction Act of 1995, an agency may not conduct or sponsor, and a person is not required to respond to, a collection of information unless it displays a valid OMB control number. The valid OMB control number for this information collection is 0572-0107. The time required to complete this information collection is estimated to average 1 minute per response, including the time for reviewing instructions, searching existing data sources, gathering and maintaining the data needed, and completing and reviewing the collection of information.

U.S. Department of Agriculture
Rural Utilities Service

WAIVER AND RELEASE OF LIEN

WHEREAS the undersigned, _____
NAME OF MANUFACTURER, MATERIAL SUPPLIER, OR SUBCONTRACTOR

has furnished to _____ the following:
NAME OF CONTRACTOR

_____ for
KIND OF MATERIAL AND SERVICES FURNISHED

use in the construction of a project belonging to _____
NAME OF BORROWER

and designated by the Rural Utilities Service as _____
RUS DESIGNATION

NOW, THEREFORE, the undersigned, _____
NAME OF MANUFACTURER, MATERIAL SUPPLIER, OR SUBCONTRACTOR

for and in consideration of \$ _____ and other good and valuable consideration, the receipt whereof is hereby acknowledged, do(es) hereby waive and release any and all liens, or right to or claim of lien, on the above described project and premises, under any law, common or statutory, on account of labor or materials, or both, heretofore or hereafter furnished by the undersigned to or for the account of said _____ for said project.
NAME OF CONTRACTOR

Given under my(our) hand(s) and seal(s) this _____ day of _____, 20_____

Name of Manufacturer, Material Supplier, or Subcontractor

By _____
President

This Waiver and Release of Lien must be signed with the full name of the Manufacturer, Material Supplier, or Subcontractor. If the Manufacturer, Material Supplier, or Subcontractor is a partnership, this Waiver and Release of Lien must be signed in the partnership name by a partner. If the Manufacturer, Material Supplier, or Subcontractor is a corporation, this Waiver and Release of Lien must be signed in the corporate name by a duly authorized officer and the corporate seal affixed and attested by the Secretary of the Corporation.

FOR INFORMATIONAL PURPOSES

According to the Paperwork Reduction Act of 1995, an agency may not conduct or sponsor, and a person is not required to respond to, a collection of information unless it displays a valid OMB control number. The valid OMB control number for this information collection is 0572-0107. The time required to complete this information collection is estimated to average 1 minute per response, including the time for reviewing instructions, searching existing data sources, gathering and maintaining the data needed, and completing and reviewing the collection of information.

U.S. Department of Agriculture
Rural Utilities Service

CERTIFICATE OF COMPLETION - CONTRACT CONSTRUCTION

I, the undersigned Architect or Engineer of the following Rural Utilities Service project, do hereby certify that:

1. The construction provided for pursuant to Construction Contract No. _____, dated _____, 20____, including all approved amendments, between East Kentucky Power Cooperative, RUS designation _____ ("Owner") and _____ ("Contractor") has been completed as of _____, 20____, and is in compliance with the provisions of the Construction Contract, including all plans, specifications, maps, and drawings and all modifications thereof.
2. Payment in full has been made to all persons who have furnished labor for the project.
3. The Contractor has obtained valid releases of lien from all manufacturers, material suppliers, and subcontractors furnishing services or materials which were employed by the Contractor in the performance of the Construction Contract, and that such releases have been delivered by the Contractor to the Owner.
4. If applicable, the Final Inventory attached hereto and made a part hereof is a complete and accurate summary of all units of construction in the project and of all work performed in accordance with the Construction Contract.
5. If applicable, the staking sheets and tabulation of staking sheets upon which the Final Inventory is based show the accurate location, number, and kind of all units of construction of the project and show all work performed in accordance with the Construction Contract.
6. All defects in workmanship and materials reported during the period of construction of the project have been corrected.
7. The total cost of the project as completed is _____ dollars (\$ _____).

Dated this _____ day of _____, 20____.

Name of Architect or Engineer

By _____

Date

Title

**CERTIFICATE OF COMPLETION
CONTRACT CONSTRUCTION**

(continued)

We, the undersigned Owner and Contractor, do hereby certify that:

1. *The project has been completed in accordance with the provisions of the Construction Contract, dated _____, 20____, provided, however, that acceptance of the project by the Owner shall not be deemed to relieve the Contractor of its obligations contained in the Construction Contract with respect to defective workmanship or, materials discovered within one year after the date of completion.*

2. *If applicable, the Final Inventory attached hereto and made a part hereof is a complete and accurate summary of all units of construction in the project and of work performed in accordance with the Construction Contract.*

Date

Owner

By _____
President

Name of Contractor

Date

By _____

Title

FOR INFORMATIONAL PURPOSES

According to the Paperwork Reduction Act of 1995, an agency may not conduct or sponsor, and a person is not required to respond to, a collection of information unless it displays a valid OMB control number. The valid OMB control number for this information collection is 0572-0107. The time required to complete this information collection is estimated to average 1 minute per response, including the time for reviewing instructions, searching existing data sources, gathering and maintaining the data needed, and completing and reviewing the collection of information.

U.S. Department of Agriculture
Rural Utilities Service

CERTIFICATE OF CONTRACTOR

_____ certifies that he or she is the
_____ of _____,
TITLE NAME OF CONTRACTOR

the Contractor, in a Construction Contract No. _____,
dated _____, 20____, entered into between the Contractor and
East Kentucky Power Cooperative, Inc. _____, RUS designation _____,
NAME OF RUS BORROWER

the Owner, and that he or she is authorized to and does make this certification on behalf of said Contractor in order to induce the Owner to make payment to the Contractor, in accordance with the provisions of said Construction Contract.

Undersigned further says that all persons who have furnished labor in connection with said construction have been paid in full, that the names of manufacturers, material suppliers, and subcontractors that furnished material or services or both in connection with such construction and the kind or kinds of material or services or both so furnished are:

NAME	KIND OF MATERIAL OR SERVICES
_____	_____
_____	_____
_____	_____
_____	_____
_____	_____
_____	_____
_____	_____

and that the releases of liens executed by all such manufacturers, material suppliers, and subcontractors have been furnished the Owner.

_____ Date By _____ President

This Certificate must be signed with the full name of the Contractor. If the Contractor is a partnership, this Certificate must be signed in the partnership name by a partner. If the Contractor is a corporation, this Certificate must be signed in the corporate name by a duly authorized officer.

FOR INFORMATIONAL PURPOSES

According to the Paperwork Reduction Act of 1995, an agency may not conduct or sponsor, and a person is not required to respond to, a collection of information unless it displays a valid OMB control number. The valid OMB control number for this information collection is 0572-0107. The time required to complete this information collection is estimated to average 1 minute per response, including the time for reviewing instructions, searching existing data sources, gathering and maintaining the data needed, and completing and reviewing the collection of information.

**U.S. Department of Agriculture
Rural Utilities Service**

CERTIFICATE

With respect to compliance with the second paragraph of the Rural Electrification Act of 1938, being Title IV of the Work Relief and Public Works Appropriation Act of 1938 (Public Resolution No. 122, 75th Congress, approved June 21, 1938).

Rural Utilities Service Project _____.

The undersigned, being, the _____,¹

in a certain contract No. _____ dated _____, _____, between the undersigned

and East Kentucky Power Cooperative, Inc. _____,²

does hereby certify that in the performance of the said contract there have been used or furnished no unmanufactured articles, materials or supplies which have not been mined or produced in the United States³ or in any eligible country and no manufactured articles, materials or supplies which have not been manufactured in the United States or in any eligible country substantially all from articles, materials or supplies mined, produced or manufactured, as the case may be, in the United States or in any eligible country, except to the extent that compliance with the second paragraph of the Rural Electrification Act of 1938, being Title IV of the Work Relief and Public Works Appropriation Act of 1938 (Public Resolution No. 122, 75th Congress, approved June 21, 1938) has been waived by the Administrator of the Rural Utilities Service. For purposes of this certificate, an "eligible country" is any country that applies with respect to the United States an agreement ensuring reciprocal access for United States products and services and suppliers to the markets of that country, as determined by the United States Trade Representative.⁴

By _____

Date _____, 20____

¹ Insert "Contractor," "Subcontractor," "Seller," Or "Material Supplier," as the case may be.
² Insert the name of the RUS Borrower.
³ United States means United States, its territories and possessions.
⁴ A current list of eligible countries may be obtained by contacting RUS.

**East Kentucky Power Cooperative
Hardin County Landfill Gas-to-Energy Project
Pearl Hollow Landfill, Hardin County, Kentucky**

Bid Breakdown Sheet

Project Subcontractors or Self-Performance Listing

Civil/Site Work

- Excavation, Grading & Backfill
- Paving

Building Structure

- Concrete
- Masonry
- Steel, Roof Deck & Misc. Metals
- Roofing
- Painting and Finishes

Mechanical Installation

- HVAC
- Piping
- Plumbing

Electrical Installation

Other Trades (List)

Base Bid

Civil/Site Work

\$ _____

Building Structure and Finishes

\$ _____

Mechanical Installation

- HVAC
- Piping
- Plumbing

\$ _____

\$ _____

\$ _____

Electrical Installation

\$ _____

TOTAL BASE BID

\$ _____

Alternate Bid Items

Alternate A -- Price adder for furnishing and installing fans EF-4, SF-4, EF-5 and SF-5 \$ _____

Alternate B - Price deduct if condensate knockout and pump station are furnished and installed by others \$ _____

Voluntary Alternate #1 - _____ \$ _____

Voluntary Alternate #2 - _____ \$ _____

Voluntary Alternate #3 - _____ \$ _____

Unit Prices

Excavation -- Native Soil (per Cubic Yard) \$ _____

Excavation -- Rock (per Cubic Yard) \$ _____

Backfill & Compaction -- Cohesive Soil (per Cubic Yard) \$ _____

Backfill & Compaction -- Top Soil (per Cubic Yard) \$ _____

Backfill & Compaction -- Soil (per Cubic Yard) \$ _____

Backfill & Compaction -- Granular Fill A57 Stone (per Cubic Yard) \$ _____

Concrete -- Forming, Pouring and Finishing (per Cubic Yard) \$ _____

Start-up and Testing Assistance -- Mechanic or Pipe Fitter (per Straight Time Man-hour) \$ _____

Start-up and Testing Assistance -- Mechanic or Pipe Fitter (per Over Time Man-hour) \$ _____

Start-up and Testing Assistance -- Mechanic or Pipe Fitter (per Double Time Man-hour) \$ _____

Start-up and Testing Assistance -- Electrician (per Straight Time Man-hour) \$ _____

1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31 32 33 34 35 36 37 38 39 40 41 42 43 44 45 46 47 48 49 50 51 52 53 54 55 56 57 58 59 60 61 62 63 64 65 66 67 68 69 70 71 72 73 74 75 76 77 78 79 80 81 82 83 84 85 86 87 88 89 90 91 92 93 94 95 96 97 98 99 100

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SECTION 01010 - SUMMARY OF WORK

PART 1 GENERAL

1.01 PROJECT DESCRIPTION

- A. Work of this Contract comprises general construction of landfill gas recovery facility for East Kentucky Power Cooperative at a County owned landfill operated under contract by Rumpke, located at the Pearl Hollow Landfill, in Hardin County, Kentucky.
 - 1. This project is exempt from Kentucky sales tax. Questions regarding this policy should be directed to either Bennett Hastie or Misy Davisson at East Kentucky Power at 859.744.4812.

1.02 FORM OF SPECIFICATIONS

- A. Some Work described in these Specifications use systems approach to identify systems of structure or facility.
 - 1. System components are either specified in system specification or by reference to another section.
- B. Term "provide" or "provided" shall mean "furnish and install in-place."

1.03 CONTRACTS

- A. Perform Work under lump sum Contract with East Kentucky Power Cooperative (OWNER).

1.04 WORK BY OTHERS

- A. Work on Project which will be or has been executed prior to start of Work of this Contract and may be concurrent to this Contract, but which is excluded from this Contract, as follows.
 - 1. Landfill gas collection system construction for facility by Hardin County Fiscal Court (by LANDFILL).
 - 2. Site Preparation (by LANDFILL).
 - 3. Preliminary site Grading (by OWNER).
 - 4. Design and installation of 12.47kV interconnect line (by OWNER).

1.05 OWNER-FURNISHED PRODUCTS

- A. OWNER has placed orders with suppliers for specific equipment to be purchased by OWNER and installed by CONTRACTOR. See attached Equipment List for further information.
 - 1. Three Caterpillar, Reciprocating Engines with associated remote radiators and appurtenances.
 - 2. Electrical equipment including switchgear, motor control center, step-up transformer, step-down transformer, and fault interrupter.
 - 3. Skid mounted fuel gas compressor set with appurtenances.
 - 4. Gas meter run with appurtenances.
 - 5. Gas chromatograph and appurtenances.
- B. The LANDFILL has placed orders with suppliers for specific equipment to be purchased by LANDFILL and installed by others. This Contractor will interface with the electrical controls of this equipment. See attached Equipment List for further information.
 - 1. Landfill gas blower/flare system.
- C. OWNER'S Responsibilities:

EKPC – Pearl Hollow Landfill Gas-to-Electric Generation Plant

1. Arrange for and deliver necessary shop drawings and samples to CONTRACTOR.
2. Arrange and pay for product delivery to site in accordance with construction progress schedule.
3. Deliver supplier's bill of materials to CONTRACTOR.
4. Inspect deliveries jointly with CONTRACTOR.
5. Submit claims for transportation damage.
6. Arrange for replacement of damaged, defective or missing items.
7. Arrange for manufacturer's warranties, bonds, service and inspections as required.
8. Plan review fee.
9. Air Permit and Sewage Holding Tank permit.

D. CONTRACTOR'S Responsibilities:

1. Perform installation, testing, and start-up activities responsibilities identified in the attached specifications, drawings, and contract documents.
2. Alternate Bid Items -- Contractor is encouraged to provide alternate pricing for value engineering concepts which will reduce overall construction costs while keeping the design intent of the original plans and specifications. OWNER reserves the right to accept any or all value engineering concepts.
3. Obtain and pay for building permit, electrical permit and plumbing permit.

PART 2 PRODUCTS (Not Used)

PART 3 EXECUTION (Not Used)

END OF SECTION 01010

SECTION 01055 - ENGINEER'S STATUS DURING CONSTRUCTION

PART 1 GENERAL

1.01 CONSULTANT (ENGINEER)

- A. Project site work has been designed by JRA Architects and plant has been designed by LFG Technologies, Inc., hereinafter called ENGINEER, and who are to act as OWNER'S representative, assume duties and responsibilities and have rights and authority assigned to ENGINEER in Contract Documents in connection with completion of Work in accordance with Contract Documents, and shall not be extended without written consent of OWNER and ENGINEER.

1.02 VISITS TO SITE

- A. ENGINEER will make visits to the site at intervals appropriate to the various stages of construction as ENGINEER deems necessary in order to observe as an experienced and qualified design professional the progress that has been made and the quality of the various aspects of CONTRACTOR's executed Work. Based on information obtained during such visits and observations, ENGINEER will endeavor for the benefit of OWNER to determine, in general, if the Work is proceeding in accordance with the Contract Documents. ENGINEER will not be required to make exhaustive or continuous on-site inspections to check the quality or quantity of the Work. ENGINEER's efforts will be directed toward providing for OWNER a greater degree of confidence that the completed Work will conform generally to the Contract Documents. On the basis of such visits and on-site observations, ENGINEER will keep OWNER informed on the progress of the Work and will endeavor to guard OWNER against defective Work.

1.03 CLARIFICATIONS AND INTERPRETATIONS

- A. ENGINEER will promptly issue with reasonable promptness such written clarifications or interpretations of requirements of Contract Documents (in form of Drawings or otherwise) as ENGINEER may determine necessary, which shall be consistent with or reasonably inferable from Contract Documents. Such written clarifications and interpretations will be binding on OWNER and CONTRACTOR.

1.04 AUTHORIZED VARIATIONS IN WORK

- A. ENGINEER may authorize minor variations in Work from requirements of Contract Documents which do not involve adjustment in Contract Price or Contract Times and are compatible with the design concept of the completed project as a functioning whole as indicated by the Contract Documents. These may be accomplished by Field Order and will be binding on OWNER and also on CONTRACTOR who shall perform Work involved promptly. If OWNER or CONTRACTOR believes that Field Order justifies an adjustment in Contract Price or Contract Time and parties are unable to agree as to amount or extent thereof, OWNER or CONTRACTOR may make claim therefore as provided in the Contract.

1.05 REJECTING DEFECTIVE WORK

- A. ENGINEER and OWNER will be initial interpreter of requirements of Contract Documents and judge of acceptability of Work thereunder. ENGINEER will have authority to disapprove or reject Work which ENGINEER believes to be defective or that ENGINEER believes will not produce a completed Project that conforms to the Contract Documents or that will prejudice the integrity of the design concept of the completed Project as a functioning whole as indicated by the Contract Documents. ENGINEER will also have authority to require special inspection or testing of Work whether or not Work is fabricated, installed or completed.

1.06 SHOP DRAWINGS AND SAMPLES

- A. ENGINEER will review and approve Shop Drawings and Samples for OWNER.

1.07 SUBSTITUTIONS

- A. ENGINEER will review substitutions submitted by CONTRACTOR in accordance with Section 01630.

1.08 LIMITATIONS ON ENGINEER'S RESPONSIBILITIES

- A. Neither ENGINEER'S authority to act under this section or Contract Documents nor any decision made by ENGINEER in good faith either to exercise or not exercise such authority or responsibility or undertaking, exercise or performance of any authority or responsibility by ENGINEER shall create, impose, or give rise to any duty owed by ENGINEER to CONTRACTOR, any Subcontractor, any Supplier, or any other person or organization, or to any surety for employee or agent of any of them.
- B. ENGINEER will not supervise, direct, control or have authority over or be responsible for CONTRACTOR'S means, methods, techniques, sequences or procedures of construction, or safety precautions and programs incidental thereto, or for any failure of CONTRACTOR to comply with Laws and Regulations and ENGINEER is not responsible for CONTRACTOR'S failure to perform or furnish Work in accordance with Contract Documents.
- C. ENGINEER will not be responsible for acts or omissions of CONTRACTOR or of any Subcontractor, any Supplier, or of any other person or organization performing or furnishing any of Work.

PART 2 PRODUCTS (Not Used)

PART 3 EXECUTION (Not Used)

END OF SECTION 01055

SECTION 01155 - ON-SITE HEALTH AND SAFETY REQUIREMENTS

PART 1 GENERAL

1.01 SUMMARY

- A. Construction activities at landfills or at other waste disposal sites may place CONTRACTOR'S personnel, personnel of other Contractors hired by OWNER to perform Work at site, and public in potentially hazardous situations due to exposure to landfill refuse, leachate, and gases.
- B. CONTRACTOR is responsible for implementation and enforcement of safe Work practices including, but not limited to, personnel exposure to refuse, leachate, and gases; use of trenching, sheeting, and shoring; scaffolding; materials handling; operation of equipment; and safety of public during progress of Work.

1.02 QUALITY ASSURANCE

- A. Regulatory Requirements:
 - 1. CONTRACTOR shall plan for and ensure personnel comply with basic provisions of OSHA Safety and Health Standards (29 CFR 1910) and General Construction Standards (29 CFR 1926) as appropriate.
 - 2. Comply with applicable laws and regulations of any public body having jurisdiction for safety of persons or property.

1.03 OPERATIONS AND EQUIPMENT SAFETY

- A. CONTRACTOR is responsible for initiating, maintaining, and supervising safety precautions and programs in connection with Work. CONTRACTOR shall take necessary precautions for safety of employees on Project site and other persons and organizations who may be affected by Project.
- B. CONTRACTOR'S duties and responsibilities for safety in connection with Work shall continue until such time as Work is complete and ENGINEER has issued notice to CONTRACTOR that Work is complete.

1.04 HAZARDOUS MATERIALS HEALTH AND SAFETY

- A. CONTRACTOR is responsible for implementation and enforcement of health and safety requirements and shall take necessary precautions and provide protection for following.
 - 1. Personnel working on or visiting Project site, irrespective of employer.
 - 2. Work and materials or equipment to be incorporated in Work area on- or off-site.
 - 3. Other property at or adjacent to Project site.
 - 4. Public exposed to job related operations or potential release of toxic or hazardous materials.
- B. CONTRACTOR shall prepare site-specific health and safety plan (HASP). If CONTRACTOR does not have capability to prepare HASP, CONTRACTOR shall employ consultants with appropriate capability. CONTRACTOR is solely responsible for adequacy of HASP's preparation, monitoring, management, and enforcement. At minimum, CONTRACTOR'S HASP shall address following.
 - 1. Site description and history.
 - 2. Project activities and coordination with other Contractors.
 - 3. Hazard evaluation.
 - 4. On-site safety responsibilities.
 - 5. Work zones.
 - 6. Personnel training.
 - 7. Atmospheric monitoring.
 - 8. Personal protection, clothing, and equipment.

9. Emergency procedures.

- C. Reference is made to following reports/plans prepared by others for use on Project site. Copies of these reports/plans are not included with Bidding Documents, but may be examined or obtained as described in Official Notice to Bidders. These reports/plans are not part of Contract Documents, but provided to CONTRACTOR for information only.

- 1. Site OWNER'S Health and Safety Plan.

1.05 ENGINEER'S RESPONSIBILITIES

- A. When ENGINEER is required to be present on Project site to perform engineering services, ENGINEER will comply with CONTRACTOR'S safety plans, programs, and procedures.
- B. If ENGINEER determines CONTRACTOR'S safety plans, programs, and procedures do not provide adequate protection for ENGINEER, ENGINEER may direct its employees to leave Project site or implement additional safeguards for ENGINEER'S protection. If taken, these actions will be in furtherance of ENGINEER'S responsibility to its employees only, and ENGINEER will not assume responsibility for protection of any other persons affected by Work.
- C. If ENGINEER observes situations which appear to have potential for immediate and serious injury to persons, ENGINEER may warn persons who appear to be affected by such situations. Such warnings, if issued, shall be given based on general humanitarian concerns, and ENGINEER will not, by issuance of any such warning, assume any responsibility to issue future warnings or any general responsibility for protection of persons affected by Work.

1.06 SUBMITTALS

- A. Submit copies of HASP to OWNER and ENGINEER within 10 days after Notice to Proceed. Work on-site shall not proceed until HASP has been submitted to ENGINEER.
 - 1. Submittal of CONTRACTOR'S HASP to ENGINEER is to inform ENGINEER and OWNER so they can comply with HASP during performance of their on-site responsibilities as described in Contract Documents.
 - 2. Submittal of CONTRACTOR'S HASP shall neither impose on ENGINEER responsibility for adequacy of HASP nor relieve CONTRACTOR from full responsibility therefore.
 - 3. CONTRACTOR shall certify to OWNER weekly by notarized certificate that CONTRACTOR is in compliance with HASP.

PART 2 PRODUCTS (Not Used)

PART 3 EXECUTION (Not Used)

END OF SECTION 01155

SECTION 01200 - PROJECT MEETINGS

PART 1 GENERAL

1.01 SUMMARY

- A. OWNER will schedule and conduct pre-construction conference in accordance with this section.
- B. Schedule weekly progress meetings for complete construction schedule. CONTRACTOR shall:
 - 1. Prepare agenda for meetings.
 - 2. Distribute written notice of specially called meetings minimum of 1 working day(s) in advance of meeting date.
 - 3. Make physical arrangements for meetings.
 - 4. Preside at meetings.
 - 5. Record minutes; include significant proceedings and decisions.
 - 6. Prepare formal minutes and distribute within 3 working days after each meeting:
 - a. To meeting participants.
 - b. To parties affected by decisions made at meeting.
 - c. Furnish both ENGINEER and OWNER with 3 copies of minutes.
- C. Representatives of CONTRACTOR, Subcontractors, and Suppliers attending meetings shall be qualified and authorized to act on behalf of entity each represents.
- D. OWNER and ENGINEER may attend meetings.

1.02 PRECONSTRUCTION CONFERENCE

- A. Within 20 days after Effective Date of Contract, but before CONTRACTOR starts Work at site.
- B. Location: At location to be selected by OWNER.
- C. Attendance:
 - 1. CONTRACTOR's Project Manager.
 - 2. CONTRACTOR's Resident Superintendent.
 - 3. CONTRACTOR's "hands-on" person designated by CONTRACTOR to submit Shop Drawings to ENGINEER.
 - 4. Subcontractors' or suppliers' representatives CONTRACTOR may desire to invite or ENGINEER may request.
 - 5. ENGINEER's representatives.
 - 6. OWNER's representatives.
 - 7. Local utility representatives, if applicable.
- D. Suggested format includes, but not be limited to following.
 - 1. Project Safety.
 - 2. Presentation of preliminary progress schedule in accordance with Section 01340 and preliminary schedule of Shop Drawing and sample submissions in accordance with Section 01340 of Contract Documents.
 - 3. Check of required bonds and insurance policies prior to Notice to Proceed.
 - 4. Procedures for handling submittals such as substitutions and Shop Drawings.
 - 5. O&M submittal procedures.
 - 6. Direction of correspondence, and coordinating responsibility.
 - 7. Weekly and monthly progress meetings.

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8. Equal opportunity requirements.
9. Laboratory and field testing requirements.
10. Provisions for inventory of material stored on-site or off-site if off-site storage is authorized.
11. Schedule of values, application for progress payment, and progress payment procedures.
12. Change Order procedures.

PART 2 PRODUCTS (Not Used)

PART 3 EXECUTION (Not Used)

END OF SECTION 01200

SECTION 01340 - SUBMITTALS

PART 1 GENERAL

1.01 SUMMARY

- A. Section includes procedural and administrative requirements for work-related submittals including:
 - 1. Progress Schedules.
 - 2. Shop Drawings and Samples.
 - 3. Test results and certifications.
 - 4. Operation and maintenance (O&M) data.
 - 5. Other miscellaneous submittals required by Contract Documents.

1.02 DEFINITIONS

- A. Submittal for Review:
 - 1. Submittal is for ENGINEER'S review in accordance with requirements of Contract Documents.
- B. Submittal for Record:
 - 1. Submittal is for inclusion into OWNER'S records prior to Substantial Completion. Submittal will not be reviewed by ENGINEER.

1.03 PROGRESS SCHEDULES

- A. Prepare and submit with bid preliminary Progress Schedule containing minimum information required by Paragraph 18.1 of Standard General Conditions as part of Execution Plan.
- B. No Work shall be done between 9:00 p.m. and 6:00 a.m., nor on Sundays or legal holidays without written permission of OWNER. Emergency work may be done without prior permission.
- C. Night work may be established by CONTRACTOR as regular procedure with written permission of OWNER. Such permission may be revoked at any time by OWNER.
- D. Prepare schedules in form of horizontal bar chart.
 - 1. Provide separate horizontal bar for each operation.
 - 2. Horizontal Time Scale: Identify first Work day of each week.
 - 3. Scale and spacings to allow space for notations and future revisions.
 - 4. Arrange listings in order of start of each item of Work.
- E. Final Progress Schedule:
 - 1. Show complete sequence of construction by activity.
 - 2. Show dates for beginning and completion of each major element of construction and installation dates for major items. Elements shall include, but not be limited to, following.
 - a. Shop Drawing receipt from supplier, submittal to ENGINEER, review and return to supplier.
 - b. Material and equipment order, manufacturer, delivery.
 - c. Clearing.
 - d. Excavation and backfilling.

- e. Concrete Work.
- f. Equipment foundations.
- g. Masonry.
- h. Roofing.
- i. Painting.
- j. Electrical.
- k. Plumbing.
- l. Heating and ventilating.
- m. Other Subcontractor's items of Work.
- n. Final cleanup and restoration.
- o. Allowance for inclement weather.
- p. Connection to existing utilities.
- q. Miscellaneous items.
- r. Substantial Completion.

3. Show projected percentage of completion for each item as of first day of each month.

F. Schedule Revisions:

- 1. Include with status report required by Paragraph 18.2 of Standard General Conditions.

1.04 SHOP DRAWINGS AND SAMPLES

A. Submit Shop Drawings and Samples required in Specification sections in accordance with Paragraph 19.9 of Standard General Conditions.

- 1. Prepare and transmit each submittal sufficiently in advance of scheduled performance of Work and other applicable activities.
- 2. Designate in Progress Schedule, dates for submittal and receipt of reviewed Shop Drawings and Samples.

B. CONTRACTOR'S Responsibilities:

- 1. Review and approve prior to submittal.
- 2. Determine and verify following.
 - a. Field measurements and quantities.
 - b. Field construction criteria.
 - c. Catalog numbers and similar data.
 - d. Conformance with Specifications.
- 3. Coordinate each submittal with requirements of Work and Contract Documents.

C. Submittals shall contain following.

- 1. Date of submittal and dates of previous submittals.
- 2. Project title and number.
- 3. Contract identification.
- 4. Names of:
 - a. CONTRACTOR.
 - b. Vendor.
- 5. Identification of product, with identification numbers, and Drawing and Specification section numbers.
- 6. Field dimensions, clearly identified.

7. Identify details required on Drawings and in Specifications.
8. Show manufacturer and model number, give dimensions, and provide clearances.
9. Relation to adjacent or critical features of Work or materials.
10. Applicable standards, such as ASTM or Federal Specification numbers. Identification of deviations from Contract Documents.
11. 8-in. by 3-in. blank space for CONTRACTOR and ENGINEER stamps.
12. CONTRACTOR'S stamp, signed, certifying to review of submittal, verification of products, field measurement, field construction criteria, and coordination of information within submittal with requirements of Work and Contract Documents.

D. Resubmittal requirements shall include following.

1. Comply with submittal requirements.
2. Make corrections or changes in submittals required by ENGINEER. Resubmittals are required until approved.
3. Identification of revisions on resubmittals.
4. Identify on transmittal form that submittal is resubmission.
5. Shop Drawings:
 - a. Revise initial drawings or data and resubmit as specified for initial submittal.
 - b. Indicate changes which have been made other than those requested by ENGINEER.
6. Samples: Submit new as required for initial submittal.

E. Distribute reproductions of Shop Drawings and copies of Product Data which carry ENGINEER'S stamp of approval to following.

1. Job site file.
2. Record documents file.
3. Other affected Contractors.
4. Subcontractors.
5. Vendor.

F. ENGINEER'S responsibilities for review and approval are same as OWNER'S, as described in Paragraph 19.9 of Standard General Conditions.

1.05 TEST RESULTS

- A. Submit test results required in Specification sections.
- B. Submit upon completion of test or submittal of results from testing laboratory.

1.06 OPERATION AND MAINTENANCE (O&M) DATA

- A. Organize operations and maintenance information into suitable sets of manageable size, and bind into individual binders properly identified and indexed (thumb-tabbed).
 1. Include emergency instructions, spare parts listing, copies of warranties, wiring diagrams, recommended "turn-around" cycles, inspection procedures, Shop Drawings, and similar applicable information.
- B. Bind each manual of each set in heavy duty 2-in., 3-ring vinyl covered binder, include pocket folders for folded sheet information. Mark identification on front and spine of each binder.

1.07 MISCELLANEOUS

A. Guarantees, Warranties, Maintenance Agreements, and Bonds:

1. Refer to Specification sections for requirements. Submittal considered final when submittal is returned by ENGINEER, marked "Approved" or "Approved as Noted."
2. Furnish 2 executed copies.

B. Survey Data:

1. Refer to Specification sections for requirements on property surveys, building or structure condition surveys, field measurements, quantitative records of actual Work, damage surveys, photographs, and similar data. Copies will not be returned.

- a) Survey Copies: 2 copies.
- b) Final Property Survey: 10 copies.
- c) Condition Surveys: 2 copies.

C. Certifications:

1. Refer to Specification sections for requirement on submittal of certifications. Submit 6 copies. Certifications are submitted for review of conformance with specified requirements and information. Submittal considered final when returned by ENGINEER, marked "Approved."

D. Closeout Submittals:

1. Refer to Specification sections and Section 01700 for requirements on submittal of closeout information, materials, tools, and similar items.
 - a. Materials and Tools: Spare parts, extra and overrun stock, maintenance tools and devices, keys, and similar physical units to be submitted.
 - b. Operating and maintenance data.

E. General Distribution:

1. Unless required elsewhere, provide distribution of submittals to Subcontractors, vendors, governing authorities, and others as necessary for proper performance of Work.
2. Provide copies of submittals bearing ENGINEER'S action stamp to:
 - a. Job site file.
 - b. Record documents file.

1.08 ACTION ON SUBMITTALS

A. ENGINEER'S Action:

1. General:

- a. Except for submittals for record and similar purposes, where action and return on submittals is required or requested, ENGINEER will review each submittal, mark with appropriate action, and return. Where submittal must be held for coordination, ENGINEER will so advise CONTRACTOR without delay.
- b. ENGINEER will stamp each submittal with action stamp, appropriately marked with submittal action.

B. Action Stamp:

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1. Marking: Approved.
 - a. Final Unrestricted Release: When submittals are marked as "Approved," Work covered by submittal may proceed provided it complies with Contract Documents. Acceptance of Work depends on that compliance.
2. Marking: Approved With Noted Exceptions.
 - a. Final-But-Restricted Release: When submittals are marked as "Approved With Noted Exceptions," Work covered by submittal may proceed provided it complies with ENGINEER'S notations or corrections on submittal and Contract Documents. Acceptance of Work depends on that compliance. Resubmittal not required.
3. Marking: Not Approved.
 - a. Submittal Not Accepted: When submittals are marked as "Not Approved," do not proceed with Work covered by submittal. Work covered by submittal does not comply with Contract Documents.
 - b. Prepare new submittal for different material or equipment supplier or different product line or material of same supplier complying with Contract Documents.
4. Marking: Revise and Resubmit.
 - a. Returned for Resubmittal: When submittals are marked as "Revise and Resubmit," do not proceed with Work covered by submittal. Do not permit Work covered by submittals to be used at Project site or elsewhere where Work is in progress.
 - b. Revise submittal or prepare new submittal in accordance with ENGINEER'S notations. Resubmit submittal without delay. Repeat if required to obtain different action marking.

PART 2 PRODUCTS (Not Used)

PART 3 EXECUTION

3.01 SUBMITTAL REQUIREMENTS

- A. Provide complete copies of required submittals as follows.
 1. Final Progress Schedule:
 - a. 2 copies of initial schedule.
 - b. 2 copies of each revision.
 2. Shop Drawings: Larger than 11 in. by 17 in.; 6 prints. 11 in. by 17 in. and smaller: 3 prints.
 3. Test Results: 3 copies.
 4. Other Required Submittals:
 - a. 6 copies if required for review.
 - b. 3 copies if required for record.
- B. Deliver required copies of submittals to ENGINEER at ENGINEER'S office – Meade Electric Company, 9550 W. 55th Street, Suite A, McCook, Illinois 60525, Attention: Chuck Anderson.

END OF SECTION 01340



SECTION 01410 - TESTING LABORATORY SERVICES

PART 1 GENERAL

1.01 PERFORMANCE REQUIREMENTS

- A. Employ and pay for services of testing laboratory approved by OWNER to perform specified services and testing as described in Specifications. General Contractor is responsible for compaction testing and for concrete testing.
 - 1. Employment of laboratory shall, in no way, relieve CONTRACTOR'S obligations to perform Work of Contract.

- B. Related Requirements in Other Parts of Contract Documents:
 - 1. Inspections and testing required by laws, ordinances, rules, regulations, orders or approvals of public authorities, Conditions of Contract.

1.02 REFERENCES

- A. American Society for Testing and Materials (ASTM):
 - 1. E329-90 - Standard Practice for Use in the Evaluation of Testing and Inspection Agencies as Used in Construction.

1.03 QUALIFICATION OF LABORATORY

- A. Meet basic requirements of ASTM E329.
- B. Authorized to operate in state in which Project is located.
- C. Testing Equipment:
 - 1. Calibrated at reasonable intervals by devices of accuracy traceable to either:
 - a. National Bureau of Standards.
 - b. Accepted values of natural physical constants.

1.04 LABORATORY DUTIES

- A. Cooperate with ENGINEER and CONTRACTOR; provide qualified personnel to perform Work after due Notice to Proceed.
- B. Perform specified inspections, secure samples, and test materials.
 - 1. Comply with specified standards.
 - 2. Ascertain compliance of materials with Contract Documents.
- C. Promptly notify ENGINEER and CONTRACTOR of observed irregularities or deficiencies of Work, equipment or material.
- D. Promptly submit written report of each test and inspection; one copy each to ENGINEER, OWNER, material supplier, and CONTRACTOR, and one copy to record document file. Each report shall include following.
 - 1. Date issued.
 - 2. Project title and number.

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3. Testing laboratory name, address, and telephone number.
4. Name and signature of laboratory inspector.
5. Date and time of sampling or inspection.
6. Record of temperature and weather conditions if test performed in field.
7. Date of test.
8. Identification of product and Specification section.
9. Location of sample or test in Project.
10. Type of inspection or test.
11. Results of tests and compliance with Contract Documents.
12. Interpretation of test results, when requested by ENGINEER.

E. Perform additional tests as required by ENGINEER or CONTRACTOR.

1.05 LIMITATIONS OF AUTHORITY OF TESTING LABORATORY

A. Laboratory is not authorized to:

1. Release, revoke, alter or enlarge on requirements of Contract Documents.
2. Approve or accept any portion of Work.
3. Perform duties of CONTRACTOR.

1.06 CONTRACTOR'S RESPONSIBILITIES

A. Cooperate with laboratory personnel and provide access to Work.

B. Provide to laboratory preliminary design mix proposed to be used for concrete and other material mixes which require control by testing laboratory.

C. Furnish copies of product test reports.

D. Furnish incidental labor and facilities.

1. Provide access to Work to be tested.
2. Obtain and handle samples at Project site or at source of product to be tested.
3. Facilitate inspections and tests.
4. Store and cure test samples.

E. Notify laboratory and ENGINEER sufficiently in advance of operations to allow for laboratory assignment of personnel and scheduling of tests.

1. When tests or inspections cannot be performed after such notice, reimburse OWNER for laboratory personnel and travel expenses incurred due to CONTRACTOR'S negligence.

F. Make arrangements with laboratory and pay for additional samples and tests required for CONTRACTOR'S convenience.

G. Pay for services of testing laboratory to perform additional inspections, sampling, and testing required when initial tests indicate Work does not comply with Contract Documents.

PART 2 PRODUCTS (Not Used)

PART 3 EXECUTION (Not Used)

END OF SECTION 01410

SECTION 01500 - TEMPORARY CONSTRUCTION FACILITIES AND UTILITIES

PART 1 GENERAL

1.01 QUALITY ASSURANCE

- A. Items provided under this section shall be listed and labeled by UL or other Nationally Recognized Testing Laboratory (NRTL).
 - 1. Term "NRTL" shall be as defined in OSHA Regulation 1910.7.
 - 2. Terms "listed" and "labeled" shall be as defined in National Electrical Code, Article 100.
- B. Regulatory Requirements:
 - 1. National Electrical Code: Components and installation shall comply with NFPA 70.
- C. Comply with federal, state, and local codes and regulations, and with utility company requirements.

PART 2 PRODUCTS

2.01 TEMPORARY ELECTRICITY AND LIGHTING

- A. Contactor shall make arrangements with Nolin Electric to provide electric service to the site.
- B. Temporary lighting shall be sufficient to enable CONTRACTOR to complete Work and enable ENGINEER to observe Work as it is being performed. Illumination shall meet or exceed state code requirements.
- C. Provide and maintain lamps, wiring, switches, sockets, and similar equipment required for temporary lighting and small power tools.
- D. Pay for electrical energy consumed for construction purposes including operation of ventilating equipment for heating of buildings, and for testing and operating of equipment after permanent wiring has been installed, until final acceptance by ENGINEER or until occupancy by OWNER.

2.02 TEMPORARY HEAT

- A. General:
 - 1. Cold Weather Protection: Heating required before building is enclosed.
 - 2. Temporary Heat: Heating required after enclosure of building or structure. Building or structure shall be considered as enclosed when it is roofed and has such protection at doorways, windows, and other openings as will provide reasonable heat retentions.
 - 3. See requirements of Specifications for minimum temperature to be maintained for various trades and Work. Except as otherwise called for, temperature in all parts of new buildings shall be kept above 50°F. Maximum temperature in building shall be 75°F during heating season.
 - 4. Heat shall be warm air heat from oil or gas-fired portable unit heaters suitably vented to outside as required for protection of health and property.
 - 5. Open salamander type heaters are not permitted.
- B. Responsibilities:
 - 1. Provide temporary heat. Make arrangements and pay fuel costs, supervise, and maintain heating units.
 - 2. Provide adequate heat to all parts of buildings or structures.
 - 3. Pay for repairing or replacing any part of building or materials damaged because of lack of heat.

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4. Provide temporary throwaway filters if, at any time, permanent system is used for temporary ventilation.
5. Upon acceptance or occupancy of building(s) by OWNER, CONTRACTOR'S responsibility for temporary heating as specified shall be in accordance with OWNER'S USE Article, this section.

2.03 TEMPORARY TELEPHONE SERVICE

- A. Arrange with local telephone company to provide telephone service throughout duration of Work.
- B. Locate telephone in Project construction office for local calls.
- C. Provide answering machine on phone or cell phone for job superintendent.

2.04 WATER FOR CONSTRUCTION

- A. Contractor is responsible for providing water service to the site for all construction activities.

2.05 SANITARY FACILITIES

- A. Provide temporary sanitary toilet facilities conforming to state and local health and sanitation regulations, in sufficient number for use of CONTRACTOR'S and Subcontractor's employees. Temporary sanitary toilet facilities shall be rented from local source.
- B. Maintain in sanitary condition and properly supply with toilet paper.

2.06 TEMPORARY FIRE PROTECTION

- A. Provide and maintain in working order, minimum of one fire extinguisher, and such other fire protective equipment and devices as would be reasonably effective in extinguishing fires during early stages by personnel at Project site.

2.07 TEMPORARY SITE AND OTHER ROADS

- A. Construct and maintain temporary site roadways in snow free, ice free, driveable condition necessary to carry out construction operations.
- B. Maintain LANDFILL'S existing roads and public roads used during construction free from accumulations of dirt, mud and construction debris resulting from construction operations. Roads shall be considered "maintained" when material has been removed by a sweeper.

2.08 SECURITY

- A. Security will not be provided by OWNER or LANDFILL.
- B. CONTRACTOR shall be responsible for loss or injury to persons or property where Work is involved, and shall provide security and take precautionary measures to protect CONTRACTOR'S, LANDFILL'S, and OWNER'S interests.

2.09 TEMPORARY PARKING

- A. Parking is available adjacent to plant building site on owner's site lease.

2.10 TEMPORARY FENCING

- A. Provide temporary fencing sufficient to prevent trespass by CONTRACTOR'S employees and suppliers onto private property and by public onto construction site, if requested by LANDFILL or OWNER.

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- B. Materials shall be sufficiently durable to be effective for duration of construction period.

2.11 PROJECT IDENTIFICATION

- A. Do not place signs on-site except name of Contractor or respective Subcontractors on their field offices.

2.12 FIELD OFFICES AND BUILDINGS

- A. If required by CONTRACTOR, erect where designated by LANDFILL, and maintain in good condition, temporary field office, tool, and storage building(s) for CONTRACTOR'S use.

1. Tool storage building(s) shall be of ample size to provide space for tools and equipment.
2. Building(s) shall be neat and well constructed, surfaced with plywood, drop siding, masonite, or other similar material, well painted and void of advertisements.

- a. At Contractor's option, a mobile job trailer can be utilized in lieu of fabricated buildings.

2.13 OWNER'S USE

- A. Owner will assume utility costs upon interconnection of plant to distribution system.

PART 3 EXECUTION

3.01 GENERAL

- A. Comply with applicable requirements specified in Divisions 15 and 16.
- B. Maintain and operate systems to ensure continuous service.
- C. Modify and extend systems as Work progress requires.

3.02 REMOVAL

- A. Completely remove temporary materials, equipment, signs, and structures when no longer required.
- B. In unfinished areas, clean and repair damage caused by temporary installations or use of temporary facilities, restore drainage, and evenly grade, seed or plant as necessary to provide appearance equal to or better than original.
- C. In finished areas, restore existing or permanent facilities used for temporary services to specified, or original condition.

3.03 DAMAGE TO EXISTING PROPERTY

- A. CONTRACTOR is responsible for replacing or repairing damage to existing buildings, structures, sidewalks, roads, parking lot surfacing, and other existing assets.
 - B. CONTRACTOR shall have option of having OWNER contract for such Work and have cost deducted from Contract amount.
- END OF SECTION 01500**

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SECTION 01560 - PROTECTION OF ENVIRONMENT

PART 1 GENERAL

1.01 SUMMARY

- A. CONTRACTOR, in executing Work, shall maintain Work areas on- and off-site free from environmental pollution that would be in violation of federal, state or local regulations.

1.02 PROTECTION OF STORM SEWERS

- A. Prevent construction material, pavement, concrete, earth or other debris from entering site drainage facilities.

1.03 EROSION AND SEDIMENT CONTROL

- A. Comply with provisions of Section 02270.
- B. Apply appropriate soil conservation measures to protect project area and adjacent lands. These measures may include, but not be limited to, mulching, rapid growth vegetation, fabric mat, hay bales, filter barriers, sediment traps, and basins.

1.04 DISPOSAL OF EXCESS EXCAVATED AND OTHER WASTE MATERIALS

- A. Excess excavated material not required or suitable not for backfill and other waste material shall be disposed of in accordance with local regulatory requirements.
- B. Provide watertight conveyance for liquid, semi-liquid or saturated solids which tend to bleed during transport. Liquid loss from transported materials is not permitted, whether being delivered to construction site or hauled away for disposal. Fluid materials hauled for disposal must be specifically acceptable at selected disposal site.

1.05 PROTECTION OF AIR QUALITY

- A. Minimize air pollution by requiring use of properly operating combustion emission control devices on construction vehicles and equipment and encourage shutdown of motorized equipment not in use.
- B. Do not burn trash on construction site.
- C. If temporary heating devices are necessary for protection of Work, they shall not cause air pollution.

1.06 THAWING OF FROZEN GROUND

- A. Obtain permit from appropriate local authority before building fire to thaw frozen ground, and comply with conditions of permit.
- B. Use fuel which does not create air pollution or inconvenience public.
- C. ENGINEER reserves right to prohibit fires for thawing whenever deemed undesirable.

1.07 USE OF CHEMICALS

- A. Chemicals used during project construction or furnished for project operation, whether herbicide, pesticide, disinfectant, polymer, reactant or of other classification, shall be approved by U.S. EPA or U.S. Department of Agriculture or any other applicable regulatory agency.
- B. Use and disposal of chemicals and residues shall comply with manufacturer's instructions.

1.08 NOISE CONTROL

- A. Conduct operations to cause least annoyance to residents in vicinity of Work, and comply with applicable local ordinances.
- B. Equip compressors, hoists, and other apparatus with mechanical devices necessary to minimize noise and dust. Equip compressors with silencers on intake lines.
- C. Equip gasoline or oil-operated equipment with silencers or mufflers on intake and exhaust lines.
- D. Line storage bins and hoppers with material that will deaden sounds.
- E. Conduct operation of dumping rock and of carrying rock away in trucks so as to cause minimum of noise and dust.

1.09 DUST CONTROL

- A. Due to close geographic location of Project to other off-site facilities take special care in providing and maintaining temporary site roadways, OWNER'S existing roads, and public roads used during construction operations in clean, dust free condition.
- B. Comply with local environmental regulations for dust control. If CONTRACTOR'S dust control measures are considered inadequate by ENGINEER, ENGINEER may require CONTRACTOR to take additional dust control measures.

1.10 FUELS AND LUBRICANTS

- A. Comply with local, state and federal regulations concerning transportation and storage of fuels and lubricants.
- B. Fuel storage area and fuel equipment shall be approved by OWNER prior to installation. Submit containment provisions to OWNER for approval.
- C. Report spills or leaks from fueling equipment or construction equipment to OWNER and cleanup as required.
- D. OWNER may require CONTRACTOR to remove damaged or leaking equipment from Project site.

PART 2 PRODUCTS (Not Used)

PART 3 EXECUTION (Not Used)

END OF SECTION 01560

SECTION 01600 - MATERIAL AND EQUIPMENT

PART 1 GENERAL

1.01 SUMMARY

A. Section Includes:

1. Administrative and procedural requirements for selection of materials and equipment for use in Project.

1.02 MANUFACTURER'S INSTRUCTIONS

A. Installation of equipment and materials shall comply with manufacturer's instructions. Obtain and distribute printed copies of such instructions to parties involved in installation, including 2 copies to ENGINEER.

1. Maintain one set of complete instructions at job site during installation and until completion of Work.

B. Handle, store, install, connect, clean, condition, and adjust materials and equipment in accordance with manufacturer's written instructions and in conformance with Specifications.

1. If job conditions or specified requirements conflict with manufacturer's instructions, consult ENGINEER for further instructions.
2. Do not proceed with Work without written instructions.

1.03 DELIVERY, STORAGE, AND HANDLING

A. Deliver, store, and handle materials and equipment in accordance with manufacturers' recommendations, using means and methods that will prevent damage, deterioration, and loss.

1. Deliver materials and equipment in undamaged condition, in manufacturer's original containers or packaging, with identifying labels intact and legible.
2. Protect bright machined surfaces, such as shafts and valve faces, with heavy coat of grease prior to shipment.
3. Inspect materials and equipment upon delivery to ensure compliance with Contract Documents and to ensure materials and equipment are undamaged and properly protected.
4. Provide equipment and personnel to handle materials and equipment by methods recommended by manufacturer to prevent soiling or damage to materials or equipment, or packaging.

B. Storage:

1. On-site storage areas and buildings shall conform to requirements of Section 01500.
2. OWNER assumes no responsibility for materials and equipment stored in buildings or on-site or at another location approved in writing. CONTRACTOR assumes full responsibility for damage due to storage of materials and equipment.
3. Interior Storage:
 - a. Store materials and equipment in accordance with manufacturer's instructions, with seals and labels intact and legible.
 - b. Store materials and equipment subject to damage by elements in weathertight enclosures.
 - c. Maintain temperature and humidity within ranges required by manufacturer's instructions.

4. Exterior Storage:

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- a. Store fabricated materials and equipment above ground, on blocking or skids, to prevent soiling or staining. Cover materials and equipment subject to deterioration with impervious sheet coverings. Provide adequate ventilation to avoid condensation.
- b. Store loose granular materials in well-drained area on solid surfaces to prevent mixing with foreign matter.
- c. Materials such as pipe, reinforcing and structural steel, and equipment shall be stored on pallets or racks, off ground.

C. Inspection and Maintenance:

- 1. Arrange storage to provide easy access for inspection, maintenance, and inventory.
- 2. Make periodic inspections of stored materials and equipment to ensure materials and equipment maintained under specified conditions and free from damage or deterioration, and coverings in-place and in condition to provide required protection.
- 3. Perform maintenance on stored material and equipment in accordance with manufacturer's written instructions and in presence of OWNER or ENGINEER.
 - a. Notify ENGINEER 24 hrs before performance of maintenance.
 - b. Submit report of completed maintenance and condition of coverings to ENGINEER with each Application for Payment.
 - c. Failure to perform maintenance, to notify ENGINEER of intent to perform maintenance or to submit maintenance report may result in rejection of material or equipment.

PART 2 PRODUCTS

2.01 MATERIALS

A. Material and Equipment Incorporated into Work:

- 1. Conform to applicable specifications and standards.
- 2. Comply with size, make, type, and quality specified or as specifically approved by Shop Drawing, ENGINEER, or other submittal.

B. Manufactured and Fabricated Materials and Equipment:

- 1. Design, fabricate, and assemble in accordance with engineering and shop practices standard with industry.
- 2. Manufacture like parts of duplicate units to standard sizes and gauges, to be interchangeable.
- 3. Two or more items of same kind shall be identical, by same manufacturer.
- 4. Material and equipment shall be suitable for service conditions.
- 5. Equipment capabilities, sizes, and dimensions shown or specified shall be adhered to, unless variations are specifically approved, in writing, in accordance with Section 01630.
- 6. Equipment shall be adapted to best economy in power consumption and maintenance. Parts and components shall be proportioned for stresses occurring during continuous or intermittent operation, and for additional stresses occurring during fabrication or installation.
- 7. Design so working parts are readily accessible for inspection and repair, easily duplicated, and replaced.

C. Do not use material or equipment for purpose other than for which it is designed or specified

2.02 SPECIAL TOOLS AND LUBRICATING EQUIPMENT

- A. Furnish, in accordance with manufacturer's recommendations, special tools required for checking, testing, parts replacement, and maintenance. Special tools are those specially designed or adapted for use on parts of equipment, and not customarily and routinely carried by maintenance mechanics.

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- B. Deliver to OWNER when unit is placed in operation and after operating personnel have been properly instructed in operation, repair, and maintenance of equipment.
- C. Tools and lubricating equipment shall be of quality compatible to equipment manufacturer has furnished.

2.03 LUBRICATION

- A. Where lubrication is required for proper operation of equipment, incorporate necessary and proper provisions in equipment in accordance with manufacturer's requirements. Where possible, lubrication shall be automated and positive.
- B. Where oil is used, reservoir shall be of sufficient capacity to supply unit for 24-hr period.

2.04 GUARDS

- A. Provide guards to meet federal, state, and local requirements. Construct guards of expanded metal where possible.

PART 3 EXECUTION

3.01 GENERAL

- A. Comply with manufacturers' recommendations and instructions for installation of materials and equipment in applications indicated.

3.02 INSTALLATION AND INSTRUCTIONAL SERVICES

- A. General:
 - 1. This article covers on-site services of Supplier's representatives provided by CONTRACTOR during construction, equipment startup, and training of OWNER'S personnel for equipment or plant operation as specifically required in Specification section for equipment or system.
 - 2. Include and pay costs for Supplier's services, including, but not limited to, those specified.
 - 3. Work day is defined as an 8-hour period during a calendar day. Work day for purposes of this section does not include travel to or from the Project site.

3.03 PROTECTION

- A. Assume responsibility for protection of completed construction and repair and restore damage to completed Work equal to original condition.
- B. Wheeling of loads over finished floors, with or without plank protection, not permitted in anything except rubber-tired wheelbarrows, buggies, trucks or dollies. This applies to finished floors and exposed concrete floors, as well as those covered with composition tile or other applied surfacing.
- C. Where structural concrete is also finished surface, avoid marking or damaging surface.

END OF SECTION 01600

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SECTION 01630 - SUBSTITUTIONS OR VARIATIONS

PART 1 GENERAL

1.01 SUMMARY

A. Section Includes:

1. Administrative and procedural requirements for handling requests for substitutions or variations made after award of Contract.

1.02 SUBSTITUTIONS OR VARIATIONS

A. Conditions which are Substitutions or Variations:

1. Requests for changes in products, equipment, materials, and methods of construction required by Contract Documents proposed by CONTRACTOR are considered requests for "substitutions or variations":
 - a. "Or Equal": For material or equipment specified by naming one or more equipment manufacturers and "or equal", CONTRACTOR shall submit request for substitution for equipment or manufacturer not specifically named.
 - b. One or Two Manufacturers or Material: For equipment or material specified by naming only one or two manufacturers or material and followed by words "no substitution permitted," there is no option.
 - c. One or Two Manufacturers or Material: For equipment or material specified by naming only one or two manufacturers or material, CONTRACTOR shall submit request for substitution for equipment or manufacturer not specifically named.

B. Conditions which are not substitutions or variations:

1. Specified options of materials and equipment included in Contract Documents.
2. Revisions to Contract Documents requested by OWNER or ENGINEER.
3. CONTRACTOR'S determination of and compliance with governing regulations and orders issued by governing authorities.
4. Substitutions requested during Bidding, which have been accepted prior to Award of Contract are considered as included in Contract Documents and are not subject to requirements of this section for substitutions.

C. If specific means, method, technique, sequence or procedure of construction are required by Contract Documents, CONTRACTOR may furnish or utilize substitute means, method, sequence, technique or procedure of construction acceptable to ENGINEER if CONTRACTOR submits sufficient information to allow ENGINEER to determine substitute proposed is equivalent to that indicated or required by Contract Documents. Review procedure by ENGINEER will be similar to that provided for material or equipment as applied by ENGINEER and as may be supplemented in Specifications.

D. Requests for review of substitute or variation of items of material and equipment will not be accepted by ENGINEER from anyone other than CONTRACTOR.

1.03 APPLICATION

A. If CONTRACTOR requests to furnish or use substitute item of material or equipment or make variations to specified material and equipment, make written application to ENGINEER for acceptance certifying proposed substitute or variation will perform functions and achieve results in conformance with design concept of Project, be similar and of equal substance to specified, and be suited to same use as that specified.

B. Application shall be on "Contractor's Request for Consideration of Substitution" form included with this section.

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- C. Information included shall be considered by ENGINEER in evaluating proposed substitute or variation.
- D. ENGINEER may require CONTRACTOR to furnish at CONTRACTOR'S expense additional data concerning proposed substitute.

1.04 CHANGE IN CONTRACT DOCUMENTS

- A. When substitute item or variation of materials or equipment is proposed by CONTRACTOR and accepted by ENGINEER, and substitution or variation requires change in Contract Documents to adapt design to proposed substitute or variation, CONTRACTOR shall be responsible for costs involved to revise design and construction, including costs associated with Work of other Contractors due to such variance in design or space requirements.
 - 1. Redesign and drawing revisions will be prepared by ENGINEER and CONTRACTOR shall reimburse OWNER for charges of ENGINEER and ENGINEER'S Consultants for redesign and drawing preparation. Reimbursement of ENGINEER shall be based on ENGINEER'S direct labor costs, indirect labor costs, profit on the total labor, and any direct non-labor expenses such as travel or per diem.

1.05 REVIEW APPROVAL

- A. ENGINEER will be allowed reasonable time to evaluate each proposed substitute. Burden of proof of merit of proposed substitution is upon CONTRACTOR. ENGINEER will be sole judge of acceptability. No substitute shall be ordered, installed or utilized without ENGINEER'S prior written acceptance.

PART 2 PRODUCTS (Not Used)

PART 3 EXECUTION (Not Used)

END OF SECTION 01630

**CONTRACTOR'S APPLICATION FOR CONSIDERATION OF SUBSTITUTION
(Include With Submittals)**

NOTE: Provisions requiring submittal of this form are described in Specification Section 01630.

Date: _____

Contractor: _____

Project: _____

Project No. _____ Contract No.: (If Applicable) _____

We hereby apply for consideration of _____
(Proposed Substitute Manufacturer)

as a substitute manufacturer to the manufacturer(s) named in:

Specification Section: _____ Paragraph: _____ Subparagraph: _____

for the following reasons: _____

We certify that the proposed substitute will perform adequately the functions and achieve the results called for by the general design, be similar in substance to that specified and be suited to the same use as that specified and will not prejudice CONTRACTOR's achievement of Substantial Completion on time.

A. Physical Characteristics of Proposed Substitute (if applicable):

Operating Wt.: _____ lbs Height: _____ Width: _____ Depth: _____

Volts: _____ Hertz: _____ KW. or HP.: _____

B. Will acceptance of the proposed substitute by OWNER:

1. Require a change in the Drawings or Specifications: Yes _____ No _____

If yes, attach an explanation and detailed drawings.

2. Require payment of any license fee or royalty: Yes _____ No _____

If yes, attach an explanation.

3. Result in a change of contract time: Yes _____ No _____

If yes, attach an explanation.

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C. Variations of proposed substitute from specified material, equipment, methods or procedures include:

(If none, state none. Attach separate listing if more space needed.)

- 1. _____
- 2. _____
- 3. _____
- 4. _____

D. Service Source (Maintenance, Repair, and Replacement) availability:

(Start with location closest to site of Project.)

1. Name of Business: _____

Address: _____

City: _____ State: _____ Zip: _____

Years in Business: _____ Factory Authorized: Yes _____ No _____

Parts Stocked: Major Yes _____ No _____ Minor Yes _____ No _____

Field Service Personnel Available: Yes _____ No _____

2. Name of Business: _____

Address: _____

City: _____ State: _____ Zip: _____

Years in Business: _____ Factory Authorized: Yes _____ No _____

Parts Stocked: Major Yes _____ No _____ Minor Yes _____ No _____

Field Service Personnel Available: Yes _____ No _____

E. Identify costs, (direct or indirect), if any, associated with acceptance of this proposed substitute. (If none, state none.)

Is a Credit Offered: Yes \$ _____ None

NOTE: ENGINEER may require CONTRACTOR to furnish, at CONTRACTOR's expense, additional data about the proposed substitute or variation including but not limited to, an analysis by CONTRACTOR of the equivalency of the proposed substitute or variation to the named item.

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INSTALLATION LIST

(APPLICATIONS OF SIMILAR SIZE AND COMPLEXITY AS THIS PROJECT)

Location: _____ Telephone No.: _____

Date Installed: _____ Date Started Up: _____

Person to be Contacted: _____

Location: _____ Telephone No.: _____

Date Installed: _____ Date Started Up: _____

Person to be Contacted: _____

Location: _____ Telephone No.: _____

Date Installed: _____ Date Started Up: _____

Person to be Contacted: _____

Location: _____ Telephone No.: _____

Date Installed: _____ Date Started Up: _____

Person to be Contacted: _____

(Attach a supplementary experience sheet if more records available.)

CONTRACTOR'S SIGNATURE: _____

POSITION: _____

DATE: _____

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SECTION 01700 - CONTRACT CLOSEOUT

PART 1 GENERAL

1.01 REQUIREMENTS INCLUDED

- A. Comply with requirements stated in Conditions of Contract and in Specifications for administrative procedures in closing out Work.

1.02 SUBSTANTIAL COMPLETION

- A. Comply with Paragraph 4.1 of General Conditions.

1.03 FINAL INSPECTION

- A. When CONTRACTOR considers Work complete, submit written certification that:
 - 1. Contract Documents have been reviewed.
 - 2. Work has been inspected for compliance with Contract Documents.
 - 3. Work has been completed in accordance with Contract Documents.
 - 4. Equipment and systems have been tested in presence of OWNER'S representative and are operational.
 - 5. Work is completed and ready for final inspection.

- B. Comply with Paragraph 4.2 of General Conditions.

1.04 CONTRACTOR'S CLOSEOUT SUBMITTAL TO ENGINEER

- A. Evidence of compliance with requirements of governing authorities:

- 1. Certificate of Occupancy.
- 2. Certificate of Inspection:

- a. Mechanical.
- b. Electrical.

- B. Project Record Documents: Requirements of Paragraph 19.8 of General Conditions.

- C. Operating and Maintenance Data: Requirements of Section 01340.

- D. Instructions to OWNER'S Personnel: Requirements of Section 01600.

- E. Warranties and Bonds: Requirements of specification sections.

- F. Evidence of Payment and Release of Liens: Requirements of General Conditions.

1.05 FINAL ADJUSTMENT OF ACCOUNTS

- A. Submit a final statement of accounting to OWNER.

- B. Statement shall reflect all adjustments to Contract Amount:

- 1. Original Contract Amount.
- 2. Additions and Deductions Resulting From:

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- a. Previous Change Orders.
- b. Deductions for uncorrected work.
- c. Deductions for re-inspection payments.
- d. Other adjustments.

3. Total Contract Amount, as adjusted.
4. Previous payments.
5. Amounting remaining due.

- C. ENGINEER may prepare final Change Order, reflecting approved adjustments to Contract Amount which were not previously made by Change Orders.

1.06 FINAL APPLICATION FOR PAYMENT

- A. CONTRACTOR shall submit final application for Payment in accordance with procedures and requirements stated in Paragraph 4.3 of General Conditions.

END OF SECTION 01700

SECTION 01710 - CLEANING

PART 1 GENERAL

1.01 SUMMARY

- A. Execute cleaning during progress of Work and at completion of Work.
- B. Cleaning for Specific Products or Work: Specification section for that Work.

1.02 DISPOSAL REQUIREMENTS

- A. Conduct cleaning and disposal operations to comply with codes, ordinances, regulations, and anti-pollution laws.

PART 2 PRODUCTS

2.01 MATERIALS

- A. Use only those cleaning materials which will not create hazards to property and persons or damage surfaces of material to be cleaned.

PART 3 EXECUTION

3.01 DURING CONSTRUCTION

- A. Keep premises and adjacent properties free from accumulations of waste materials, rubbish, and other debris resulting from construction operations.
- B. Provide on-site containers for collection and removal of waste materials, debris, and rubbish in accordance with applicable regulations. On-site containers to be rented from LANDFILL.

3.02 FINAL CLEANING

- A. Remove grease, mastic, adhesives, dust, dirt, stains, fingerprints, labels, and other foreign materials from sight exposed interior and exterior surfaces.
- B. Wash and shine glazing and mirrors.
- C. Polish glossy surfaces to clear shine.
- D. Ventilating Systems:
 - 1. Clean permanent filters and replace disposable filters if units were operated during construction.
 - 2. Clean ducts, blowers, and coils if units were operated without filters during construction.
- E. Electrical Systems:
 - 1. Leave electrical rooms broom clean.
 - 2. Clean interior of panel cabinets, pull boxes, and other equipment enclosures.
 - 3. Clean lighting fixtures, lamps, and other electrical equipment soiled during installation.
 - 4. Touch-up paint or repaint damaged finishes on electrical items delivered to Project with finish coat of paint. ENGINEER will make final determination of items to be repainted or touched-up.

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- F. Broom clean interior floors and exterior paved surfaces; rake clean other surfaces of grounds.
- G. Clean out existing or new sewers to remove sediment and other materials that have entered during construction.
- H. Clean haul roads and streets used as haul roads during construction of accumulated material. Clean paved streets with water.
- I. Prior to final completion or OWNER occupancy, CONTRACTOR with ENGINEER and OWNER, shall conduct inspection of sight-exposed interior and exterior surfaces and work areas to verify Work and site is clean.

END OF SECTION 01710

SECTION 02100 - SITE PREPARATION

PART 1 GENERAL

1.01 SUMMARY

A. Section Includes

1. CONTRACTOR will remove and dispose of existing trees, bushes and vegetative growth within limits of rough site grading.
2. CONTRACTOR will strip existing topsoil, within limits of rough site grading.
3. CONTRACTOR will perform rough grading of site.

B. Section Includes:

1. CONTRACTOR will perform all earthwork, trenching, backfilling and compacting for utilities, installation of utilities (including potable water, plumbing, underground tanks and telephone), installation of chain link fencing and gates and final grading in accordance with the plans and specifications provided.

1.02 DEFINITIONS

- A. Surface Features: Existing surface features including signs, posts, fences, property markers, and other miscellaneous items.
- B. Utilities: Existing gas mains, water mains, power poles, electric lines and conduits, sewer pipe, other utilities, and appurtenances.

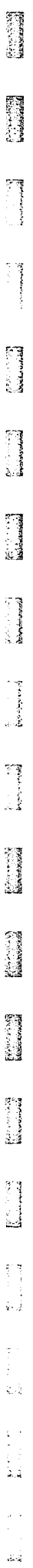
PART 2 PRODUCTS (Not Used)

PART 3 EXECUTION

3.01 PREPARATION

- A. Provide 3 working days notice, prior to beginning construction, to owners of existing utilities, structures, and surface features.
- B. Provide protection and support during construction for existing utilities, structures, and surface features.
- C. Relocate obstructions located within limits of construction if required.
- D. Remove and dispose of any additional existing trees, bushes and vegetative growth within limits of construction, but beyond limits of rough site grading, if required.
- E. Strip and temporarily stockpile any additional existing topsoil within limits of construction, if required.

END OF SECTION 02100



SECTION 02220 - STRUCTURE EXCAVATION AND BACKFILLING

PART 1 GENERAL

1.01 REFERENCES

A. American Society for Testing and Materials (ASTM):

1. C33-90 - Standard Specification for Concrete Aggregates.
2. D422 E1-63 - Standard Test Method for Particle Size Analysis of Soils.
3. D1556 E1-90 - Standard Test Method for Density and Unit Weight of Soil in Place by the Sand Cone Method.
4. D1557-91 - Test Method for Laboratory Compaction Characteristics of Soil Using Modified Effort (56,000 ft-lbs/ft (2,700 kN-m/m) Drop.)
5. D2167-84 - Standard Test Method for Density and Unit Weight of Soil in Place by the Rubber Balloon Method.
6. D2922-91 - Standard Test Methods for Density of Soil and Soil-Aggregate in Place by Nuclear Methods (Shallow Depth).
7. D2937-83 - Standard Test Method for Density of Soil in Place by the Drive-Cylinder Method.
8. D4318-84 - Standard Test Method for Liquid Limit, Plastic Limit, and Plasticity Index of Soils.

B. U.S. Army Corps of Engineers/U.S. Department of Interior:

1. Unified Soil Classification System.

1.02 DEFINITIONS

- A. Influence Zone Under Foundations, Pavements, or Sidewalks:** Area below foundation or pavement and sidewalk base bounded by 1 horizontal to 2 vertical slope extending outward from 1 ft beyond outer edges of foundation, pavement or sidewalk.
- B. Influence Zone Under Piping or Electrical Ducts:** Area below limits bounded by line 6 in. below pipe or duct and by 1 horizontal to 2 vertical slope extending outward from that line 1 ft beyond outer edge of pipe or duct.
- C. Unsuitable Material:** Topsoil, peat, organic soils, and materials containing slag, cinders, foundry sand, debris, and rubble or soil with less than required bearing capacity as determined by ENGINEER.

1.03 SUBMITTALS

A. Test Results:

1. Compaction testing results.
2. Additional soil testing as required herein.

B. Miscellaneous Submittals:

1. Test results to verify fill materials meet specifications.

C. Submit in accordance with Section 01340.

1.04 QUALITY ASSURANCE

A. Testing:

1. Testing shall be provided by CONTRACTOR in accordance with Section 01410 and this section.

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2. Degree of Compaction: ASTM D1557, Method D (Modified Proctor).
3. Moisture Content: Within 3% of optimum when placed and compacted, unless otherwise approved by ENGINEER.

1.05 PROJECT/SITE CONDITIONS

- A. Do not block or obstruct sidewalks, roads, streets or pavements with excavated materials, except as authorized by ENGINEER. Trim banks to minimize inconvenience to public travel or tenants occupying adjoining property.
- B. Sheeting, Shoring, and Bracing:
 1. Sheeting, shoring, and bracing shall not affect structural integrity of new construction, watertightness or waterproofing of new construction, and shall allow for sufficient clearances necessary to install associated appurtenances adjacent to new construction.
 2. Sheeting, shoring, and bracing, shall not penetrate walls or slabs of new construction unless approved by ENGINEER.

PART 2 PRODUCTS

2.01 STRUCTURAL FILL

- A. Well-graded sand, well-graded sand and gravel, crushed stone or other approved granular material, of 2-in. maximum size, free from organic and deleterious materials. Classified as GW, GP, SW, SP, GM or SM in Unified Soil Classification System.
- B. Plasticity Index: ASTM D4318, 6 or less.
- C. Maximum Fines: ASTM D422, 10% passing No. 200 sieve.
- D. Uniformity Coefficient: 5 or greater.

2.02 EARTH FILL

- A. Subsoil, excess topsoil or sand, free of wood, peat, cinders, organic and deleterious matter or other rubbish.

2.03 FREE-DRAINING FILL

- A. ASTM C33, Size No. 67.
- B. Washed crushed stone, maximum fines: ASTM D422, 1% passing No. 200 sieve.

2.04 SHEETING, SHORING, AND BRACING

- A. Type, design, detail, and installation of shoring, sheeting, and bracing shall be determined by and sole responsibility of CONTRACTOR.

2.05 SOURCE QUALITY CONTROL

- A. Testing:
 1. One sieve analysis, plasticity index, and uniformity coefficient for each source of structural fill.
 2. One sieve analysis for each source of free-draining fill.

PART 3 EXECUTION

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3.01 PREPARATION

- A. Notify corporations, companies, individuals or authorities owning above or below ground conduits, wires, pipes or other utilities running to property or encountered during excavating operations.
- B. Cap or remove and relocate services in accordance with instructions by owners of said services.
- C. Protect, support, and maintain conduits, wires, pipes or other utilities that are to remain in accordance with requirements of owners of said services.

3.02 EXAMINATION

- A. Proof-roll and examine surfaces to receive fill and subgrades within influence zone to determine existence of soft areas, areas loosened by frost action or softened by flooding, groundwater or weather or existence of unsuitable materials.
- B. Where sensitive soils are encountered, requirement for proof-rolling shall be waived, and CONTRACTOR shall perform alternate field testing to determine existence of soft areas.
- C. Method of alternative testing shall be approved by ENGINEER.

3.03 SHEETING, SHORING, AND BRACING

- A. Whenever necessary to prevent caving during excavation and to protect adjacent structures, property, workers, and public, excavations shall be adequately sheeted, shored, and braced.
- B. When sheeting, shoring, or bracing is required, drive/install to prevent soil from entering excavation below or through sheeting.
- C. Keep sheeting in place until structure is placed, tested, and backfilled.
- D. Remove sheeting, shoring, and bracing in manner not damaging structure or permitting voids within backfill.
- E. Fill settled areas remaining after sheeting has been pulled with sand or other approved material.

3.04 FILL USAGE

- A. Structural: Within influence zone of footings, foundation slabs and floor slabs and where noted. Within influence zone of pavements and sidewalks or under piping and electrical ducts. Bedding and cover material shall conform to requirements of Section 02221.
- B. Free-Draining: Where noted.
- C. Earth: Other areas not previously specified.

3.05 DEWATERING

- A. CONTRACTOR is responsible for choosing method of groundwater control.
- B. If CONTRACTOR chooses to use deep wells or well points, wells and well points shall be designed, installed, and operated to prevent removal of in-situ materials.
- C. Keep construction site free-draining.
- D. Keep excavations free from water.

- E. Maintain groundwater minimum of 12 in. below excavations.
- F. Remove soil disturbed by pressure or flow of groundwater and replace with free-draining material.
- G. Maintain dewatering systems to prevent uplifting of and damage to structures.
- H. Protect adjacent utilities, structures, and properties from damage resulting from dewatering operations.
- I. Dewatering wells shall be drilled, maintained, and abandoned in accordance with federal, state, and local ordinances.

3.06 SURFACE PREPARATION

- A. Fill settled areas where excavations or trenches were backfilled and holes made by demolition, tree removal, and site preparation work.
- B. Remove and replace or re-compact natural soils or compacted fill softened by frost, flooding, groundwater or weather.
- C. Remove frozen soils within influence zone and replace with structural fill.
- D. Do not excavate within influence zone of existing footings or foundations, without prior approval of ENGINEER.

3.07 EXCAVATION

- A. Excavate to elevations and dimensions necessary to complete construction. Method of excavation shall be consistent with soil types encountered and result in undisturbed foundation subgrade. Loosened soils shall be re-compact or removed and replaced with fill material meeting these Specifications.
- B. Do not excavate for other structures until scheduled for construction.
- C. Upon completion of excavation, notify ENGINEER before proceeding with further Work.
- D. Protect excavated areas from freezing.

3.08 PLACING FILL

- A. Notify ENGINEER before placing fill material.
- B. Do not use frozen material or place fill on frozen subgrade.
- C. Fill excavations below bottom of foundation or footing elevations within influence zone with concrete or structural fill.
- D. Do not backfill until new concrete is properly cured and required tests accepted.
- E. Do not operate power-operated earth moving or backfill equipment closer to foundation walls or other structures than distance equal to 1/2 height of backfill above top of footing.
- F. Place fill simultaneously on both sides of freestanding structures.
- G. Begin compaction of each layer at structure wall to minimize lateral forces against structure due to wedging action of soil.

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- H. **Lift Thickness and Compaction:** Place and compact fill materials in maximum lift thickness and to minimum densities listed.

Location	Lift Thickness (in.)	Modified Proctor (%)
Footing, Foundation Slab, or Floor Slab Influence Zones	8	95
Sidewalk, Paving, Piping, or Electrical Duct Influence Zones	12	90
Lawn and Landscaped Areas	12	80

- I. Stop backfill at specified or indicated grade to allow for placing of topsoil when required.
- J. Compact backfill in lawns and landscaped areas adjacent to structures to minimum density noted herein, but not more than 90% of maximum dry density as determined by ASTM D1557.

3.09 **FIELD QUALITY CONTROL**

- A. **Testing:**
1. One field density test for each 25 cu yds of structural fill, minimum one each lift.
 2. One field density test for each 500 cu yds of earth fill.
 3. **Method of Testing:** Determine in-place density of fill at maximum intervals specified herein in accordance with ASTM D1556, D2167, D2922 or D2937.

END OF SECTION 02220

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SECTION 02221 - TRENCHING, BACKFILLING, AND COMPACTING

PART 1 GENERAL

1.01 REFERENCES

- A. American Society for Testing and Materials (ASTM):
 - 1. ASTM D1557-78 - Standard Test Methods for Moisture Density Relations of Soils and Soil Aggregate Mixtures Using 10-lb (4.54-kg) Rammer and 18-in.(457-mm) Drop.

1.02 DEFINITIONS

- A. Influence Zone Around Piping or Electrical Ducts: Area below limits bounded by line 12 in. above pipe or duct and by 1 horizontal to 2 vertical slope extending outward from that line 1 ft beyond outer edge of pipe or duct.
- B. Influence Zone Under Foundations, Pavements or Sidewalks: Area below foundation or pavement and sidewalk base bounded by 1 horizontal to 2 vertical slope extending outward from 1 ft beyond outer edges of foundation, pavement or sidewalk.
- C. Unsuitable Material: Topsoil, peat, organic soils, and materials containing slag, cinders, foundry sand, debris, and rubble or soil with less than required bearing capacity as determined by ENGINEER.

1.03 QUALITY ASSURANCE

- A. Testing shall be performed by CONTRACTOR in accordance with Section 01410 and this section.

1.04 SUBMITTALS

- A. Test results.
- B. Submit in accordance with Section 01340.

1.05 PROJECT/SITE CONDITIONS

- A. Do not block or obstruct pavements with excavated materials, except as authorized by OWNER. Trim banks to minimize inconvenience to public travel.
- B. Trenching, backfilling, and compacting within influence zone of existing or future structures shall be in accordance with Section 02220.

PART 2 PRODUCTS

2.01 FINE AGGREGATE

- A. Granular material, consisting of durable particles ranging in size from fine to coarse in substantially uniform combination. Unwashed bank-run sand and crushed bank-run gravel will be considered.

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1. Gradation No. 1:

Sieve Size	% Passing by Weight
1 in.	100
No. 16	45 - 80
No. 200	2 - 10

2. Gradation No. 2:

Sieve Size	% Passing by Weight
1 in.	100
3/4 in.	85 - 100
3/8 in.	50 - 80
No. 4	35 - 65
No. 40	15 - 30
No. 200	5 - 15

2.02 COARSE AGGREGATE

- A. Crushed stone chips from crushing sound limestone or dolomite ledge rock or other rock materials of regional availability shall be hard, tough, and durable.

1. Gradation No. 2 (ASTM C33 - Size No. 67):

Sieve Size	% Passing by Weight
1 in.	100
3/4 in.	90 - 100
3/8 in.	20 - 55
No. 4.	0 - 10
No. 8	0 - 5

2. Gradation No. 4 (ASTM C33 - Size No. 3):

Sieve Size	% Passing by Weight
2-1/2 in.	100
2 in.	90 - 100
1-1/2 in.	35 - 70
1 in.	0 - 15
1/2 in.	0 - 5

2.03 FILL MATERIALS

- A. Conform to requirements of Section 02220.

PART 3 EXECUTION

3.01 EXAMINATION

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- A. Examine surfaces to receive fill to determine existence of areas loosened by frost action, softened by flooding or weather or of unsuitable materials.

3.02 PREPARATION

- A. Notify corporations, companies, individuals or authorities owning above or below ground conduits, wires, pipes or other utilities running to property or encountered during excavating operations.
- B. Cap or remove and relocate services in accordance with instructions by owners of services.
- C. Protect, support, and maintain conduits, wires, pipes, and other remaining utilities in accordance with requirements of owners of said services.
- D. Remove and replace or compact natural soils or compacted fills softened by frost, flooding or weather.
- E. Remove unsuitable material from within trenches.
- F. Stabilize trench bottom and replace unsuitable material with coarse aggregate gradation No. 4.
- G. Dewatering in accordance with Section 02220.
- H. Sheet piling, shoring and bracing in accordance with Section 02220.

3.03 EXCAVATION

- A. Excavate to elevations and dimensions necessary to complete construction.
- B. Trenching Tolerances:
 - 1. Excavate so pipes, ducts, and conduits can be laid straight at uniform grade, without sags or humps, between elevations shown on Drawings.
 - 2. Maximum width of excavation at top of pipe shall be outside dia of pipe plus 24 in. When stringers and sheathing required, width of trench may be increased to allow for their use, provided provisions for this excess width of trench are met.
 - 3. Where trench width for that portion of trench depth between trench bottom and outside top of pipe barrel, for any reason within CONTRACTOR'S control, exceeds specified limits, CONTRACTOR, at his expense, shall furnish pipe with strength adequate for actual trench width.
 - 4. Maximum width at surface of ground shall not exceed width of trench at top of pipe by more than 2 ft without permission of ENGINEER, unless specifically shown on Drawings.
 - 5. Minimum trench width shall be outside pipe dia plus 18 in.
 - 6. Excavate electrical duct or conduit trenches as required so top of concrete encasement or top of conduit shall be minimum of 24 in. below final grade or as shown on Drawings.
- C. Do not advance excavation of trenches more than 300 ft ahead of completed pipe installation.
- D. Do not excavate for holding tank until scheduled for construction.
- E. Upon completion of excavation, notify ENGINEER before proceeding with further Work.
- F. Excavation Across Roadways: Excavation, backfill, and surface replacement shall conform to requirements of maintaining authority. In no case shall surface replacement edges bear on less than 12 in. of undisturbed soil.

3.04 FILL USAGE

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A. Bedding Material:

1. Plastic and Copper Pipe, Electrical Conduit or Ducts: Fine aggregate gradation No. 1.
2. Other Piping:
 - a. Pipe 18 in. dia or less: Coarse aggregate gradation No. 2.

B. Cover Material:

1. Use bedding material as cover material.

C. Structural Fill: Within piping or electrical duct influence zone and within influence zone under pavements and within trenches under pavements.

D. Earth Fill: Other areas not previously specified.

3.05 PLACING FILL

A. Notify ENGINEER before placing fill material.

B. Do not use frozen material or place fill on frozen subgrade.

C. Bedding Material Limits:

1. Electric Ducts:
 - a. Hand grade and rake bottom of trench to establish uniform trench gradient not less than 4 in./100 ft.
 - b. Use bedding to bring grade to desired level.
2. Plastic and Copper Pipe, Electrical Conduit: Minimum of 6 in. below, to spring line and minimum of 9 in. each side.
3. Other Piping: Minimum of 6 in. below, minimum of 5 in. below bell of pipe, to spring line, and entire trench width.

D. Cover Material Limits:

1. Plastic and Copper Pipe, Electrical Conduit: Minimum 6 in. above and 9 in. each side.
2. Other Piping: Minimum 12 in. above and 12 in. each side.

E. Trench backfill beyond limits of cover material specified above shall be as specified elsewhere in this section.

F. Where pipes or electrical ducts cross, protect piping or ducts at higher elevation by backfilling trench within higher pipe or duct influence zone down to bedding of lower pipe or duct with structural fill or controlled fill.

G. Where pipes or electrical ducts leave structures, protect by backfilling pipe or duct influence zone down to undisturbed soil with structural or controlled fill.

H. Do not backfill until new concrete has properly cured, coatings approved, and required tests accepted.

I. Place fill simultaneously on both sides of free-standing structures.

J. Provide mechanical compaction for cohesive material and vibratory compaction for granular materials.

- K. **Lift Thickness and Compaction:** Place and compact fill materials in maximum lift thickness and to minimum densities listed below and in Section 02220.

Location	Lift Thickness (in.)	Modified Proctor (%)
Bedding Material or Cover Material	6	90

3.06 **FIELD QUALITY CONTROL**

A. **Testing:**

1. One sieve analysis and plasticity index for each source of structural fill, bedding material, and cover material. Additional analysis as required by OWNER verifying gradation and plasticity index.
2. One field density test for each 100 cu yds of structural (minimum one each lift), bedding or cover material.
3. One field density test for each 500 cu yd of earth fill.

B. **Degree of Compaction:** ASTM D1557, Method D (Modified Proctor).

3.07 **ADJUSTMENT AND CLEANING**

A. **Excess Material:**

1. OWNER has first right to excess excavated material suitable for backfilling or site grading not required at job site.
2. Remove material not required by OWNER from site.

B. **Stockpile material suitable for backfill where designated by ENGINEER.** Place no fill where trenches for sewers, water lines or other utilities will be located.

C. **Place material not suitable for backfilling or site grading and unsuitable materials in designated spoil areas and grade to drain.** If spoil areas are not provided on-site, remove excess material from site.

D. **Rough grade areas within grading lines and areas which are disturbed to achieve lines and grades indicated on Drawings, with allowance for thickness of pavements and topsoil.**

E. **Pavement Restoration:**

1. Where trenches cross existing pavement, remove pavement in accordance with detail included on Drawings prior to constructing replacement pavement.
2. Replacement Pavement: Conform to requirements of Section 02513.

END OF SECTION 02221

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SECTION 02511 - CRUSHED STONE PAVING

PART 1 GENERAL

1.01 QUALITY ASSURANCE

- A. Testing shall be provided by CONTRACTOR in accordance with Section 01410 and this section.
- B. Tolerances:
 - 1. Variation from true profile and section shall not be more than 3/8 in.
- C. Reference Standards:
 - 1. American Association of State Highway and Transportation Officials (AASHTO):
 - a. AASHTO T104-86 - Soundness of Aggregate by Use of Sodium Sulfate or Magnesium Sulfate.
 - b. AASHTO T99-86 - Moisture Density Relations of Soils Using 5.5-lb (2.5 KG) Rammer and 12-in. (305 MM) Drop.

PART 2 PRODUCTS

2.01 MATERIALS

- A. General:
 - 1. Aggregates: Hard, durable particles of crushed stone or crushed gravel and filler of natural sand, stone sand or other finely divided mineral matter.
 - 2. Remove oversize material encountered in deposits from which material is taken by screening or crushing to required sizes.
 - 3. Composite material shall be substantially free from vegetable matter, shale, and lumps or balls of clay and conform to pertinent gradation requirements.
 - 4. Aggregate, including blended filler, shall have liquid limit of not more than 25 and plasticity index of not more than 6.
 - 5. At least 45%, by count, of number of particles of aggregate retained on No. 4 sieve shall have at least one fractured face.
- B. Soundness:
 - 1. When fraction of aggregates retained on No. 4 sieve is subjected to 5 cycles of sodium sulfate soundness test (AASHTO T104), weighted loss shall not exceed 18% by weight, unless otherwise provided in Contract.
 - 2. In the event that quality of material or conditions of deposition in quarry or deposit are such as to make questionable continuous compliance with this soundness requirement, ENGINEER reserves right to require maintenance of stockpile or stockpiles of produced material sufficiently large as to preclude use of material which has not been previously approved by test.
- C. Filler for Blending:
 - 1. If filler, in addition to that naturally present in material, is necessary for meeting gradation requirements or for satisfactory binding of material, it shall be uniformly blended with material at screening plant.
 - 2. Material for such purpose shall be obtained from sources approved by ENGINEER, and shall be free from agglomerations or lumps, and shall contain not more than 15% of material retained on No. 4 sieve.
- D. Herbicide Treatment:

1. **Manufacturers:**
 - a. Allied Chemical Corporation.
 - b. Achem Products, Inc.
 - c. Ciba-Geigy Corporation.
 - d. Dow Chemical U.S.A.
 - e. E.I. DuPont De Nemours & Co., Inc.
 - f. FMC Corporation.
 - g. Thompson-Hayward Chemical Company.
 - h. U.S. Borax and Chemical Corporation.
2. Commercial chemical for weed control, registered by Environmental Protection Agency.
3. Provide granular, liquid, or wettable powder form.

E. **Gradation Requirements:** Aggregates shall be well-graded between limits specified and conform to following gradation requirements:

Sieve Size	Gradation No. 3	
	Crushed Stone	Crushed Gravel
1-1/2 in.	---	---
1 in.	100	100
3/4 in.	95 - 100	95 - 100
3/8 in.	50 - 90	50 - 90
No. 4	35 - 70	35 - 70
No. 10	15 - 55	20 - 55
No. 40	---	10 - 35
No. 200	5 - 15	8 - 15

PART 3 EXECUTION

3.01 PREPARATION

- A. Check subgrade as to soundness, outline, and contour. Prepare subgrade for areas to be paved by scraping down bumps and irregularities to obtain smooth, even bed.
- B. Remove and replace with crushed stone any area, including soft or spongy spots, where displacement in subgrade is more than 1/2 in. in front of rollers.
- C. Place materials when surface is dry and atmospheric temperature is above 40°F.

3.02 INSTALLATION

- A. Construct stone paving in two 4 in. layers (8-in. minimum total compacted thickness).
- B. **Herbicide Treatment:**
 1. Apply chemical weed control agent in compliance with manufacturer's recommended dosage and application instructions.
 2. Apply to compacted, dry subgrade prior to application of stone paving.

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- C. If compacted depth of course exceeds 6 in., or 8 in. in case of loose and subgrade, or when special compacting equipment is used, stone paving shall be constructed in two or more layers of approximate equal thickness.
- D. Maximum compacted thickness of any one layer shall not exceed 6 in. except when layer is placed upon loose sand subgrade which would otherwise displace or when vibrating or other approved types of special compacting equipment are used, compacted depth of single layer of stone paving may be increased to 8 in. upon approval of ENGINEER.
- E. Construct each layer as far in advance of succeeding layer as ENGINEER may direct. Work shall, in general, proceed from point on project nearest source of supply of aggregate in order that hauling equipment will travel over previously placed material, and hauling equipment shall be routed as uniformly as possible over portions of previously constructed courses or layers of stone paving.
- F. Deposit material on subgrade or previously placed layer in manner to minimize segregation and facilitate spreading to uniform layer of required dimensions.
- G. After layer or course has been placed and spread to required thickness, width, and contour, it shall be compacted.
 - 1. In event material is deficient in moisture content for readily attaining required density, it shall be moistened to degree necessary during compaction operations by means of equipment adapted for purpose.
 - 2. Unless otherwise required in Contract, each layer shall be compacted to extent required for standard compaction which contemplates consolidation of material to degree where no appreciable displacement laterally or longitudinally under compacting equipment occurs.
- H. Prior to and during compaction, operations material shall be shaped and maintained to proper dimensions and contour by means of blade graders or other suitable equipment. Keep surface of each layer true and smooth at all times.

3.03 FIELD QUALITY ASSURANCE

- A. Determination of optimum moisture content and maximum density shall be in accordance with AASHTO T99, Method C, with replacement of fraction of aggregate retained on 3/4 in. sieve with No. 4 to 3/4 in. material.
- B. Areas where proper compaction is not obtainable due to segregation of materials, excess fines or other deficiencies in aggregate, shall be reworked as necessary or material in them removed and replaced with material yielding required results.

END OF SECTION 02511

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SECTION 02741 - HOT-MIX ASPHALT PAVING

PART 1 - GENERAL

RELATED DOCUMENTS

Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 1 Specification Sections, apply to this Section.

SUMMARY

This Section includes the following:

Hot-mix asphalt paving.

Pavement-marking paint.

Related Sections include the following:

Division 2 Section "Earthwork" for aggregate subbase and base courses and for aggregate pavement shoulders.

DEFINITIONS

Hot-Mix Asphalt Paving Terminology: Refer to ASTM D 8 for definitions of terms.

DOT: Department of Transportation.

SYSTEM DESCRIPTION

Provide hot-mix asphalt paving according to materials, workmanship, and other applicable requirements of standard specifications of state or local DOT.

Compacted depth of hot-mix paving shall be 3". Compacted depth of sub-base material shall be 8".

SUBMITTALS

Product Data: For each type of product indicated. Include technical data and tested physical and performance properties.

Job-Mix Designs: Certification, by authorities having jurisdiction, of approval of each job mix proposed for the Work.

Qualification Data: For manufacturer.

Material Test Reports: For each paving material.

Material Certificates: For each paving material, signed by manufacturers.

QUALITY ASSURANCE

Manufacturer Qualifications: A qualified manufacturer.

Manufacturer shall be a paving-mix manufacturer registered with and approved by authorities having jurisdiction or the DOT of the state in which Project is located.

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Testing Agency Qualifications: Qualified according to ASTM D 3666 for testing indicated, as documented according to ASTM E 548.

Regulatory Requirements: Comply with local DOT for asphalt paving work.

Asphalt-Paving Publication: Comply with AI MS-22, "Construction of Hot Mix Asphalt Pavements," unless more stringent requirements are indicated.

DELIVERY, STORAGE, AND HANDLING

Deliver pavement-marking materials to Project site in original packages with seals unbroken and bearing manufacturer's labels containing brand name and type of material, date of manufacture, and directions for storage.

Store pavement-marking materials in a clean, dry, protected location within temperature range required by manufacturer. Protect stored materials from direct sunlight.

PROJECT CONDITIONS

Environmental Limitations: Do not apply asphalt materials if subgrade is wet or excessively damp or if the following conditions are not met:

Prime and Tack Coats: Minimum surface temperature of 60 deg F (15.5 deg C).

Slurry Coat: Comply with weather limitations of ASTM D 3910.

Asphalt Base Course: Minimum surface temperature of 40 deg F (4 deg C) and rising at time of placement.

Asphalt Surface Course: Minimum surface temperature of 60 deg F (15.5 deg C) at time of placement.

Pavement-Marking Paint: Proceed with pavement marking only on clean, dry surfaces and at a minimum ambient or surface temperature of 40 deg F (4 deg C) for oil-based materials, 50 deg F (10 deg C) for water-based materials, and not exceeding 95 deg F (35 deg C).

PART 2 - PRODUCTS

AGGREGATES

General: Use materials and gradations that have performed satisfactorily in previous installations.

Coarse Aggregate: ASTM D 692, sound; angular crushed stone, crushed gravel, or properly cured, crushed blast-furnace slag.

Fine Aggregate: ASTM D 1073 or AASHTO M 29, sharp-edged natural sand or sand prepared from stone, gravel, properly cured blast-furnace slag, or combinations thereof.

For hot-mix asphalt, limit natural sand to a maximum of 10 percent by weight of the total aggregate mass.

Mineral Filler: ASTM D 242 or AASHTO M 17, rock or slag dust, hydraulic cement, or other inert material.

ASPHALT MATERIALS

Asphalt Binder: AASHTO MP 1, PG 58-28.

Asphalt Cement: ASTM D 3381 for viscosity-graded material ASTM D 946 for penetration-graded material.

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Prime Coat: Asphalt emulsion prime complying with DOT requirements.

Water: Potable.

AUXILIARY MATERIALS

Herbicide: Commercial chemical for weed control, registered by the EPA. Provide in granular, liquid, or wettable powder form.

Pavement-Marking Paint: Latex, waterborne emulsion, lead and chromate free, ready mixed, complying with FS TT-P-1952, with drying time of less than 45 minutes.

Color: White

Wheel Stops: Precast, air-entrained concrete, 4500-psi minimum compressive strength, 5-5/8 inches high by 8 inches wide by 72 inches long.

Dowels: Galvanized steel, 5/8-inch diameter, 12-inch minimum length.

MIXES

Hot-Mix Asphalt: Dense, hot-laid, hot-mix asphalt plant mixes approved by authorities having jurisdiction; designed according to procedures in AI MS-2, "Mix Design Methods for Asphalt Concrete and Other Hot-Mix Types"; and complying with the following requirements:

Provide mixes with a history of satisfactory performance in geographical area where Project is located.

PART 3 - EXECUTION

EXAMINATION

Verify that subgrade is dry and in suitable condition to support paving and imposed loads.

Proof-roll subbase using heavy, pneumatic-tired rollers to locate areas that are unstable or that require further compaction.

Proceed with paving only after unsatisfactory conditions have been corrected.

SURFACE PREPARATION

General: Immediately before placing asphalt materials, remove loose and deleterious material from substrate surfaces. Ensure that prepared subgrade is ready to receive paving.

Sweep loose granular particles from surface of unbound-aggregate base course. Do not dislodge or disturb aggregate embedded in compacted surface of base course.

Herbicide Treatment: Apply herbicide according to manufacturer's recommended rates and written application instructions. Apply to dry, prepared subgrade or surface of compacted-aggregate base before applying paving materials.

HOT-MIX ASPHALT PLACING

Machine place hot-mix asphalt on prepared surface, spread uniformly, and strike off. Place asphalt mix by hand to areas inaccessible to equipment in a manner that prevents segregation of mix. Place each course to required grade, cross

section, and thickness when compacted.

Place hot-mix asphalt base course in number of lifts and thicknesses indicated.

Spread mix at minimum temperature of 250 deg F (121 deg C).

Begin applying mix along centerline of crown for crowned sections and on high side of one-way slopes, unless otherwise indicated.

Regulate paver machine speed to obtain smooth, continuous surface free of pulls and tears in asphalt-paving mat.

Place paving in consecutive strips not less than 10 feet (3 m) wide unless infill edge strips of a lesser width are required.

After first strip has been placed and rolled, place succeeding strips and extend rolling to overlap previous strips. Complete a section of asphalt base course before placing asphalt surface course.

Promptly correct surface irregularities in paving course behind paver. Use suitable hand tools to remove excess material forming high spots. Fill depressions with hot-mix asphalt to prevent segregation of mix; use suitable hand tools to smooth surface.

JOINTS

Construct joints to ensure a continuous bond between adjoining paving sections. Construct joints free of depressions with same texture and smoothness as other sections of hot-mix asphalt course.

Clean contact surfaces and apply tack coat to joints.

Offset longitudinal joints, in successive courses, a minimum of 6 inches (150 mm).

Offset transverse joints, in successive courses, a minimum of 24 inches (600 mm).

Construct transverse joints as described in AI MS-22, "Construction of Hot Mix Asphalt Pavements."

Compact joints as soon as hot-mix asphalt will bear roller weight without excessive displacement.

Compact asphalt at joints to a density within 2 percent of specified course density.

COMPACTION

General: Begin compaction as soon as placed hot-mix paving will bear roller weight without excessive displacement. Compact hot-mix paving with hot, hand tampers or vibratory-plate compactors in areas inaccessible to rollers.

Complete compaction before mix temperature cools to 185 deg F (85 deg C).

Breakdown Rolling: Complete breakdown or initial rolling immediately after rolling joints and outside edge. Examine surface immediately after breakdown rolling for indicated crown, grade, and smoothness. Correct laydown and rolling operations to comply with requirements.

Intermediate Rolling: Begin intermediate rolling immediately after breakdown rolling while hot-mix asphalt is still hot enough to achieve specified density. Continue rolling until hot-mix asphalt course has been uniformly compacted to the following density:

Average Density: 96 percent of reference laboratory density according to AASHTO T 245, but not less than 94 percent nor greater than 100 percent.

Average Density: 92 percent of reference maximum theoretical density according to ASTM D 2041, but not less than 90 percent nor greater than 96 percent.

Finish Rolling: Finish roll paved surfaces to remove roller marks while hot-mix asphalt is still warm.

Edge Shaping: While surface is being compacted and finished, trim edges of pavement to proper alignment. Bevel edges while asphalt is still hot; compact thoroughly.

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Repairs: Remove paved areas that are defective or contaminated with foreign materials and replace with fresh, hot-mix asphalt. Compact by rolling to specified density and surface smoothness.

Protection: After final rolling, do not permit vehicular traffic on pavement until it has cooled and hardened.

Erect barricades to protect paving from traffic until mixture has cooled enough not to become marked.

INSTALLATION TOLERANCES

Thickness: Compact each course to produce the thickness indicated within the following tolerances:

Base Course: Plus or minus ½ inch (13 mm).

Surface Course: Plus 1/4 inch (6 mm), no minus.

Surface Smoothness: Compact each course to produce a surface smoothness within the following tolerances as determined by using a 10-foot (3-m) straightedge applied transversely or longitudinally to paved areas:

Base Course: 1/4 inch

Surface Course: 1/8 inch

PAVEMENT MARKING

Do not apply pavement-marking paint until layout, colors, and placement have been verified with Engineer.

Allow paving to age for 30 days before starting pavement marking.

Sweep and clean surface to eliminate loose material and dust.

Apply paint with mechanical equipment to produce pavement markings, of dimensions indicated, with uniform, straight edges. Apply at manufacturer's recommended rates to provide a minimum wet film thickness of 15 mils (0.4 mm).

Broadcast glass spheres uniformly into wet pavement markings at a rate of 6 lb/gal. (0.72 kg/L).

WHEEL STOPS

Securely attach wheel stops into pavement with not less than two galvanized steel dowels embedded at one-quarter to one-third points. Securely install dowels into pavement and bond to wheel stop. Recess head of dowel beneath top of wheel stop.

FIELD QUALITY CONTROL

Testing Agency: Owner will engage a qualified independent testing and inspecting agency to perform field tests and inspections and to prepare test reports.

Testing agency will conduct and interpret tests and state in each report whether tested Work complies with or deviates from specified requirements.

Additional testing and inspecting, at Contractor's expense, will be performed to determine compliance of replaced or additional work with specified requirements.

Thickness: In-place compacted thickness of hot-mix asphalt courses will be determined according to ASTM D 3549.

Surface Smoothness: Finished surface of each hot-mix asphalt course will be tested for compliance with smoothness tolerances.

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In-Place Density: Testing agency will take samples of uncompacted paving mixtures and compacted pavement according to ASTM D 979 or AASHTO T 168.

Reference maximum theoretical density will be determined by averaging results from four samples of hot-mix asphalt-paving mixture delivered daily to site, prepared according to ASTM D 2041, and compacted according to job-mix specifications.

In-place density of compacted pavement will be determined by testing core samples according to ASTM D 1188 or ASTM D 2726.

One core sample will be taken for every 1000 sq. yd. (836 sq. m) or less of installed pavement, with no fewer than 3 cores taken.

Field density of in-place compacted pavement may also be determined by nuclear method according to ASTM D 2950 and correlated with ASTM D 1188 or ASTM D 2726.

Remove and replace or install additional hot-mix asphalt where test results or measurements indicate that it does not comply with specified requirements.

DISPOSAL

Except for material indicated to be recycled, remove excavated materials from Project site and legally dispose of them in an EPA-approved landfill.

Do not allow excavated materials to accumulate on-site.

END OF SECTION 02741

SECTION 02920 - LAWNS AND GRASSES

PART 1 - GENERAL

RELATED DOCUMENTS

Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 1 Specification Sections, apply to this Section.

SUMMARY

Section Includes:

Seeding.

Related Sections:

Division 2 Section "Earthwork" for excavation, filling and backfilling, and rough grading.

DEFINITIONS

Finish Grade: Elevation of finished surface of planting soil.

Manufactured Soil: Soil produced off-site by homogeneously blending mineral soils or sand with stabilized organic soil amendments to produce topsoil or planting soil.

Planting Soil: Native or imported topsoil, manufactured topsoil, or surface soil modified to become topsoil; mixed with soil amendments.

Subgrade: Surface or elevation of subsoil remaining after completing excavation, or top surface of a fill or backfill immediately beneath planting soil.

Subsoil: All soil beneath the topsoil layer of the soil profile, and typified by the lack of organic matter and soil organisms.

SUBMITTALS

Product Data: For each type of product indicated.

Certification of Grass Seed: From seed vendor for each grass-seed monostand or mixture stating the botanical and common name and percentage by weight of each species and variety, and percentage of purity, germination, and weed seed. Include the year of production and date of packaging.

Qualification Data: For qualified landscape Installer.

Planting Schedule: Indicating anticipated planting dates for each type of planting.

Maintenance Instructions: Recommended procedures to be established by Owner for maintenance of lawns during a calendar year. Submit before expiration of required initial maintenance periods.

QUALITY ASSURANCE

Installer Qualifications: A qualified landscape installer whose work has resulted in successful lawn establishment.

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DELIVERY, STORAGE, AND HANDLING

Seed: Deliver seed in original sealed, labeled, and undamaged containers.

PART 2 - PRODUCTS

SEED

Grass Seed: Fresh, clean, dry, new-crop seed complying with AOSA's "Journal of Seed Technology; Rules for Testing Seeds" for purity and germination tolerances.

Seed Species: State-certified seed of grass species, as follows:

Seed Species: Seed of grass species as follows, with not less than 95 percent germination, not less than 85 percent pure seed, and not more than 0.5 percent weed seed:

Sun and Partial Shade: Proportioned by weight as follows:

- 30 percent Kentucky bluegrass (*Poa pratensis*).
- 50 percent chewings red fescue (*Festuca rubra* variety).
- 10 percent perennial ryegrass (*Lolium perenne*).
- 10 percent redtop (*Agrostis alba*).

TOPSOIL

Topsoil: ASTM D 5268, pH range of 5.5 to 7, a minimum of 4 percent organic material content; free of stones 1 inch (25 mm) or larger in any dimension and other extraneous materials harmful to plant growth.

Topsoil Source: Reuse surface soil stockpiled on-site. Verify suitability of stockpiled surface soil to produce topsoil. Clean surface soil of roots, plants, sod, stones, clay lumps, and other extraneous materials harmful to plant growth.

Supplement with imported or manufactured topsoil from off-site sources when quantities are insufficient. Obtain topsoil displaced from naturally well-drained construction or mining sites where topsoil occurs at least 4 inches (100 mm) deep; do not obtain from agricultural land, bogs or marshes.

Topsoil Source: Amend existing in-place surface soil to produce topsoil. Verify suitability of surface soil to produce topsoil. Clean surface soil of roots, plants, sod, stones, clay lumps, and other extraneous materials harmful to plant growth.

Surface soil may be supplemented with imported or manufactured topsoil from off-site sources. Obtain topsoil displaced from naturally well-drained construction or mining sites where topsoil occurs at least 4 inches (100 mm) deep; do not obtain from agricultural land, bogs or marshes.

INORGANIC SOIL AMENDMENTS

Lime: ASTM C 602, agricultural limestone containing a minimum of 80 percent calcium carbonate equivalent and as follows:

Class: T, with a minimum of 99 percent passing through No. 8 (2.36-mm) sieve and a minimum of 75 percent passing through No. 60 (0.25-mm) sieve.

Class: O, with a minimum of 95 percent passing through No. 8 (2.36-mm) sieve and a minimum of 55 percent passing through No. 60 (0.25-mm) sieve.

Provide lime in form of dolomitic limestone.

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Sulfur: Granular, biodegradable, containing a minimum of 90 percent sulfur, with a minimum of 99 percent passing through No. 6 (3.35-mm) sieve and a maximum of 10 percent passing through No. 40 (0.425-mm) sieve.

Iron Sulfate: Granulated ferrous sulfate containing a minimum of 20 percent iron and 10 percent sulfur.

Aluminum Sulfate: Commercial grade, unadulterated.

Perlite: Horticultural perlite, soil amendment grade.

Agricultural Gypsum: Finely ground, containing a minimum of 90 percent calcium sulfate.

Sand: Clean, washed, natural or manufactured, free of toxic materials.

ORGANIC SOIL AMENDMENTS

Compost: Well-composted, stable, and weed-free organic matter, pH range of 5.5 to 8; moisture content 35 to 55 percent by weight; 100 percent passing through 3/4-inch sieve; soluble salt content of 5 to 10 decisiemens/m; not exceeding 0.5 percent inert contaminants and free of substances toxic to plantings; and as follows:

Organic Matter Content: 50 to 60 percent of dry weight.

Feedstock: Agricultural, food, or industrial residuals; biosolids; yard trimmings; or source-separated or compostable mixed solid waste.

Peat: Finely divided or granular texture, with a pH range of 6 to 7.5, containing partially decomposed moss peat, native peat, or reed-sedge peat and having a water-absorbing capacity of 1100 to 2000 percent.

Manure: Well-rotted, unleached, stable or cattle manure containing not more than 25 percent by volume of straw, sawdust, or other bedding materials; free of toxic substances, stones, sticks, soil, weed seed, and material harmful to plant growth.

PLANTING ACCESSORIES

Selective Herbicides: EPA registered and approved, of type recommended by manufacturer for application.

FERTILIZER

Bonemeal: Commercial, raw or steamed, finely ground; a minimum of 1 percent nitrogen and 10 percent phosphoric acid.

Superphosphate: Commercial, phosphate mixture, soluble; a minimum of 20 percent available phosphoric acid.

Commercial Fertilizer: Commercial-grade complete fertilizer of neutral character, consisting of fast- and slow-release nitrogen, 50 percent derived from natural organic sources of urea formaldehyde, phosphorous, and potassium in the following composition:

Composition: 1 lb/1000 sq. ft. (0.45 kg/92.9 sq. m) of actual nitrogen, 4 percent phosphorous, and 2 percent potassium, by weight.

Slow-Release Fertilizer: Granular or pelleted fertilizer consisting of 50 percent water-insoluble nitrogen, phosphorus, and potassium in the following composition:

Composition: 20 percent nitrogen, 10 percent phosphorous, and 10 percent potassium, by weight.

MULCHES

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Straw Mulch: Provide air-dry, clean, mildew- and seed-free, salt hay or threshed straw of wheat, rye, oats, or barley.

PART 3 - EXECUTION

EXAMINATION

Examine areas to receive lawns and grass for compliance with requirements and other conditions affecting performance.

Proceed with installation only after unsatisfactory conditions have been corrected.

PREPARATION

Protect structures, utilities, sidewalks, pavements, and other facilities, trees, shrubs, and plantings from damage caused by planting operations.

Protect adjacent and adjoining areas from hydroseeding and hydromulching overspray.
Protect grade stakes set by others until directed to remove them.

Provide erosion-control measures to prevent erosion or displacement of soils and discharge of soil-bearing water runoff or airborne dust to adjacent properties and walkways.

LAWN PREPARATION

Limit lawn subgrade preparation to areas to be planted.

Newly Graded Subgrades: Loosen subgrade to a minimum depth of 6 inches. Remove stones larger than 1 inch in any dimension and sticks, roots, rubbish, and other extraneous matter and legally dispose of them off Owner's property.

Apply fertilizer directly to subgrade before loosening.
Thoroughly blend planting soil mix off-site before spreading or spread topsoil, apply soil amendments and fertilizer on surface, and thoroughly blend planting soil mix.

Delay mixing fertilizer with planting soil if planting will not proceed within a few days.
Mix lime with dry soil before mixing fertilizer.

Spread planting soil mix to a depth of 4 inches but not less than required to meet finish grades after light rolling and natural settlement. Do not spread if planting soil or subgrade is frozen, muddy, or excessively wet.

Spread approximately 1/2 the thickness of planting soil mix over loosened subgrade. Mix thoroughly into top 2 inches of subgrade. Spread remainder of planting soil mix.

Unchanged Subgrades: If lawns are to be planted in areas unaltered or undisturbed by excavating, grading, or surface-soil stripping operations, prepare surface soil as follows:

Remove existing grass, vegetation, and turf. Do not mix into surface soil.
Loosen surface soil to a depth of at least 6 inches. Apply soil amendments and fertilizers according to planting soil mix proportions and mix thoroughly into top 4 inches of soil. Till soil to a homogeneous mixture of fine texture.

Apply fertilizer directly to surface soil before loosening.

Remove stones larger than 1 inch in any dimension and sticks, roots, trash, and other extraneous matter.

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Legally dispose of waste material, including grass, vegetation, and turf, off Owner's property.

Finish Grading: Grade planting areas to a smooth, uniform surface plane with loose, uniformly fine texture. Grade to within plus or minus 1/2 inch (13 mm) of finish elevation. Roll and rake, remove ridges, and fill depressions to meet finish grades. Limit finish grading to areas that can be planted in the immediate future.

Moisten prepared lawn areas before planting if soil is dry. Water thoroughly and allow surface to dry before planting. Do not create muddy soil.

Before planting, restore areas if eroded or otherwise disturbed after finish grading.

SEEDING

Sow seed with spreader or seeding machine. Do not broadcast or drop seed when wind velocity exceeds 5 mph (8 km/h). Evenly distribute seed by sowing equal quantities in two directions at right angles to each other.

Do not use wet seed or seed that is moldy or otherwise damaged.

Do not seed against existing trees. Limit extent of seed to outside edge of planting saucer.

Sow seed at a total rate as recommended by supplier of seed.

Rake seed lightly into top 1/8 inch (3 mm) of soil, roll lightly, and water with fine spray.

Protect seeded areas with slopes exceeding 1:4 with erosion-control blankets and 1:6 with erosion-control fiber mesh installed and stapled according to manufacturer's written instructions.

Protect seeded areas with erosion-control mats where shown, installed and anchored according to manufacturer's written instructions.

Protect seeded areas with slopes not exceeding 1:6 by spreading straw mulch. Spread uniformly to form a continuous blanket 1-1/2 inches in loose depth over seeded areas. Spread by hand, blower, or other suitable equipment.

HYDROSEEDING

Hydroseeding: Mix specified seed, fertilizer, and fiber mulch in water, using equipment specifically designed for hydroseed application. Continue mixing until uniformly blended into homogeneous slurry suitable for hydraulic application.

Mix slurry with fiber-mulch manufacturer's recommended tackifier.

Apply slurry uniformly to all areas to be seeded in a one-step process. Apply slurry at a rate so that mulch component is deposited at not less than 1500-lb/acre dry weight, and seed component is deposited at not less than the specified seed-sowing rate.

LAWN RENOVATION

Renovate existing lawn damaged by Contractor's operations, such as storage of materials or equipment and movement of vehicles.

Reestablish lawn where settlement or washouts occur or where minor regrading is required.

Provide new topsoil as required.

Remove sod and vegetation from diseased or unsatisfactory lawn areas; do not bury in soil.

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Remove topsoil containing foreign materials resulting from Contractor's operations, including oil drippings, fuel spills, stone, gravel, and other construction materials, and replace with new topsoil.

Mow, dethatch, core aerate, and rake existing lawn.

Remove weeds before seeding. Where weeds are extensive, apply selective herbicides as required. Do not use pre-emergence herbicides.

Remove waste and foreign materials, including weeds, soil cores, grass, vegetation, and turf, and legally dispose of them off Owner's property.

Till stripped, bare, and compacted areas thoroughly to a soil depth of 6 inches (150 mm).

Apply soil amendments and initial fertilizers required for establishing new lawns and mix thoroughly into top 4 inches (100 mm) of existing soil. Provide new planting soil to fill low spots and meet finish grades.

Apply seed and protect with straw mulch as required for new lawns.

Water newly planted areas and keep moist until new lawn is established.

LAWN MAINTENANCE

Maintain and establish lawn by watering, fertilizing, weeding, mowing, trimming, replanting, and other operations. Roll, regrade, and replant bare or eroded areas and remulch to produce a uniformly smooth lawn. Provide materials and installation the same as those used in the original installation.

In areas where mulch has been disturbed by wind or maintenance operations, add new mulch and anchor as required to prevent displacement.

Watering: Provide and maintain temporary piping, hoses, and lawn-watering equipment to convey water from sources and to keep lawn uniformly moist to a depth of 4 inches (100 mm).

Schedule watering to prevent wilting, puddling, erosion, and displacement of seed or mulch. Lay out temporary watering system to avoid walking over muddy or newly planted areas.

Water lawn with fine spray at a minimum rate of 1 inch (25 mm) per week unless rainfall precipitation is adequate.

Mow lawn as soon as top growth is tall enough to cut. Repeat mowing to maintain specified height without cutting more than 1/3 of grass height. Remove no more than 1/3 of grass-leaf growth in initial or subsequent mowings. Do not delay mowing until grass blades bend over and become matted. Do not mow when grass is wet. Schedule initial and subsequent mowings to maintain the following grass height:

Mow grass to a height of 1-1/2 to 2 inches (38 to 50 mm).

SATISFACTORY LAWNS

Lawn installations shall meet the following criteria as determined by Engineer:

Satisfactory Seeded Lawn: At end of maintenance period, a healthy, uniform, close stand of grass has been established, free of weeds and surface irregularities, with coverage exceeding 90 percent over any 10 sq. ft. and bare spots not exceeding 5 by 5 inches.

Use specified materials to reestablish lawns that do not comply with requirements and continue maintenance until lawns are satisfactory.

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CLEANUP AND PROTECTION

Promptly remove soil and debris, created by lawn work, from paved areas. Clean wheels of vehicles before leaving site to avoid tracking soil onto roads, walks, or other paved areas.

Erect temporary fencing or barricades and warning signs as required to protect newly planted areas from traffic. Maintain fencing and barricades throughout initial maintenance period and remove after lawn is established.

Remove nondegradable erosion-control measures after grass establishment period.

END OF SECTION 02920

SECTION 03300 - CAST-IN-PLACE CONCRETE

PART 1 GENERAL

1.01 REFERENCES

A. American Concrete Institute (ACI):

1. SP-66-88 - ACI Detailing Manual.
2. 117-90 - Standard Specification for Tolerances for Concrete Construction and Materials.
3. 304R-89 - Guide for Measuring, Mixing, Transporting, and Placing Concrete.
4. 305R-91 - Hot Weather Concreting.
5. 306R-88 - Cold Weather Concreting.
6. 308-92 - Standard Practice for Curing Concrete.
7. 318-92 - Building Code Requirements for Reinforced Concrete.
8. 347R-89 - Formwork for Concrete.

B. American Society for Testing and Materials (ASTM):

1. A185 REV A-90 - Standard Specification for Steel Welded Wire Fabric, Plain, for Concrete Reinforcement.
2. A615 REV A-92 - Standard Specification for Deformed and Plain Billet-Steel Bars for Concrete Reinforcement.
3. C31-91 - Standard Practice for Making and Curing Concrete Test Specimens in the Field.
4. C33-92 - Standard Specification for Concrete Aggregates.
5. C39-86 - Standard Test Method for Compressive Strength of Cylindrical Concrete Specimens.
6. C94-92 - Standard Specification for Ready-Mixed Concrete.
7. C143 REV A-90 - Standard Test Method for Slump of Hydraulic Cement Concrete.
8. C150-92 - Standard Specification for Portland Cement.
9. C231 REV B-91 - Standard Test Method for Air Content of Freshly Mixed Concrete by the Pressure Method.
10. C260-86 - Standard Specification for Air-Entraining Admixtures for Concrete.
11. C309-91 - Standard Specification for Liquid Membrane-Forming Compounds for Curing Concrete.
12. C494-92 - Standard Specification for Chemical Admixtures for Concrete.
13. D1751-83 - Standard Specification for Preformed Expansion Joint Filler for Concrete Paving and Structural Construction (Non-extruding and Resilient Bituminous Types).
14. D1752-84 - Standard Specification for Preformed Sponge Rubber and Cork Expansion Joint Fillers for Concrete Paving and Structural Construction.

C. Concrete Reinforcing Steel Institute (CRSI):

1. Placing Reinforcing Bars.

D. Federal Specifications (FS):

1. UU-B-790A - Building Paper, Vegetable Fiber (Kraft, Waterproofed, Water Repellent, and Fire Resistant).

1.02 SUBMITTALS

A. Shop Drawings:

1. Reinforcing steel drawings conforming to ACI SP-66 showing bending diagrams, assembly diagrams, location diagrams, splicing and laps of bars, shapes, dimensions, and details for bar reinforcing and stirrup spacing, accessories, and openings.

B. Test Results:

1. Provide with each load of concrete delivered, duplicate delivery tickets one for CONTRACTOR and one for ENGINEER with following information.
 - a. Date and serial number of ticket.
 - b. Name of ready mixed concrete plant, operator, and job location.
 - c. Type of cement, admixtures, if any, and brand name.
 - d. Cement content, in bags/cu yd of concrete, and mix design.
 - e. Truck number, time loaded, and name of dispatcher.
 - f. Amount of concrete in load, in cu yds, delivered.
 - g. Maximum size aggregate.
 - h. Gal of water added at job, if any, and slump of concrete after water was added.
 - i. Temperature of concrete at delivery.
 - j. Number of revolutions of mixer.

C. Miscellaneous Submittals:

1. Statement by ready mix supplier giving source and material certificates, and proportions by weight of cement, fine and coarse aggregates, and admixtures.

D. Submit in accordance with Section 01340.

1.03 QUALITY ASSURANCE

A. Testing:

1. Sampling and testing will be performed by independent testing laboratory and paid for by CONTRACTOR in accordance with Section 01410.
2. Perform slump tests (ASTM C143), air-entrainment tests (ASTM C231), and compressive strength tests (ASTM C31 and C39) daily for each class of concrete poured.

B. Tolerances:

1. Conform to requirements of ACI 117.
2. Concrete shall be within 3/16-in. of 10-ft straightedge in all directions except where slabs are dished for drains. Deviations from elevation indicated shall not exceed 3/4-in.

1.04 PROJECT SITE CONDITIONS

A. Hot Weather:

1. Comply with ACI 305R.
2. Concrete temperature shall not exceed 90°F.
3. At air temperatures of 80°F or above, keep concrete as cool as possible during placement and curing. Cool forms by water wash.
4. When concrete temperatures exceed 80°F, water reducing, set retarding admixtures shall be used in accordance with manufacturer's recommendations.

B. Cold Weather:

1. Comply with ACI 306R.
2. Temperature of reinforcement, forms, fillers, and other materials in contact with concrete at time of placement shall not be less than 35°F. Preheat if temperature is below 35°F.

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3. Maintain air and forms in contact with concrete sections having minimum dimension less than 12 in. at temperature above 50°F for at least first 3 days and at temperature above 32°F for remainder of specified curing period.
4. Maintain air and forms in contact with concrete in more massive sections at temperature above 40°F for at least first 3 days and at temperature above 32°F for remainder of specified curing period.

PART 2 PRODUCTS

2.01 MATERIALS

A. Portland Cement:

1. ASTM C150, Type I. Except tricalcium aluminate (C₃A) content of Type I shall not exceed 12%.
2. When aggregates determined to be deleteriously reactive, as defined by Appendix XI of ASTM C33, alkali content of cement defined by Table 1A of ASTM C150 shall not exceed 0.60%.

B. Aggregates:

1. ASTM C33, free of foreign materials.
2. Fine Aggregate: Natural sand.
3. Coarse Aggregate: Crushed stone, crushed gravel or gravel. Size 67 (3/4 in. maximum).
4. Potential reactivity of aggregates shall be determined in accordance with Appendix XI of ASTM C33.

C. Admixtures for Concrete:

1. Air-Entraining: ASTM C260.
2. Chemical Admixtures: Optional, ASTM C494.
 - a. Water Reducing: Type A.
 - b. Retarding: Type B.
 - c. Water Reducing and Retarding: Type D.

D. Water: Potable.

E. Steel Reinforcing Bars:

1. Deformed bars conforming to ASTM A615, grade 60.

F. Welded Wire Fabric: ASTM A185.

1. Unless other size noted, wherever welded wire fabric is called for it shall be 6 x 6-W2.9 x W2.9.
2. Provide welded wire fabric, heavier than W2.9 in flat sheets.

G. Premolded Joint Filler: Cork type, ASTM D1752 or bituminous type, ASTM D1751.

H. Membrane Forming Curing Compound:

1. Manufacturers:
 - a. Cure and Seal J-20 by Dayton Superior.
 - b. Dress and Seal 18 by L&M Construction Materials, Inc.
 - c. Kure-N-Seal by Sonneborn Building Products, Inc.
 - d. Floor Treet by Forrer Chemical Company.
 - e. Master Seal by Master Builders.
 - f. Euco Floor Coat by Euclid Chemical Company.

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- g. Cure & Seal by Symons.
- h. Or equal.

I. Vapor Barrier: Polyethylene film minimum 6 mils thick coated reinforced kraft paper conforming to Fed. Spec. UU-B-790A, Type 1, Grade A, Style 4.

J. Preformed Control Joint Strips:

- 1. Manufacturers:
 - a. Kold-Seal Zip-Per Strip, by Kold-Seal Vinylex Corporation.
 - b. Stresslock, by H. Compton Company.
 - c. Quick Strip, by Schlegel Corporation.
 - d. or equal.
- 2. Plastic joint former with locking tabs.
- 3. Depth shall be 1/4 of slab thickness.

K. Epoxy Joint Filler:

- 1. Manufacturers:
 - a. Euco Epoxy 600 or 700 by Euclid Chemical Company.
 - b. Sikadur 51 by Sika Corporation.
 - c. MM80 by Metzger/McGuire.
 - d. Flexresin R180 or Flexresin Paste R811 by Symons.
 - e. Epoflex of Everjoint by L&M Construction Materials, Inc.
 - f. Poxy-Fil J-52 by Dayton Superior.
- 2. Minimum Shore Hardness of 70.

2.02 CONCRETE MIX DESIGN

A. Concrete Mix: Measure and combine cement, aggregates, water, and admixtures in accordance with ASTM C94.

- 1. Class A:
 - a. Minimum Cement Content: 6 bags/cu yd.
 - b. Minimum 28-Day Strength: 4,000 psi.
 - c. Air Content: 6%, ± 1%.
 - d. Maximum Slump: 4 in.

B. Concrete Usage:

- 1. Class A: All locations.
- 2. Air Entraining Admixture not required for concrete used for interior slabs. Air content of 6%± 1% required for all other concrete.

2.03 MIXING AND DELIVERY

A. Furnish and deliver concrete in conformance with ASTM C94.

B. Deliver and complete discharge within 1-1/2 hrs of commencing mixing or before 300 revolutions of drum or blades, whichever comes first. Includes revolutions required by transit mix trucks. Limitations may be waived by ENGINEER if concrete is of such slump after 1-1/2 hrs or 300-revolution limit, it can be placed without addition of water.

- C. Do not add water on job unless authorized by ENGINEER. If water is added, additional mixing of 30 drum revolutions is required.

PART 3 EXECUTION

3.01 SUBGRADE PREPARATION

- A. Subgrade and Bedding: Compacted and free of frost. If placement is allowed at temperatures below freezing, provide temporary heat and protection as required to remove frost.
- B. Provide mud slabs where necessary and when required by ENGINEER to obtain dry and stable working platform for placement of slabs on grade.
- C. Where vapor barrier is not noted, at CONTRACTOR'S option, provide vapor barrier or soak subgrade evenly before placement and sprinkle ahead of placement of concrete.
- D. Remove standing water, ice, mud, and foreign matter before concrete is deposited.

3.02 FORMS

- A. Workmanship: Formwork shall prevent leakage of mortar. Removal of wall ties shall leave holes clean cut and without appreciable spalling at face of concrete. Conform to requirements of ACI 347R.
- B. Materials:
 - 1. Unless specified otherwise, type of forms used is CONTRACTOR'S option. CONTRACTOR may use metal, plywood, presswood form liners or plastic surfaced plywood.
 - 2. Use approved commercially manufactured devices for form ties. Arrange ties so when forms are removed, no metal will be within 1 in. of formed face of concrete.
- C. Do not disturb forms until concrete is adequately cured.
- D. Form system design shall be CONTRACTOR'S responsibility.

3.03 JOINTS

- A. Joints not shown on Drawings shall be subject to ENGINEER'S approval.
- B. Clean and prime in accordance with manufacturer's instructions before applying sealant.
- C. Control joints in slabs-on-grade shall consist of plastic strips set flush with finished surface or 1/4 in. wide joints cut with diamond saw within 12 hrs after pouring.
 - 1. Sawed control joint shall be 1/4 depth of slab, unless shown otherwise.
 - 2. Fill sawed control joints with epoxy joint filler.
 - 3. Cut alternating reinforcing bars or wires crossing joint.

3.04 REINFORCEMENT PLACEMENT

- A. Correct displacement of reinforcement prior to and during concrete pouring operations. Maintain clear cover as noted on Drawings. Tolerances shall be in accordance with ACI 318, unless noted otherwise.
- B. Locate reinforcing to avoid interference with items drilled in later, such as concrete anchors.

- C. Reinforcing steel shall be approved by ENGINEER before being covered with concrete.
- D. Extend wire fabric to within 2 in. of edges of slab or section. Lap sheets at least 12 in. or 2 wire spaces, whichever greater, at ends and edges and wire together. Stagger end laps.
- E. Do not field bend bars including bars partially embedded in concrete unless indicated or approved by ENGINEER.
- F. Welding of reinforcing bars permitted only where indicated or as otherwise approved by ENGINEER.

3.05 CONCRETE PLACEMENT

- A. Except as modified herein, ACI 304 - Chapter V, shall constitute requirements of this Specification.
- B. Support reinforcing steel in accordance with CRSI "Placing Reinforcing Bars," with maximum spacing of 4 ft-0 in.
- C. Tie reinforcing steel at intersections in accordance with CRSI "Placing Reinforcing Bars." Maximum spacing for footings, walls, and columns every third intersection or 3 ft-0 in. Maximum spacing for slabs and other Work every fourth intersection or 3 ft-0 in. Dowels shall be tied in-place.
- D. Avoid damage to waterstop and reinforcing, and ensure accurate positioning after concrete placed.
- E. Do not spread concrete with vibrators.
- F. When placing of concrete is temporarily halted or delayed, provide construction joints as shown on Drawings or specified herein.
- G. Place concrete with aid of internal mechanical vibrator equipment capable of 7,000 impulses/min. Transmit vibration directly to concrete. Duration of vibration at any location shall be necessary to produce thorough consolidation and to cause maximum amount of air bubbles to migrate to top of pour.
- H. Set embedded items such as bolts, anchors, and piping in concrete as required by manufacturer of equipment used. Verify location with equipment manufacturers.
- I. Place items constructed of dissimilar metals to avoid physical contact with reinforcing. Secure item and reinforcing to ensure they will not shift and come into contact during pouring. Contact between reinforcing and other metal, other than bare, coated or plated carbon steel is not permitted, unless approved by ENGINEER.

3.06 SLAB FINISHES

- A. Interior slabs shall receive 3 trowelings. Exterior slabs and walks shall receive 1 troweling and broom finish.
 - 1. Perform initial troweling by power or hand with trowel blade kept as flat as possible against concrete surface to prevent washboard or chatter effect.
 - 2. Perform second troweling by power if 3 trowelings specified; by hand if 2 trowelings specified.
 - 3. Perform third troweling by hand and continue until concrete is consolidated to uniform, smooth, dense surface free of trowel marks and irregularities.
 - 4. Allow sufficient time between successive trowelings to allow concrete to become harder. Perform each successive troweling with trowels progressively smaller and tipped more to increase compaction of concrete surface.
- B. Broom Finished: Broom at right angles to direction of traffic to give nonskid finish. Use fine, soft bristled broom for stoops, ramps, and walks.

3.07 FINISHING FORMED CONCRETE

- A. Ordinary Finish: Finish resulting directly from formwork for surfaces which will be hidden from view by earth, or subsequent construction.
 - 1. Patch honeycombing, stone pockets, form ties, spalls, and other irregularities.
 - 2. Where joint marks or fins on submerged surfaces exceed 1/4-in., grind smooth.
- B. Smooth Finish: Concrete surfaces permanently exposed to view and concrete surfaces scheduled to be painted.
 - 1. Patch honeycombing, stone pockets, form ties, spalls, and other irregularities.
 - 2. Grind joint marks and fins smooth with adjacent wall surface. Remove oil stains and rinse surface.
 - 3. After grinding and cleaning, dampen concrete and paint entire surface with cement grout. Work cement grout into surface with cork or other suitable float. When grout has set to where it will not be pulled out of holes or depressions, brush off with dry burlap or carpet flat.
 - 4. Prepare surfaces to be painted in accordance with Section 09900 and paint manufacturer's requirements.

3.08 PROTECTION AND CURING

- A. Protect concrete from frost and rapid drying, and keep moist for minimum curing period of 7 days after placing in accordance with ACI 308.
- B. Wet cure or apply curing compound. Do not use curing compound where other coating or topping will be applied.
- C. Formed surfaces may be cured by leaving forms in place. Spray surface of forms left in place during curing period as frequently as drying conditions may require to keep concrete surfaces moist. For vertical surfaces, apply water to run down on inside of forms, if necessary to keep concrete wet.
- D. Protect from damaging mechanical disturbances, particularly load stresses, heavy shock, and excessive vibration.
- E. Protect finished concrete surfaces from damage caused by construction equipment, materials or methods, and rain or running water.
- F. Do not load self-supporting structures in a manner which will overstress concrete.

END OF SECTION 03300

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SECTION 03604 - NONSHRINK GROUT

PART 1 GENERAL

1.01 REFERENCES

- A. U.S. Army Corps of Engineers (CRD):
 - 1. C621-89 - Specification for Nonshrink Grout.
- B. American Society for Testing and Materials (ASTM):
 - 1. C1107 REV A-91 - Standard Specification for Packaged Dry, Hydraulic-Cement Grout (Nonshrink).

PART 2 PRODUCTS

2.01 MATERIALS

- A. Manufacturers:
 - 1. Five Star Grout, U.S. Grout Corporation.
 - 2. Sealtight 588 Grout, W.R. Meadows, Inc.
 - 3. Masterflow 713 Grout or Set Nonshrink Grout, Master Builders.
 - 4. SonogROUT, Sonneborn Contech.
 - 5. SikagROUT 212, Sika Corporation.
 - 6. Euco N-S Grout, Euclid Chemical Company.
 - 7. Unisorb V-1 or V-2, Non-Shrink Grout, Unisorb Machinery Installation Systems.
 - 8. Multi-Purpose Construction Grout, Symons.
 - 9. DuragROUT, L&M Construction Materials, Inc.
 - 10. Or equal.
- B. Grout:
 - 1. Cement base, nonmetallic, nongas forming, nonshrink, preblended and ready-to-use requiring only addition of water at Project site.
 - 2. Comply with ASTM C1107 and CRD C621, Grade B or C.
 - 3. Of moderate fluidity with minimum compressive strength of 5,000 psi at 28 days and shall not bleed.
- C. Water:
 - 1. Clean and free from injurious chemicals and deleterious materials.

PART 3 EXECUTION

3.01 PREPARATION

- A. Clean grout contact surfaces of oil, grease, scale, and other foreign matter. Chip away unsound concrete leaving surface level but rough.
- B. Underside of base plates of machinery, rails, and bolts shall be free of grease, oil, dirt or coatings.

3.02 MIXING AND PLACING

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- A. Mix and place in accordance with manufacturer's written instructions.
- B. Provide sealing materials where necessary to retain grout until hardened.
- C. Work grout from one side to other. Avoid trapping air under base plates.
- D. Remove plastic anchor bolt sleeve tops where used, and fill with grout at same time base plates are grouted.

3.03 CURING

- A. Cure with curing compound or as recommended by grout manufacturer.

END OF SECTION 03604

SECTION 04810 - UNIT MASONRY

PART 1 GENERAL

1.01 REFERENCES

A. American Concrete Institute (ACI):

1. 530-88 - Building Code Requirements for Masonry Structures.
2. 530.1-88 - Specifications for Masonry Structures.

B. American Society for Testing and Materials (ASTM):

1. A82 REV A-90 - Standard Specification for Steel Wire, Plain, for Concrete Reinforcement.
2. A153-82 - Standard Specification for Zinc Coat (Hot-Dip) on Iron and Steel Hardware.
3. A615-92 - Standard Specification for Deformed and Plain Billet-Steel Bars for Concrete Reinforcement.
4. A641-92 - Standard Specification for Zinc-Coated (Galvanized) Steel Wire.
5. C67 REV A-92 - Standard Test Methods of Sampling and Testing Brick and Structural Clay Tile.
6. C90-92 - Standard Specification for Load-Bearing Concrete Masonry Units.
7. C91 E1-91 - Standard Specification for Masonry Cement.
8. C144 E1-91 - Standard Specification for Aggregate for Masonry Mortar.
9. C150-92 - Standard Specification for Portland Cement.
10. C207 E1-91 - Standard Specification for Hydrated Lime for Masonry Purposes.
11. C270 REV A-92 - Standard Specification for Mortar for Unit Masonry.
12. C404-92 - Standard Specification for Aggregates for Masonry Grout.
13. C476-91 - Standard Specification for Grout for Masonry.
14. C744-73 - Standard Specification for Prefaced Concrete and Calcium Silicate Masonry Units.
15. C780-91 - Standard Test Method for Preconstruction and Construction Evaluation of Mortars for Plain and Reinforced Unit Masonry.

1.02 SUBMITTALS

A. Shop Drawings:

1. Statement giving source and material certificates, and proportions by weight of cement, fine and coarse aggregates, and admixtures for mortar and grout.

B. Product Data:

1. Manufacturer's literature for concrete masonry and decorative masonry unit.

C. Miscellaneous Submittals:

1. Material certification for concrete masonry units. Test data shall not be more than 1 yr old.

D. Submit in accordance with Section 01340.

1.03 QUALITY ASSURANCE

A. Sample Panel:

1. 4 ft long by 4 ft high for each type of decorative masonry unit.
2. Sample panel shall include following.

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- a. Selected color range.
 - b. Selected range of texture.
 - c. Bonding.
 - d. Mortar color.
 - e. Tooled joints.
 - f. Quality of workmanship.
 - g. Typical reinforcement and ties.
3. Do not start Work until ENGINEER has accepted sample panel.
 4. Use panel as standard of comparison for masonry work built of same material. Failure of masonry work to meet or exceed quality of workmanship depicted by sample panel shall be cause for rejection.
 5. Do not destroy or move panel until Work is completed and accepted by OWNER.
 6. When approved by ENGINEER, sample panel may be incorporated into finished work.
- B. Construct masonry to meet requirements of local building code, and ACI 530 and 530.1.

1.04 DELIVERY, STORAGE, AND HANDLING

- A. Store masonry units above ground on level platforms which allow air circulation under stacked units.
- B. Cover and protect against wetting prior to use.
- C. Handle units on pallets or flat bed barrows.
- D. Do not permit free discharge from conveyor units or transporting in mortar trays.
- E. Deliver cementitious materials in manufacturer's standard packages.

1.05 PROJECT/SITE CONDITIONS

A. Cold Weather Protection:

1. When ambient temperature falls below 40°F or when temperature of masonry units is below 40°F:
 - a. Temperature of masonry units shall not be less than 32°F when laid in masonry. Remove visible ice on masonry units before unit is laid in masonry.
 - b. Heat mortar sand or mixing water to produce mortar temperatures between 40°F and 120°F at time of mixing. Maintain mortar above freezing until used in masonry.
 - c. Use heat sources where ambient temperatures are between 20°F and 25°F, on both sides of masonry under construction and install wind breaks when wind velocity is in excess of 15 mph.
 - d. Where ambient temperatures are below 20°F, provide enclosure for masonry under construction and use heat sources to maintain temperatures above 32°F within enclosure.
 - e. Where mean daily temperatures are between 32°F and 40°F, protect completed masonry from rain or snow by covering with weather resistive membrane for 24 hrs after construction.
 - f. Where mean daily temperatures are between 25°F and 32°F, completely cover completed masonry with weather-resistive membrane for 24 hrs after construction.
 - g. Where mean daily temperatures are between 20°F and 25°F, completely cover completed masonry with insulating blankets or equal protection for 24 hrs after construction.
 - h. Where mean daily temperatures are below 20°F, maintain masonry temperature above 32°F for 24 hrs after construction by enclosure with supplementary heat, electric heating blankets, infrared heat lamps, or other acceptable methods.

B. Hot Weather Protection:

1. When ambient air temperature exceeds 100°F, or 90°F with wind velocity greater than 8 mph:

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- a. Do not spread mortar beds more than 4 ft ahead of masonry.
- b. Set masonry units within 1 min of spreading mortar.

PART 2 PRODUCTS

2.01 MORTAR AND GROUT

A. Materials:

1. Aggregates:
 - a. Mortar: ASTM C144, acceptable in color, 10% passing No. 100 sieve.
 - b. Grout: ASTM C404.
2. Portland Cement: ASTM C150, Type I.
3. Masonry Cement: ASTM C91, Type S.
4. Lime: Hydrated lime, ASTM C207, Type S.
5. Water Repellent Mortar Admixture:
 - a. Omicron Mortar-proofing by Master Builders Company.
 - b. Hydrocide Power by Sonneborn Building Products, Inc.
 - c. Hydratite Plus by W.R. Grace Construction Materials.
 - d. Best Tuff by Best Block Company.
 - e. Or equal.
6. Water: Potable.
7. Use no antifreeze compounds.
8. Coloring Pigment: Commercial iron oxide, manganese oxide, or chromium oxide compound for use in mortar mixes.

B. Proportions:

1. Mortar: ASTM C270, property specification: Type S (1,800 psi).
2. Masonry Grout: ASTM C476 (2,500 psi minimum).
3. Measure materials by volume. Use within 1 hr.
4. Use water repellent mortar admixture for CMU exposed to earth or weather in accordance with manufacturer's written instructions.

2.02 CONCRETE MASONRY UNITS (CMU)

- A. Hollow Lightweight Concrete Blocks: ASTM C90, moisture controlled units, meeting the requirements for Type I at time of manufacture.
- B. Hollow Standard Weight Concrete Blocks: ASTM C90, moisture controlled units, meeting the requirements for Type I at time of manufacture.
- C. Solid Blocks: ASTM C90, standard weight, moisture controlled units, meeting the requirements for Type I at time of manufacture. Concrete filled hollow standard weight concrete blocks may be substituted.
- D. Water Repellent Concrete Blocks: Hollow, standard weight, concrete blocks with water repellent mortar admixture added to concrete mix.
- E. Full Face Split Units:
 1. Decorative concrete masonry units.

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2. Simulated stone face.
3. Block and color shall be as selected by OWNER.

F. Provide uniform gradation of color for exposed unpainted exterior block.

G. Provide fire rated units where noted.

H. Provide decorative concrete masonry lintels, corners with decorative faces, etc., as required in areas with decorative concrete masonry units.

2.03 REINFORCEMENT AND ANCHORS

A. Horizontal Joint Reinforcement:

1. Manufacturers:

- a. Blok-Lok, Blok-Trus, Tri-Lok with Drip, or Econo Cavity-Lok, by AA Wire Products Company.
- b. Truss, Ladur or Continuous Rectangular Tab Tie, by Dur-O-Wall, Inc.
- c. Or equal.

2. Two parallel, longitudinal, 9 ga., galvanized, rods weld-connected to 9 ga. galvanized cross-rods, spaced at 16 in. oc, conforming to ASTM A82 for single wythe construction or for cavity wall construction when cavity ties are used. Three parallel, longitudinal, 9 ga., galvanized, rods weld-connected to 9 ga. galvanized cross-rods, spaced at 16 in., oc, conforming to ASTM A82 for cavity wall and multi-wythe construction.

3. Provide special manufactured corner and wall intersection pieces.
4. Electronically weld cross-ties.
5. Zinc Coated.

- a. Interior Walls: ASTM A641 Class I.
- b. Exterior Walls: ASTM A153 Class B2.

B. Reinforcing Bars: Deformed bars conforming to ASTM A615, Grade 60.

2.04 WEEPHOLE MATERIAL

A. Plastic or rubber tube, 1/4 in. diameter

B. Cotton sash cord of length required to produce 2-in. exposure on exterior and 16 in. in collar joint.

2.05 FIELD APPLIED WATER REPELANT

A. Hydrozo Enviroseal Double 7, by Hydrozo Incorporated. Apply to exterior face of all exterior concrete blocks.

PART 3 EXECUTION

3.01 GENERAL

A. Lay masonry true to dimensions, plumb, square, in bond, and properly anchored with courses level and joints uniform.

B. Provide full mortar beds for solid and hollow units to be filled with mortar or grout. Other hollow masonry units shall have face-shell mortar beds.

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- C. Tool joints on exposed walls concave, 1/8 in. maximum depth. Wipe joints with burlap or brush with soft brush to remove mortar projecting beyond face of block after joints are tooled. Cut mortar flush with surface of concealed block.
- D. Provide control joints. Conform to details shown.
- E. Unless otherwise shown, provide continuous bond beam around top of buildings at roof bearing elevation. Reinforce with two No. 5 bars.

3.02 TOLERANCES

A. Dimension of Elements:

- 1. In Cross-Section or Elevation: -1/4 in. to +1/2 in.
- 2. Mortar Joint Thickness: $\pm 1/8$ in.

B. Elements:

- 1. Variation from Level:
 - a. Bed joints: $\pm 1/4$ in. in 10 ft, $\pm 1/2$ in. maximum.
 - b. Top surface of walls: $\pm 1/4$ in. in 10 ft, $\pm 1/2$ in. maximum.
- 2. Variation from Plumb: $\pm 1/4$ in. in 10 ft, $\pm 3/8$ in. in 20 ft, $\pm 1/2$ in. maximum.
- 3. True to a Line: $\pm 1/4$ in. in 10 ft, $\pm 3/8$ in. in 20 ft, $\pm 1/2$ in. maximum.
- 4. Alignment of Columns and Walls (bottom versus top): $\pm 1/2$ in.

C. Location of Elements:

- 1. Indicated on Drawings: $\pm 1/2$ in. in 20 ft, $\pm 3/4$ in. maximum.
- 2. Indicated in Elevation: $\pm 1/4$ in. in story height, $\pm 3/4$ in. maximum.

3.03 CONCRETE MASONRY UNITS

- A. Use lightweight or standard weight concrete block for interior partitions.
- B. Use water repellent block where exposed to weather or earth.
- C. Exposed inside face of concrete block surfaces shall form finished wall surfaces. Painted walls or special coatings on wall are considered exposed walls.
- D. Provide special blocks for corners, expansion joints, control joints, jambs, sills, lintels, and bond beams.
- E. Provide bull nose edges where shown and at all interior exposed vertical corners, including door and window openings.
- F. Fill cores of hollow units with mortar or grout where bolts, anchors or similar items occur within hollow units.
- G. Flashing:
 - 1. Clean surface of masonry smooth and free from projections which might puncture or otherwise damage flashing material.
 - 2. Place through-wall flashing on bed of mortar.
 - 3. Cover flashing with mortar.

- H. Provide weepholes by omission of 1 in. of mortar head joints or provide tubes or sash cord at base of flashings, steel lintels, and base of walls. Space not over 2 ft-0 in. with minimum of 1 weephole between openings. Keep weepholes and area above flashing free of mortar droppings.
- I. Pattern for plain faced units shall be running bond. Pattern for split face units shall be stack bond.

3.04 REINFORCEMENT AND ANCHORS

- A. Provide masonry anchors, ties, reinforcement, and inserts of type noted on Drawings and specified herein.
- B. Bond intersection of exterior walls and interior load bearing walls by use of horizontal joint reinforcement, extend into wall at least 30 in. Conform to details shown.
- C. Bond intersection of interior nonload bearing walls by use of horizontal joint reinforcement, extend into wall at least 16 in.
- D. Reinforce concrete block walls with continuous horizontal joint reinforcement. Lap reinforcing minimum of 6 in. and stagger splices 32 in. or more. Space reinforcement not over 16 in. o.c.
- E. Provide vertical reinforcement in fully-grouted cores where noted.

3.05 INSTALLATION OF MISCELLANEOUS ITEMS

- A. Install steel lintels that bear on masonry. Build into masonry rough frames, bucks, and metal frames for openings in walls and partitions. Fill cores under lintels with masonry grout.
- B. Build in items such as anchors, anchor bolts, inserts, sleeves, brackets, bearing plates, furnished under this or other sections.
- C. Build in items of mechanical, heating, ventilating, air conditioning, and electrical work including anchors and anchor bolts. Point-up joints between masonry, cabinets, outlet boxes, and metal work.
- D. Build flashing into wall. Slush joints and holes in wall, full, with smooth struck application of mortar, before flashing application.
- E. Set units plumb, square, true, and level before building into masonry.
- F. Avoid loosening or disturbing temporary bracing holding frames. Set masonry tightly against inside of frames and slush voids full with mortar. Build anchors into joints and fill masonry cores adjacent to frame with grout.
- G. Provide weep holes by omission of 1 in. of mortar head joints or provide 1/4 in. dia. tubes at base of flashings, steel lintels, and base of walls. Space not over 2 ft-0 in. with minimum of 1 weephole between openings. Keep weepholes and area above flashing free of mortar droppings.

3.06 GROUTING

- A. Conform to requirements of ACI 530.1.
- B. Spaces to be grouted shall be free of mortar dropping, debris, loose aggregates, and material deleterious to masonry grout.
- C. Reinforcement and ties shall be in place prior to grouting.
- D. Cleanouts: When grout pour exceeds 5 ft in height, cleanouts shall be provided in bottom course of masonry.
 - 1. Cleanouts shall be provided adjacent to each vertical bar.

2. Size of cleanout openings shall be of sufficient size to permit removal of debris. Minimum opening dimension shall be 3 in.
3. After cleaning, close cleanouts with closures to match adjacent wall surface and brace to resist grout pressure.

E. Place grout in lifts not exceeding 5 ft.

F. Consolidate grout at time of placement.

1. Consolidate grout pours 12 in. or less in height by mechanical vibration or by puddling.
2. Consolidate pours exceeding 12 in. in height by mechanical vibration and reconsolidate by mechanical vibration after initial water loss and settlement has occurred.

3.07 PROTECTION

A. Protect masonry from damage.

B. Cover freshly laid masonry and walls not being worked on to prevent rapid drying and to exclude rain and snow.

C. Cover items susceptible to damage with wood nosings or boxing. Use no lumber or materials susceptible to staining or defacing masonry.

D. Brace walls until roof system is in place. Bond beam grout at roof elevation shall be a minimum of 7 days old prior to removal of bracing.

E. Do not apply superimposed loads until completed masonry reaches design strength.

1. Do not apply uniform floor or roof loading for at least 12 hrs after completing masonry.
2. Do not apply concentrated loads for at least 3 days after completing masonry.

3.08 CUTTING AND PATCHING

A. Cut and patch to accommodate Work of other sections. Patch around items such as outlet boxes, piping, and steel work.

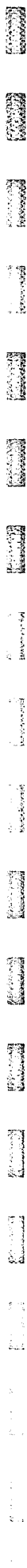
3.09 CLEANING

A. Clean and point concrete block surfaces. Clean as units are set and upon completion. No acid may be used in cleaning any part of interior of buildings.

B. Remove surplus mortar and leave surface of masonry clean and finished. Remove large particles of mortar before cleaning walls. Remove sharp burrs on exposed block mortar joints.

C. Apply one coat of exterior masonry water repellent sealer to exposed exterior surfaces of concrete masonry. Protect Items: Window frames, doors, louvers, light fixtures, during application. Conform to sealer manufacturer's recommendations for temperature and wind, surface conditions and curing conditions.

END OF SECTION 04810



SECTION 05210 - STEEL JOISTS

PART 1 GENERAL

1.01 REFERENCES

- A. American Institute of Steel Construction (AISC):
 - 1. M016-89 - Manual of Steel Construction Allowable Stress Design.
 - 2. S335-89 - Specification for Structural Steel Buildings Allowable Stress Design and Plastic Design with Commentary.
- B. American Society for Testing and Materials (ASTM):
 - 1. A36-91 - Standard Specification for Structural Steel.
 - 2. A325 REV A-92 - Standard Specification for Structural Bolts, Steel, Heat-Treated, 120/105 ksi Minimum Tensile Strength.
- C. American Welding Society (AWS):
 - 1. D1.1-92 - Structural Welding Code Steel.
- D. Steel Joist Institute (SJI).
- E. Steel Structures Painting Council (SSPC):
 - 1. SP 1-82 - Surface Preparation Specification No. 1 Solvent Cleaning.
 - 2. SP 2-89 - Surface Preparation Specification No. 2 Hand Tool Cleaning.
 - 3. SP 7-91 - Surface Preparation Specification No. 7 Brush-off Blast Cleaning.

1.02 SYSTEM DESCRIPTION

- A. Design Criteria:
 - 1. Joists shall have structural properties to safely sustain own weight and superimposed loads noted on Drawings and specified herein.
 - 2. Allowable deflection for steel joists shall be 1/360 of clear span under indicated uniform live load.

1.03 SUBMITTALS

- A. Shop Drawings:
 - 1. Indicate joist type, number, lengths, spacing, bridging, connections, bearing plates, shop primer, and markings of units to correspond with sequence of installation.
- B. Submit in accordance with Section 01340.

1.04 QUALITY ASSURANCE

- A. Steel joists shall conform to provisions of AISC and SJI.
- B. Connections made by welding shall conform to AISC S335 and AWS D1.1.

1.05 DELIVERY, STORAGE, AND HANDLING

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- A. Bundle, haul, and deliver in manner preventing damage.
- B. Store above ground.

PART 2 PRODUCTS

2.01 MATERIALS

- A. Steel Joist: AISC and SJI specifications.
- B. Bolts and Washers: ASTM A325.
- C. Bridging: ASTM A36.
- D. Paint, Primer: SJI standard specifications, except black asphalt not permitted.

2.02 DESIGN AND MANUFACTURE

- A. Joists shall be of series and designation as indicated on Drawings.
- B. Camber joists in accordance with SJI specifications.
- C. Joists adjacent to nonload-bearing masonry walls shall not have camber after application of dead load.
- D. Provide horizontal or diagonal bridging of size and spacing as required by SJI or as indicated on Drawings.
- E. Provide extended ends where shown on Drawings and design to withstand superimposed loads.
- F. Clean joists, bridging, and other accessories to remove oil, mill scale, rust, and foreign matter in accordance with SSPC SP 7.
- G. Apply one shop coat of primer, 1.5 mil dry.

PART 3 EXECUTION

3.01 EXAMINATION

- A. Examine adjoining construction affecting acceptability of installation of Work and report unsatisfactory conditions, errors or deficiencies.
- B. Work shall not proceed until unsatisfactory conditions remedied.
- C. Before members are assembled, bearing surfaces and surfaces to be in permanent contact shall be clean and free from scale.

3.02 INSTALLATION

- A. Erect in conformance with SJI and AISC specifications.
- B. Set joists with bearings as indicated on Drawings.
- C. Install items such as headers, trimmers, bearing plates, bracing, bridging, and anchors necessary for installation of joists.

- D. Bearing plate size shown is minimum required, adjust size of plate as required to suit joist bearing.
- E. Shim with steel shims where necessary.
- F. Brace and anchor joists to bridging before erecting next joist.
- G. Support equipment hung from joists from panel points unless special details provided on Drawings.
- H. Do not place construction loads on joists other than required to erect joists prior to installation of bridging and fastening to supports.

3.03 ADJUSTING AND CLEANING

- A. Field paint bolt heads and nuts, and abraded or rusty surfaces on joists. Wire brush surfaces and clean with solvent before painting in accordance with SSPC SP 1 and SP 2. Use same type of paint as used for shop painting, 1.5 mils dry.

END OF SECTION 05210

- B. Metal deck units shall be manufactured by firm listed in Underwriters' Laboratories, "Fire Resistance Directory - Index of Manufacturers." Deck shall bear UL label and marking.

1.04 DELIVERY, STORAGE, AND HANDLING

- A. Protect steel deck units during shipping, handling, and erection. Store decking above ground and protect from water.

PART 2 PRODUCTS

2.01 MATERIALS

- A. Depth, type, and gauge as shown on Drawings.
- B. Roof Deck:
 - 1. ASTM A446, Grade A with ASTM A525 Class G90 zinc coating.
 - 2. ASTM A792, Grade 33, coating designation AZ60.

2.02 FABRICATION

- A. Provide deck units in lengths to span between 3 or more supports with 2-in. end laps and nested side laps. End laps shall occur over support members.

PART 3 EXECUTION

3.01 EXAMINATION

- A. Examine supporting members for acceptability of installation of this Work and report unsatisfactory conditions, errors or deficiencies.
- B. Do not proceed until unsatisfactory conditions remedied.

3.02 INSTALLATION

- A. Install in accordance with manufacturer's written instructions, these Specifications, and as shown on Drawings.
- B. Install and anchor roof deck units to resist gross uplift loading of 30 lbs/sq ft for roof areas.
- C. Attachment:
 - 1. Fasten to steel framing at ends and intermediate supports by welding 5/8 in. dia fusion welds at maximum spacing of 12 in. oc with 1 weld always occurring at side laps.
 - 2. Fasten to supporting structure and adjacent panels along side laps at center of span.
 - 3. Provide welding washers.
 - 4. Self-tapping screws or power-actuated fasteners may be substituted for welding. Capacity of fasteners shall equal or exceed capacity of welds. Minimum Size 12 fastener with minimum 5/16 in. dia head.
 - 5. Ends shall overlap a minimum of 2 in.
 - 6. Side laps shall be nested.
- D. Burn holes where underside of deck will be concealed by ceiling shall be closed with closure plate of same gauge and shape as deck.

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- E. No burn holes, ragged cuts, bent deck or other damage or defect permitted where underside of deck will be exposed in completed building.
- F. Secure accessories to deck by welding.
- G. Install deck closures to close top of interior partitions where there is no ceiling at partition, at open uncovered ends, edges of decking, and in voids between decking and other construction.

3.03 CUTTING AND FITTING

- A. Cut and fit roof deck units and accessories around projections through roof decking.
- B. Cuts shall be neat, square, trim, and true to dimension.
- C. Openings in roof deck units for pipe sleeves, ducts, and conduits shall be cut and reinforced by CONTRACTOR requiring opening.
- D. Provide structural steel supports around openings exceeding 12 in. in width. Conform to details shown.

3.04 FIELD QUALITY CONTROL

- A. Deck welded in place is subject to inspection and testing by Testing Laboratory engaged by OWNER. Correct unacceptable work by removing and replacing work found to be defective and not complying with requirements. CONTRACTOR will pay for further testing required to provide acceptability of installation.

3.05 CLEANING

- A. Clean welds, abrasions, rust spots or other defects in finish in accordance with SSPC SP 2 and touch up on top and bottom with zinc-rich paint.

END OF SECTION 05300

SECTION 05500 - METAL FABRICATIONS

PART 1 GENERAL

1.01 REFERENCES

A. Aluminum Association (AA):

1. 30-86 - Specifications for Aluminum Structures Construction Manual Series Section 1.

B. American Hot-Dip Galvanizers Association (AHDGA).

C. American Institute of Steel Construction (AISC):

1. M016-89 - Manual of Steel Construction Allowable Stress Design.
2. S302-86 - Code of Standard Practice for Steel Buildings and Bridges.
3. S335-89 - Specification for Structural Steel Buildings Allowable Stress Design and Plastic Design with Commentary.

D. American Iron and Steel Institute (AISI).

E. American Society for Testing and Materials (ASTM):

1. A6-90 - Standard Specification for General Requirements for Rolled Steel Plates, Shapes, Sheet Piling, and Bars for Structural Use.
2. A36-91 - Standard Specification for Structural Steel.
3. A48-92 - Standard Specification for Gray Iron Castings.
4. A53 REV B-90 - Standard Specification for Pipe, Steel, Black and Hot-Dipped, Zinc-Coated, Welded and Seamless.
5. A123 E1 REV A-89 - Standard Specification for Zinc (Hot-Dip Galvanized) Coatings on Iron and Steel Products.
6. A307 REV A-92 - Standard Specification for Carbon Steel Bolts and Studs, 60,000 psi Tensile Strength.
7. A325 REV A-92 - Standard Specification for Structural Bolts, Steel, Heat-Treated, 120/105 ksi Minimum Tensile Strength.
8. A500 REV A-90 - Standard Specification for Cold-Formed Welded and Seamless Carbon Steel Structural Tubing in Rounds and Shapes.
9. A536-84 - Standard Specification for Ductile Iron Castings.
10. A570-92 - Standard Specification for Steel, Sheet and Strip, Carbon, Hot-Rolled, Structural Quality.
11. A780-92 - Standard Practice for Repair of Damaged and Uncoated Areas of Hot-Dip Galvanized Coatings.
12. B26 REV A-92 - Standard Specification for Aluminum-Alloy Sand Castings.
13. B85 REV A-92 - Standard Specification for Aluminum-Alloy Die Castings.

F. American Welding Society (AWS):

1. D1.1-92 - Structural Welding Code Steel.

G. Steel Structures Painting Council (SSPC):

1. SP 6-91 - Surface Preparation Specification No. 6 Commercial Blast Cleaning

1.02 SUBMITTALS

A. Shop Drawings:

1. Indicate materials, sizes, connections, anchors, and painting.

2. One reproducible and one print.

B. Submit in accordance with Section 01340.

1.03 QUALITY ASSURANCE

A. Welding:

1. Steel:

- a. Conform to codes for arc and gas welding in building construction of AWS and to AISC Specifications. Surfaces to be welded shall be free from loose scale, rust, grease, paint, and other foreign material, except mill scale which will withstand vigorous wire brushing may remain. No welding shall be done when base metal lower than 0°F.
- b. Qualify welding operators in accordance with AWS D1.1. Qualification tests shall be run by recognized testing laboratory approved by ENGINEER at CONTRACTOR'S expense.
- c. Welding operators shall be subject to examination for requalification using equipment, materials, and electrodes employed in execution of Work. Such requalification, if ordered by ENGINEER, shall be done at CONTRACTOR'S expense.

1.04 DELIVERY, STORAGE, AND HANDLING

A. Tag miscellaneous iron, steel and aluminum including anchor bolts, concrete anchors, sleeves, and bases or otherwise mark for ease of identification at Project site.

PART 2 PRODUCTS

2.01 MATERIALS

A. Conform to following.

1. Steel Shapes and Plates: ASTM A36.
2. Square and Rectangular Structural Tubing: ASTM A500, Grade B.
3. Round Structural Tubing and Steel Pipe: ASTM A53, Type E or S, Grade B.
4. Stainless Steel:
 - a. Exterior Uses: AISI, Type 316.
 - b. Industrial Uses: AISI, Type 316.
 - c. Interior and Architectural Uses: AISI, Type 304.
 - d. Cast-in-Place Anchor Bolts: AISI, Type 302, 303 or 304.
5. Aluminum Structural Shapes and Plates: Alloy 6061-T6 or 6063-T6; conform to referenced specifications and ASTM sections found in AA current construction manual series.
6. Connection Bolts for Steel Members: ASTM A325.
7. Anchor Bolts: 1/2 in. minimum diameter; nonsubmerged - ASTM A307, galvanized; submerged - stainless steel.
8. Connection Bolts for Wood Members: ASTM A307, galvanized.
9. Connection Bolts for Aluminum: Stainless steel

2.02 FABRICATION

A. Connections and Workmanship:

1. Fabricate details and connection assemblies in accordance with Drawings and Specifications, with projecting corners clipped and filler pieces welded flush.

2. Weld shop connections and bolt or weld field connections, unless otherwise noted or specified:
 3. Provide clips, lugs, brackets, straps, plates, bolts, nuts, washers, and similar items, as required for fabrication and erection.
 4. Use connections of type and design required by forces to be resisted and to provide secure fastening.
 - a. AISC standard 2-angle web connections or single plate framing connections capable of supporting minimum of 50% total uniform load capacity of members joined as tabulated in uniform load constants of AISC M011.
 - b. Connections shall consist of minimum of two 3/4 in. diameter bolts or welds developing minimum of 10,000 lbs.
 - c. Make bearing type bolted connections with minimum 3/4 in. diameter bolts with threads included in shear plane, unless detailed otherwise.
 5. Welding:
 - a. Grind exposed edges of welds to 1/8 in. minimum radius. Grind burrs, jagged edges, and surface defects smooth.
 - b. Prepare welds and adjacent areas so there is:
 - 1) No undercutting or reverse ridges on weld bead.
 - 2) No weld spatter on or adjacent to weld or other area to be painted.
 - 3) No sharp peaks or ridges along weld bead.
 - c. Grind embedded pieces of electrode or wire flush with adjacent surface of weld bead.
 6. Bolting:
 - a. Draw up bolts or nuts tight in accordance with AISC specifications. Use bolts of lengths required so bolts do not project more than 1/4 in. beyond face of nut. Do not use washers unless specified. Provide hexagonal head bolts with hexagonal nuts.
 - b. Provide holes required for connection of adjacent or adjoining Work wherever noted on Drawings. Locate holes for bolting equipment to supports to tolerance of $\pm 1/16$ in. of dimensions indicated.
- B. Fit Work together in fabrication shop and deliver complete or in parts, ready to be set in place or assembled in field.
- C. Galvanizing:
1. Galvanize after fabrication.
 2. Galvanize by hot-dip process conforming with ASTM A123 and AHDGA specifications.
 3. Galvanize in plant having facilities to produce quality coatings and capacity for volume of Work.
 4. Ship and handle in manner to avoid damage to zinc coating.
- D. Painting or Coating and Finishes:
1. Do not coat ferrous metal surfaces embedded in concrete.
 2. Review and comply with Section 09900. Where other finish is not specified, clean ferrous metal after fabrication to remove oil, mill scale, rust, and foreign matter in accordance with SSPC SP 6. Apply 1 coat of shop primer yielding 1.5 mil dry thickness.
 3. Steel lintels and surfaces not accessible after assembly or erection shall be given 2 shop coats using different colors of paint, 3.0 mil total dry thickness.
- E. Castings shall be of uniform quality, free from blowholes, porosity, hard spots, shrinkage distortion, smooth, and well cleaned by shot blastings.

2.03 CONCRETE ANCHORS

A. Wedge Anchors:

1. Manufacturers:

- a. Rawl-Stud Anchor by Rawlplug Company, Inc.
- b. Thrubolt Wedge Anchor by ITW Ramset/Red Head.
- c. Kwik-Bolt II by Hilti Corporation.
- d. Liebig Wedge Anchor by Liebig.
- e. Or equal.

2. Usage: In concrete.

- a. Zinc- or chromate-plated carbon steel may be used where totally embedded, in interior locations with controlled humidity and other protected locations.
- b. Stainless steel shall be used in other locations such as outside, in tanks or when attaching aluminum or galvanized steel.
- c. Do not use wedge anchors when subjected to dynamic loads.

B. Expansion Anchors:

1. Manufacturers:

- a. Liebig Anchor by Liebig.
- b. HSL Expansion Anchor by Hilti.
- c. Rawl Bolt by Rawlplug Company, Inc.
- d. Or equal.

2. Usage: In concrete.

- a. Zinc- or chromate-plated carbon steel may be used where totally embedded, in interior locations with controlled humidity, and other protected locations.
- b. Stainless steel shall be used in other locations such as outside, in tanks, or when attaching aluminum or galvanized steel.
- c. Do not use expansion anchors in overhead applications, or subjected to dynamic loads.

C. Sleeve Anchors:

1. Manufacturers:

- a. Sleeve Anchor by Hilti Corporation
- b. Dynabolt Sleeve by ITW Ramset/Red Head.
- c. Lok/Bolt by Rawlplug Company, Inc.
- d. Or equal.

2. Usage: In masonry.

- a. Zinc- or chromate-plated carbon steel in interior locations and other protected locations.
- b. Stainless steel in other locations.

D. Adhesive Anchors:

1. Manufacturers:

- a. Anchor-It Fastening System by Adhesive Technology Corporation.
- b. Foil-Fast Epoxy Injection Gel System by Rawl/Sika.
- c. EPCON Injection System by ITW Ramset/Red Head.

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- d. Kelipoxy II by Kelken-Gold, Inc.
 - e. Sure-Anchor (J50) by Dayton Superior.
 - f. Poly-All Epoxy Anchoring System by Ackerman Johnson Fastening Systems, Inc.
 - g. Or equal.
- 2. Epoxy adhesive with Type 316 stainless steel stud or anchor rod assembly, nuts, and washers.
 - 3. Usage:
 - a. In concrete, subjected to dynamic loads. Do not use in overhead applications.
 - b. In masonry, provide tube screen inserts.

2.04 STEEL LINTELS

- A. Provide steel lintels over doors, louvers, grille openings, wall recesses, duct openings, and other openings in masonry walls as noted and wherever reinforced concrete or masonry lintels not provided.
- B. Fabricate lintels from structural shapes as detailed, selected for straightness of section.
- C. Unless otherwise shown, lintels shall have minimum bearing of 8 in. at each side of opening.
- D. Fabricate lintels of multiple sections by welding, grind exposed welds smooth.
- E. Openings less than 4 ft wide without lintel scheduled shall have double steel angle lintels. Total width of horizontal legs shall be 1 in. less than wall thickness. Weld angles together.

2.05 METAL FRAMES

- A. Provide door, hatch, and grille frames, and other frames fabricated from structural shapes.
- B. Fabricate frames from rolled steel sections or rolled steel sections and steel plates. Select sections for trueness of web and flange. Straighten members so finished frames are uniform, square, and true throughout length and depth of assembled units.
- C. Connect built-up members of frames by plug welding. Miter or cope and join members with continuous welding beads. Provide temporary spreader bars to prevent springing frames out of shape prior to and during erection.

2.06 LADDERS

- A. Ladder shall conform to applicable federal, state, and local safety requirements.
- B. Fixed rail ladders shall be aluminum and shall be ACL-201, O'Keefe's No. 502 or approved equal by Alaco or Precision.

PART 3 EXECUTION

3.01 INSTALLATION

- A. Lay out and install connectors such as concrete anchors and anchor bolts to secure metal fabrications to structure.
- B. Concrete Anchors:
 - 1. Drill holes in concrete and masonry work with rotary driven twist drills only. Fill voids in masonry with grout.
 - 2. Do not install until concrete has reached specified minimum strength (f'c).

3. Do not install closer than 6-bolt diameter to edge of concrete or masonry, or closer than 12-bolt diameter to another anchor unless detailed on Drawings.
 4. Minimum embedment shall be 8-bolt diameter, except 6-bolt diameter embedment acceptable when bolt loaded in shear only.
 5. Locate to clear reinforcing bars in concrete.
 6. Install in accordance with manufacturer's recommendations.
- C. Erect to lines and levels, plumb and true, and in correct relation to adjoining Work. Secure parts using concealed connections when practicable.
- D. Plumb and true vertical members to tolerance of $\pm 1/8$ in. in 10 ft. Level horizontal members to tolerance of $\pm 1/8$ in. in 10 ft.
- E. Provide items such as bolts, shims, blocks, nuts, washers, and wedging pieces to complete installation.
- F. Drill field holes for bolts. Do not burn holes.
- G. New holes or enlargement of unfair holes by use of cutting torch is cause for rejection of entire member.
- H. Perform cutting, drilling, and fitting required for installation of metal fabrications.
- I. Field welds shall be approved by ENGINEER before prime painting. Clean slag from welds prior to inspection.
- 3.02 ADJUSTING AND CLEANING
- A. Field repair of damaged galvanized coatings.
1. Repair galvanized surfaces damaged during shipping or erection/ construction operations.
 2. Repair surfaces using zinc-rich paint.
 3. Prepare surfaces and apply in accordance with ASTM A780, Annex A2.

END OF SECTION 05500

SECTION 06100 - ROUGH CARPENTRY

PART 1 GENERAL

1.01 SUMMARY

- A. Section Includes:
 - 1. Rough Carpentry:
 - a. Furring, nailers, and blocking.
 - b. Miscellaneous plywood panels.

1.02 DEFINITIONS

- A. Rough Carpentry: Carpentry work not specified as part of other sections and generally not exposed, except as otherwise indicated.

1.03 QUALITY ASSURANCE

- A. Lumber Standards: Manufacture lumber to comply with PS 20 and with applicable grading rules of inspection agencies certified by ALSC Board of Review.
- B. Grade Stamps:
 - 1. Factory-mark each piece of lumber and plywood with grade stamp of inspection agency evidencing compliance with grading rule requirements and identifying grading agency, grade, species, and moisture content at time of surfacing, and mill.
- C. Fire-Retardant Marking: Mark each unit of fire-retardant treated lumber and plywood with UL classification marking or other testing and inspecting agency acceptable to authorities having jurisdiction. Place marking on surfaces not exposed after installation.

1.04 DELIVERY, STORAGE, AND HANDLING

- A. Keep materials under cover and dry. Protect against exposure to weather and contact with damp or wet surfaces. Stack lumber and provide air circulation within and around stacks and under temporary coverings including polyethylene and similar material.
 - 1. For lumber pressure treated with waterborne chemicals, provide spacers between each course to provide air circulation.

PART 2 PRODUCTS

2.01 GENERAL

- A. Nominal sizes indicated except as shown by detail dimensions. Provide actual sizes required by PS 20 for moisture content specified for each use. Provide dressed lumber, S4S, unless otherwise indicated.

2.02 FURRING, NAILERS, BLOCKING, AND MISCELLANEOUS

- A. Provide wood for support or attachment of other Work including bucks, nailers, blocking, furring, grounds, stripping, and similar members. Provide lumber of sizes indicated, worked into shapes shown, and as follows.
 - 1. Moisture Content: 19% maximum for lumber items.

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2. Grade: Standard grade light framing size lumber of species or board size lumber as required. No. 3 common or standard grade boards per WCLIB or WWPA or No. 3 boards in accordance with SPIB.

2.03 MISCELLANEOUS PLYWOOD PANELS

A. General:

1. Construction Panel Standards: Comply with PS 1 for plywood panels and for products not manufactured under PS 1 provisions, with APA PRP-108.
2. Trademark: Factory-mark each construction panel with APA trademark evidencing compliance with grade requirements.

B. Plywood Backing Panels:

1. For mounting electrical, instrumentation or telephone equipment, provide fire-retardant treated plywood panels with trade designation, APA C-D plugged interior with exterior glue in thickness indicated, or if not otherwise indicated, not less than 1/2 in.

2.04 MISCELLANEOUS MATERIALS

A. Fasteners and Anchorages:

1. Provide size, type, material, and finish indicated and recommended by applicable standards, complying with applicable FS standards for nails, staples, screws, bolts, nuts washers, and anchoring devices.
2. Provide fasteners and anchorages with hot-dip zinc coating complying with ASTM A153.

2.05 WOOD TREATMENT

A. Preservative Treatment, Pressure Process:

1. Where lumber or plywood indicated or specified herein to be treated, comply with applicable requirements of AWWA C2 (lumber) and C9 (plywood) and of AWPB listed below. Mark each treated item with AWPB quality mark requirements.
2. Pressure-treat above ground items with waterborne preservatives to comply with AWPB LP-2. After treatment, kiln-dry lumber and plywood to maximum moisture content, respectively, of 19% and 15%.
3. Treat indicated items and following.
 - a. Wood cants, nailers, curbs, blocking, stripping, and similar members in connection with roofing, flashing, vapor barriers, and waterproofing.
 - b. Wood blocking, furring, stripping, and similar concealed members in contact with masonry or concrete.
4. Complete fabrication of treated items prior to treatment, where possible. If cut after treatment, coat cut surfaces with heavy brush coat of same chemical used for treatment to comply with AWWA M4. Inspect each piece of lumber or plywood after drying and discard damaged or defective pieces.

B. Fire-Retardant Treatment:

1. Where fire-retardant treated wood indicated, pressure impregnate lumber and plywood with fire-retardant chemicals to comply with AWWA C20 and AWWA C27, respectively, for treatment type indicated below; identify lumber with appropriate classification marking of UL, U.S. Testing, Timber Products Inspection or other testing and inspecting agency acceptable to authorities having jurisdiction.
2. Interior Type A: Interior applications.
3. Inspect each piece of treated lumber or plywood after drying and discard damaged or defective pieces.
4. Treat indicated items and following:
 - a. Interior exposed lumber and plywood.

PART 3 EXECUTION

3.01 INSTALLATION, GENERAL

- A. Discard units of material with defects impairing quality of Work and units too small to use in fabricating work with minimum joints or optimum joint arrangement.
- B. Set to required levels and lines, with members plumb and true to line and cut and fitted.
- C. Securely attach carpentry work to substrate by anchoring and fastening as shown and required by recognized standards.
 - 1. Countersink nail heads on exposed carpentry work and fill holes.
 - 2. Use common wire nails, except as otherwise indicated. Use finishing nails for finish work. Select fasteners of size that will not penetrate members where opposite side will be exposed to view or will receive finish materials. Make tight connections between members. Install fasteners without splitting of wood; predrill as required.

3.02 WOOD NAILERS AND BLOCKING

- A. Provide where shown and required for screeding or attachment of other Work. Form to shapes shown and cut as required for true line and level of Work to be attached. Coordinate location with other Work involved.
- B. Attach to substrates as required to support applied loading. Countersink bolts and nuts flush with surfaces, unless otherwise indicated. Build into masonry during installation of masonry work. Where possible, anchor to formwork before concrete placement.
- C. Provide permanent grounds of dressed, preservative treated, key-bevelled lumber not less than 1/2 in. wide and of thickness required to bring face of ground to exact thickness of finish material involved. Remove temporary grounds when no longer required.

3.03 WOOD FURRING

- A. Install plumb and level with closure strips at edges and openings. Shim with wood as required for tolerance of finished Work.

3.04 CONSTRUCTION PANELS

- A. General: Comply with PS 1 for types of plywood construction panels and, for products not manufactured under PS 1 provision, with APA PRP-108.
- B. Fastening Methods:
 - 1. Plywood Backing Panels: Bolt to supports.

3.05 PROTECTION

- A. Protect and maintain conditions necessary to ensure Work shall be without damage or deterioration at time of acceptance.

END OF SECTION 06100

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SECTION 06402 - INTERIOR ARCHITECTURAL WOODWORK

PART 1 - GENERAL

1.01 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 1 Specification Sections, apply to this Section.

1.02 SUMMARY

- A. This Section includes the following:
 - 1. Plastic-laminate cabinets
 - 2. Plastic-laminate countertops.

1.03 SUBMITTALS

- A. Product Data: For each type of product indicated, including cabinet hardware and accessories.
- B. Shop Drawings: Show location of each item, dimensioned plans and elevations, large-scale details, attachment devices, and other components
- C. Samples for Initial Selection:
 - 1. Plastic laminates.
 - 2. PVC edge material.
- D. Product Certificates: For each type of product, signed by product manufacturer.

1.04 QUALITY ASSURANCE

- A. Fabricator Qualifications: Shop that employs skilled workers who custom-fabricate products similar to those required for this Project and whose products have a record of successful in-service performance.
- B. Installer Qualifications: Fabricator of products.
- C. Quality Standard: Unless otherwise indicated, comply with AWI's "Architectural Woodwork Quality Standards" for grades of interior architectural woodwork indicated for construction, finishes, installation, and other requirements.

1.05 DELIVERY, STORAGE, AND HANDLING

- A. Do not deliver woodwork until painting and similar operations that could damage woodwork have been completed in installation areas. If woodwork must be stored in other than installation areas, store only in areas where environmental conditions comply with requirements specified in "Project Conditions" Article.

1.06 PROJECT CONDITIONS

- A. Environmental Limitations: Do not deliver or install woodwork until building is enclosed, wet work is complete, and HVAC system is operating and maintaining temperature and relative humidity at occupancy levels during the remainder of the construction period.

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- B. **Field Measurements:** Where **woodwork** is indicated to fit to other construction, verify dimensions of other construction by field measurements before fabrication, and indicate measurements on Shop Drawings. Coordinate fabrication schedule with construction progress to avoid delaying the Work.
 - 1. **Established Dimensions:** Where field measurements cannot be made without delaying the Work, establish dimensions and proceed with fabricating woodwork without field measurements. Provide allowance for trimming at site, and coordinate construction to ensure that actual dimensions correspond to established dimensions.

1.07 COORDINATION

- A. Coordinate sizes and locations of framing, blocking, furring, reinforcements, and other related units of Work specified in other Sections to ensure that interior architectural woodwork can be supported and installed as indicated.

PART 2 PRODUCTS

2.01 MATERIALS

- A. **General:** Provide materials that comply with requirements of AWI's quality standard for each type of woodwork and quality grade specified, unless otherwise indicated.
 - 1. **Wood Products:** Comply with the following:
 - a. **Hardboard:** AHA A135.4.
 - b. **Medium-Density Fiberboard:** ANSI A208.2, Grade MD.
 - c. **Particleboard:** ANSI A208.1, Grade M-2
 - d. **Softwood Plywood:** DOC PS 1, Medium Density Overlay.
 - 2. **Thermoset Decorative Panels:** Particleboard or medium-density fiberboard finished with thermally fused, melamine-impregnated decorative paper complying with LMA SAT-1.
 - a. Provide PVC or polyester edge banding complying with LMA EDG-1 on components with exposed or semiexposed edges.
 - 3. **High-Pressure Decorative Laminate:** NEMA LD 3, grades as indicated or, if not indicated, as required by woodwork quality standard.
 - a. **Manufacturer:** Subject to compliance with requirements, provide high-pressure decorative laminates by one of the following:
 - (1) Formica Corporation.
 - (2) Lamin-Art, Inc.
 - (3) Nevamar Company, LLC; Decorative Products Div.
 - (4) Westinghouse Electric Corp.; Specialty Products Div.
 - (5) Wilsonart International; Div. of Premark International, Inc.

2.02 CABINET HARDWARE AND ACCESSORIES

- A. **General:** Provide cabinet hardware and accessory materials associated with architectural cabinets, except for items specified in Division 8 Section Door Hardware.
 - 1. **Frameless Concealed Hinges (European Type):** BHMA A156.9, B01602, 170 degrees of opening.
 - 2. **Back-Mounted Pulls:** BHMA A156.9, B02011.
 - 3. **Wire Pulls:** Back mounted, solid metal, 4 inches long, 5/16 inch in diameter.
 - 4. **Catches:** Magnetic catches, BHMA A156.9, B03141

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5. Shelf Rests: BHMA A156.9, B04013; metal.
6. Drawer Slides: BHMA A156.9, B05091.
 - a. Standard Duty (Grade 1, Grade 2, and Grade 3): Side mounted and extending under bottom edge of drawer; full-extension type; epoxy-coated steel with polymer rollers.

- B. Exposed Hardware Finishes: For exposed hardware, provide finish that complies with BHMA A156.18 for BHMA finish number indicated.

Satin Chromium Plated: BHMA 626 for brass or bronze base; BHMA 652 for steel base.

- C. For concealed hardware, provide manufacturer's standard finish that complies with product class requirements in BHMA A156.9.

2.03 MISCELLANEOUS MATERIALS

- A. Adhesive for Bonding Plastic Laminate: Contact cement.

1. Adhesive for Bonding Edges: Hot-melt adhesive or adhesive specified above for faces.

2.04 FABRICATION, GENERAL

2. Interior Woodwork Grade: Unless otherwise indicated, provide Custom-grade interior woodwork complying with referenced quality standard.
3. Wood Moisture Content: Comply with requirements of referenced quality standard for wood moisture content in relation to ambient relative humidity during fabrication and in installation areas.
4. Complete fabrication, including assembly, finishing, and hardware application, to maximum extent possible before shipment to Project site. Disassemble components only as necessary for shipment and installation. Where necessary for fitting at site, provide ample allowance for scribing, trimming, and fitting.
 - a. Trial fit assemblies at fabrication shop that cannot be shipped completely assembled. Install dowels, screws, bolted connectors, and other fastening devices that can be removed after trial fitting. Verify that various parts fit as intended and check measurements of assemblies against field measurements indicated on Shop Drawings before disassembling for shipment.
5. Shop-cut openings to maximum extent possible to receive hardware, appliances, plumbing fixtures, electrical work, and similar items. Locate openings accurately and use templates or roughing-in diagrams to produce accurately sized and shaped openings. Sand edges of cutouts to remove splinters and burrs.
 - a. Seal edges of openings in countertops with a coat of varnish.

2.05 PLASTIC-LAMINATE CABINETS

- A. Retain one of four grades in first paragraph below; delete paragraph if one grade is specified for all interior woodwork. Laboratory grade only applies to W1. If retaining Laboratory grade, special finishes must be inserted into "Shop Finishing" Article. See Evaluations and W1's manual.
 1. Grade: Custom.
 2. AWI Type of Cabinet Construction: Flush overlay
 3. Laminate Cladding for Exposed Surfaces: High-pressure decorative laminate complying with the following requirements:
 - a. Horizontal Surfaces Other Than Tops: Grade HGS
 - b. Vertical Surfaces: Grade HGS

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c. Edges: PVC edge banding, 0.12 inch (3 mm) thick.

D. Materials for Semiexposed Surfaces:

1. Surfaces Other Than Drawer Bodies: Thermoset decorative panels.

a. Edges of Plastic-Laminate Shelves: PVC edge banding, 0.12 inch (3 mm) thick.

2. Drawer Sides and Backs: Thermoset decorative panels.

3. Drawer Bottoms: Thermoset decorative panels.

E. Colors, Patterns, and Finishes: Provide materials and products that result in colors and textures of exposed laminate surfaces complying with the following requirements:

1. As selected by Architect from laminate manufacturer's full range in the following categories:

a. Solid colors or patterns, matte finish.

2.06 PLASTIC-LAMINATE COUNTERTOPS

F. Grade: Custom.

G. High-Pressure Decorative Laminate Grade: HGS.

H. Colors, Patterns, and Finishes: Provide materials and products that result in colors and textures of exposed laminate surfaces complying with the following requirements:

1. As selected by Architect from manufacturer's full range in the following categories:

A. Solid colors or patterns, matte finish

I. Edge Treatment: 3mm PVC.

J. Core Material: Particleboard

PART 3 EXECUTION

A. PREPARATION

1. Before installation, condition woodwork to average prevailing humidity conditions in installation areas.

2. Before installing architectural woodwork, examine shop-fabricated work for completion and complete work as required, including removal of packing and backpriming.

B. INSTALLATION

1. Cabinets: Install without distortion so doors and drawers fit openings properly and are accurately aligned. Adjust hardware to center doors and drawers in openings and to provide unencumbered operation. Complete installation of hardware and accessory items as indicated.

a. Install cabinets with no more than 1/8 inch in 96-inch (3 mm in 2400-mm) sag, bow, or other variation from a straight line.

2. Countertops: Anchor securely by screwing through corner blocks of base cabinets or other supports into underside of countertop.

a. Install countertops with no more than 1/8 inch in 96-inch (3 mm in 2400-mm) sag, bow, or other variation from a straight line.

b. Secure backsplashes to walls with adhesive and to tops.

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- c. Calk space between backsplash and wall with sealant specified in Division 7 Section "Joint Sealants."
3. Touch up finishing work specified in this Section after installation of woodwork. Fill nail holes with matching filler where exposed.

C. ADJUSTING AND CLEANING

1. Repair damaged and defective woodwork, where possible, to eliminate functional and visual defects; where not possible to repair, replace woodwork. Adjust joinery for uniform appearance.
2. Clean, lubricate, and adjust hardware.
3. Clean woodwork on exposed and semiexposed surfaces. Touch up shop-applied finishes to restore damaged or soiled areas.

END OF SECTION 06402



SECTION 07200 - INSULATION

PART 1 GENERAL

1.01 SUMMARY

A. Section Includes:

1. Rigid board insulation.
2. Foamed-in-place insulation.
3. Mineral wool insulation.
4. Firestop mastic.

1.02 QUALITY ASSURANCE

A. Thermal Resistivity: Where thermal resistivity properties of insulation materials are designated by R-values, they represent rate of heat flow through homogenous material exactly 1-in. thick, measured by test method included in referenced material standard or otherwise indicated. They are expressed by temperature difference in degrees Fahrenheit between two exposed faces required to cause one Btu to flow through 1 sq ft/hr at mean temperatures indicated.

B. Fire Performance Characteristics: Provide insulation materials which are identical to those whose fire performance characteristics, as listed for each material or assembly of which insulation is a part, have been determined by testing, in accordance with methods indicated below, by UL or other testing and inspecting agency acceptable to authorities having jurisdiction.

1. Surface Burning Characteristics: ASTM E84.
2. Fire Resistance Ratings: ASTM E119.
3. Combustion Characteristics: ASTM E136.

1.03 DELIVERY, STORAGE, AND HANDLING

A. Protection:

1. Protect insulations from physical damage and from becoming wet, soiled, or covered with ice or snow.
2. Comply with manufacturer's recommendations for handling, storage, and protection during installation.

B. Protection for Plastic Insulation:

1. Do not expose to sunlight, except to extent necessary for period of installation and concealment.
2. Protect against ignition.
3. Do not deliver plastic insulating materials to Project site ahead of installation time.
4. Complete installation and concealment of plastic materials as rapidly as possible in each area of Work.

PART 2 PRODUCTS

2.01 INSULATING MATERIALS

A. General:

1. Provide insulating materials which comply with requirements indicated for materials, compliance with referenced standards, and other characteristics.

B. Extruded Polystyrene Board Insulation:

1. Manufacturers:

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- a. Dow Chemical Company.
 - b. Diversifoam Products, Inc.
 - c. UC Industries, U.S. Gypsum Company.
 - d. Or approved equal.
2. Rigid, cellular thermal insulation with closed-cells and integral high density skin, formed by expansion of polystyrene base resin in extrusion process.
 3. ASTM C578 for type indicated.
 4. 5-yr aged R-values of 5.4 and 5 at 40°F and 75°F (4.4°C and 23.9°C), respectively.
 5. Surface Burning Characteristics: Maximum flame spread and smoke developed values of 5 and 165, respectively.
 - a. Type IV, 1.6 lbs/cu ft minimum density, unless otherwise indicated.

C. Foamed-in-place Insulation:

1. Manufacturers:
 - a. Thermal Corporation of America
 - b. C.P. Chemical Co., Inc.
 - c. Polymaster
 - d. Tailored Chemical Products, Inc.
2. Liquid expanding pourable foam, closed cell, low density, non-settling, non-toxic off-gassing, limited moisture absorption, complying with applicable ASTM and UL standards.
3. R-values of not less than 4.8/inch at 75°F (23.9°C).

D. Mineral Wood Safing Insulation:

1. Manufacturers:
 - a. Celotex.
 - b. Owens-Corning.
 - c. IIG MinWool LLC
2. Thermal insulation produced by combining mineral fibers of type described below with thermosetting resins.
3. ASTM C665 for Type I (blankets without membrane facing).
4. Mineral Fiber Type: Fibers manufactured from glass or slag.
5. Surface Burning Characteristics: Maximum flame spread value of 25 and smoke developed value of 50.

E. Firestop Coating

1. Manufacturers:
 - a. W. R. Grace, FS3000 Firestop Coating
 - b. Approved equal.

2.02 AUXILIARY INSULATING MATERIALS

- A. Adhesive for Bonding Insulation: Type recommended by insulation manufacturer complying with fire performance characteristics.
- B. Mechanical Anchors: Type and size shown or, if not shown, as recommended by insulation manufacturer for type of application and condition of substrate.

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C. Crack Sealer for Board Insulation:

1. Manufacturers:

- a. "Polycel 100" by Construction Products, Division of W.R. Grace & Company.
- b. Or equal.

2. Provide polymeric insulating foam in aerosol dispenser designed for filling voids in board insulation.

PART 3 EXECUTION

3.01 EXAMINATION

- A. Examine substrates and conditions under which insulation work to be performed. Do not proceed with insulation work until unsatisfactory conditions corrected.

3.02 PREPARATION

- A. Clean substrates of substances harmful to insulations or vapor retarders (barriers) including removal of projections which might puncture vapor retarder.
- B. Close off openings in cavities to receive poured-in-place insulation, sufficiently to prevent escape of insulation. Provide bronze or stainless steel screen (inside) where openings must be maintained for drainage or ventilation.

3.03 INSTALLATION

A. General:

1. Comply with manufacturer's instructions for particular conditions of installation. If printed instructions not available or do not apply to Project conditions, consult manufacturer's technical representative for specific recommendations before proceeding with Work.
2. Extend insulation full thickness as shown over entire area to be insulated. Cut and fit tightly around obstructions, and fill voids with insulation. Remove projections interfering with placement.
3. Apply single layer of insulation of required thickness, unless otherwise shown or required to make up total thickness.
4. Apply insulation units to substrate by method indicated complying with manufacturer's recommendations. If no specific method is indicated, bond units to substrate with adhesive or use mechanical anchorage to provide permanent placement and support of units.

B. Perimeter Insulation:

1. On vertical surfaces, set units in adhesive applied in accordance with manufacturer's instructions. Use type adhesive recommended by insulation manufacturer.

C. Block Fill Insulation:

1. For filling CMU block cores, apply only at acceptable temperatures and in accordance with manufacturer's instructions to ensure entire void space is properly filled.

3.04 PROTECTION

- A. Protect installed insulation and vapor retarders from harmful weather exposures and possible physical abuses where possible by non-delayed installation of concealing work or, where not possible, by temporary covering or enclosure.

END OF SECTION 07200

SECTION 07532 - SINGLE PLY LOOSE LAID MEMBRANE ROOFING (EPDM)

PART 1 GENERAL

1.01 SUBMITTALS

A. Product Data:

1. List of materials proposed for use including roofing materials, insulation, and fasteners.
2. Manufacturer's specifications selected for use including description of complete system from deck up.

B. Samples:

1. Samples of ballast (10 lbs minimum) which is representative of the material which will be used.

C. Shop Drawings:

1. Manufacturer's details including perimeter, flashing, parapet, splices, penetrations, and terminations. Include roof layout showing splices and locations of proposed details.

D. Operation and Maintenance Data:

1. Manufacturer's Maintenance Manual, identified with project name, location and date; type of roofing applied; and surface to which system was applied, including sketches where applicable. Include recommendations for periodic inspections, care, and maintenance. Identify common causes of damage with instructions for temporary patching until permanent repair can be made.

E. Miscellaneous:

1. Letter from roofing materials manufacturer stating that installer has been trained and approved by manufacturer to apply roof.
2. Name and location of quarry that will provide ballast.
3. Copy of "pre-installation notice" bearing manufacturer's acceptance.

F. Submit in accordance with Section 01340.

1.02 QUALITY ASSURANCE

A. Manufacturer: Obtain primary flexible sheet roofing from single manufacturer. Provide auxiliary materials as recommended by manufacturer of primary materials.

B. Installer: Engage an experienced Installer to apply single ply membrane roofing who has specialized in application of roofing systems similar to those required for this Project. Installer shall be acceptable to or licensed by manufacturer of primary roofing material.

1. Work associated with single ply membrane roofing, including (but not limited to) insulation, flashing and counterflashing, expansion joints, and joint sealers, is to be performed by Installer of this work.

C. Pre-Roofing Conference: Prior to installation of roofing and associated work, meet at project site, or other mutually agreed location, with Installer, roofing sheet manufacturer, installers of related work, and other entities concerned with roofing performance, including (where applicable) Owner's insurer, test agencies, governing authorities, and OWNER. Record discussions and agreements and furnish copy to each participant. Provide at least 72 hrs' advance notice to participants prior to convening pre-roofing conference.

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- D. **UL Listing:** Provide labeled materials that have been tested and listed by UL in "Building Materials Directory" or by other nationally recognized testing laboratory for application indicated, with "Class A" rated materials/system for roof slopes shown.

1.03 PROJECT/SITE CONDITIONS

- A. **Weather:** Proceed with roofing work when existing and forecasted weather conditions permit work to be performed in accordance with manufacturers' recommendations and warranty requirements.
- B. **Substrate Conditions:** Do not begin roofing installation until substrates have been inspected and are determined to be in satisfactory condition.
- C. Do not place concentrated loads on deck.

1.04 WARRANTY

- A. **Manufacturer's Warranty:** Submit executed copy of single ply membrane manufacturer's "Limited Service Warranty" agreement including flashing endorsement covering roofing system from the deck up, unlimited, no monetary limit, signed by an authorized representative of manufacturer. Provide form that was published with product literature as of date of Contract Documents, for the following period of time:
 - 1. 10 yrs after date of Substantial Completion.

PART 2 PRODUCTS

2.01 GENERAL

- A. **Performance:** Provide roofing materials recognized to be of generic type indicated and tested to show compliance with indicated performances, or provide other similar materials certified in writing by manufacturer to be equal to, or better than, materials specified in every significant respect, and acceptable to ARCHITECT.
- B. **Compatibility:** Provide products that are recommended by manufacturers to be fully compatible with indicated substrates, or provide separation materials as required to eliminate contact between incompatible materials.

2.02 EPDM MEMBRANE

- A. **Manufacturers:**
 - 1. Carlisle Syntec Systems.
 - 2. Firestone Building Products Co.
 - 3. Or equal.
- B. **Ethylene propylene diene monomers formed into uniform, flexible sheets, complying with ASTM D4637, Type 1.**
 - 1. Class SR, scrim or fabric reinforced.
 - 2. Thickness: 45 mils, nominal.
 - 3. Exposed Face Color: Black.

2.03 AUXILIARY MATERIALS

- A. **Gypsum Board Base:** ASTM C1177, equal to Georgia Pacific Densdeck Prime Fireboard.
- B. **Sheet Seaming System:** Manufacturer's standard materials for sealing lapped joints, including edge sealer to cover exposed spliced edges as recommended by membrane manufacturer.

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- C. Tapered Edge Strips, and Flashing Accessories: Types recommended by membrane manufacturer, including adhesive tapes, flashing cements, and sealants.
- D. Flashing Material: Manufacturer's standard system compatible with flexible sheet membrane.
- E. Roof Walkway: 30" x 30" asphalt roof pavers.
- F. Slip Sheet: Type recommended by membrane manufacturer for protecting membrane from incompatible substrates.
- G. Aggregate Surface Ballast:
 - 1. Washed, rounded, riverbed gravel or other acceptable smooth-faced stone ranging in size from 1 in. to 2 in. in diameter.
 - 2. Provide aggregate that will withstand weather exposure without significant deterioration and will not contribute to membrane degradation.
- H. Mechanical fasteners as recommended by membrane manufacturer.

2.04 INSULATING MATERIALS

- A. General:
 - 1. Provide insulating materials to comply with requirements indicated for materials and compliance with referenced standards in sizes to fit applications indicated, selected from manufacturer's standard thicknesses, widths, and lengths.
 - 2. Provide tapered boards where indicated for sloping to drain. Fabricate with taper of 1/4 in./ft, unless otherwise indicated.
- B. Extruded Polystyrene Board Insulation:
 - 1. Rigid, cellular thermal insulation with closed cells and integral high-density skin.
 - 2. Comply with ASTM C578 for Type indicated.
 - 3. 5-yr aged r-values of 5.4 and 5 at 40 and 75°F (4.4 and 23.9°C), respectively.
 - 4. Type IV, 1.6-pcf min. density, unless otherwise indicated.

PART 3 EXECUTION

3.01 SYSTEM PROFILE

- A. Gypsum Board.
- B. Insulation: 2 layers.
- C. Membrane and base flashing.
- D. Ballast.

3.02 PREPARATION OF SUBSTRATE

- A. General:
 - 1. Comply with manufacturers' instructions for preparation of substrate to receive single ply membrane system.

2. Verify that penetrations, expansion joints, and blocking are in placed and secured and that roof drains are properly clamped into position.

- B. Clean substrate of dust, debris, and other substances detrimental to work. Remove sharp projections.
- C. Install flashings and accessory items as shown, and as recommended by manufacturer if not shown.
- D. Prevent compounds from entering and clogging drains and conductors and from spilling or migrating onto surfaces of other work.

3.03 GYPSUM BOARD INSTALLATION

- A. Stagger joints.

3.04 INSULATION INSTALLATION

A. General:

1. Extend insulation full thickness in 2 layers, or in multiple layers over entire surface to be insulated, cutting and fitting tightly around obstructions.
2. Form crickets, saddles, and tapered areas with additional material as shown and as required for proper drainage of membrane.
3. Stagger joints in 1 direction for each course. For multiple layers, stagger joints in both directions between courses with no gaps, to form complete thermal envelope.

- B. Do not install more insulation each day than can be covered with membrane before end of day or before start of inclement weather.

- C. Set insulation units loose on substrate and cover immediately with loose membrane for ballasted installation. Limit joints between adjacent units to 1/4-in. maximum.

3.05 MEMBRANE INSTALLATION

A. General:

1. Start installation only after approval of roofing system by installation manufacturer if condition of warranty.
2. Cut out and repair membrane defects at end of each day's work.

B. Loose-Laid and Ballasted:

1. Install membrane by unrolling over prepared substrate, fastening at perimeter and at roofing penetrations.
2. Lap adjoining sheets and bond, covering top edges of each sheet at seams with uniform fillet of sealant as recommended by manufacturer.
3. Install flashings and counterflashings as shown and as recommended by manufacturer.
4. Install premolded pipe seals as shown and as recommended by manufacturer.
5. Apply aggregate at following thickness:
 - a. Roof Perimeter: 4 ft wide, 12 lbs/sq ft.
 - b. Roof Corners: 8 ft x 8 ft, 15 lbs/sq ft.
 - c. Remainder of Roof: 10 lbs/sq ft.
6. Apply asphalt pavers in strict accordance with manufacturer's instructions.

3.06 PROTECTION OF ROOFING

- A. Upon completion of roofing (including associated work), institute appropriate procedures for surveillance and protection of roofing during remainder of construction period. At substantial completion roofing manufacturer's representative shall make final inspection of roofing and prepare a written report to OWNER, describing nature and extent of deterioration or damage found.

- B. Repair or replace (as required) deteriorated or defective work found at time of final inspection to a condition free of damage and deterioration at time of Substantial Completion and in accordance with requirements of specified warranty.

END OF SECTION 07532



SECTION 07600 - SHEET METAL

PART 1 GENERAL

1.01 SUMMARY

A. Section Includes:

1. Metal counter flashing and wall flashings.
2. Metal expansion joints.
3. Gutters and downspouts (rain drainage).
4. Metal fascia/gravel stop systems.
5. Thru wall flashing.

1.02 SUBMITTALS

- A. **Product Data:** Manufacturer's product data, installation instructions, and general recommendations for each specified sheet material fascia, coping, and fabricated products.
- B. Submit in accordance with Section 01340.

1.03 QUALITY ASSURANCE

- A. Industry Standards provide products complying with applicable requirements of SMACNA "Architectural Sheet Metal Manual," except as otherwise indicated.

1.04 PROJECT/SITE CONDITIONS

- A. Coordinate Work of this section with interfacing and adjoining work for proper sequencing of each installation. Ensure best possible weather resistance and durability of Work and protection of materials and finishes.

PART 2 PRODUCTS

2.01 MATERIALS

A. Sheet Metal Flashing/Trim:

1. **Zinc-Coated Steel:**
 - a. Commercial quality with 0.20% copper, ASTM A525 except ASTM A527 for lock-forming.
 - b. G90 hot dip galvanized, mill phosphatized where indicated for painting.

2.02 METAL COUNTERFLASHING

A. Materials:

1. **Pre-Finished Zinc-Coated Steel:**
 - a. Gauge: 26.
 - b. Finish: High performance coating.
 - c. Color: As selected by OWNER.

- B. **Fabrication:** Shop-fabricated.

2.03 GUTTERS AND DOWNSPOUTS (RAIN DRAINAGE)

A. Materials:

1. Pre-Finished Zinc-Coated Steel:
 - a. Gauge/Thickness: 26.
 - b. Finish: High performance coating.
 - c. Color: As selected by OWNER.
 - d. Gutter Shape: SMACNA Style G.
 - e. Downspout Shape: Rectangular, open-face.
 - f. Size: Per SMACNA recommendations for 10-yr storms.

B. Fabrication: Shop-fabricated.

2.04 METAL COPING SYSTEMS

A. Materials:

1. Pre-Finished Zinc-Coated Steel:
 - a. Gauge: 26.
 - b. Finish: High performance coating.
 - c. Color: As selected by OWNER.
 - d. Shape: As indicated on Drawings.
2. Provide system consisting of fascia or coping designed to interlock, formed zinc-coated steel hold-down clip, compression clamp with concealed screw to maintain fascia engagement with clip and compression clamp of profile and size indicated.
3. Weld prefabricated outside and inside corner miters before finishing.

2.05 METAL FASCIA/GRAVEL STOP

1. Pre-Finished Aluminum equal to SAF FTGS.
 - a. Gauge: Min. .093".
 - b. Finish: High performance coating.
 - c. Color: As selected by OWNER.
 - d. Shape: As indicated on Drawings.

2.06 THRU WALL FLASHING

A. Manufacturer's standard flexible, elastic, black, non-reinforced, flashing sheet of 40 mil thickness with adhesive backing.

1. Provide flashing equal to W.R. Grace Bithuthene Perma-Barrier.
2. Provide 22 ga. stainless steel flashing lip.

2.06 MISCELLANEOUS MATERIALS AND ACCESSORIES

A. General: Use materials compatible with adjoining materials.

B. Solder: For use with steel, provide 50-50 tin/lead solder (ASTM B32), with rosin flux.

C. Fasteners:

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1. Exposed Fasteners: Stainless steel, nonmagnetic, of type and size standard with manufacturer for product and application indicated. Match finish of exposed heads with material being fastened.
 2. Concealed Fasteners: Same metal as item fastened or other non-corrosive metal as recommended by manufacturer.
- D. Bituminous Coating: SSPC Paint 12, solvent type bituminous mastic, nominally free of sulfur, compounded for 15-mil dry film thickness per coat.
- E. Mastic Sealant: Polyisobutylene; non-hardening, non-skinning, nondrying, non-migrating sealant.
- F. Elastomeric Sealant: Generic type recommended by manufacturer of metal and fabricator of components being sealed.
- G. Epoxy Seam Sealer: 2-part non-corrosive metal seam cementing compound, recommended by metal manufacturer for exterior/interior nonmoving joints including riveted joints.
- H. Adhesives: Type recommended by flashing sheet manufacturer for waterproof/weather-resistant seaming and adhesive application of flashing sheet.
- I. Metal Accessories: Provide sheet metal clips, straps, anchoring devices, and similar accessory units as required for installation of Work, matching or compatible with material being installed, non-corrosive, size and gauge required for performance.
- J. Elastic Flashing Filler: Closed-cell polyethylene or other soft closed-cell material recommended by elastic flashing manufacturer as filler under flashing loops to ensure movement with minimum stress on flashing sheet.
- K. Roofing Cement: ASTM D2822, asphaltic.
- L. Foam Rubber Seal: Manufacturer's standard foam.

2.07 FABRICATION

A. General:

1. Design and fabricate to fit applications indicated and perform optimally with respect to weather resistance, watertightness, durability, strength, and uniform appearance.
2. Expansion Provisions: Fabricate fascia and copings to allow controlled expansion in running lengths not only for movement of metal components in relationship to one another but also to adjoining dissimilar materials, including flashing and roofing membrane materials, in manner sufficient to prevent water leakage, deformation or damage.

B. Metal Fabrication:

1. General:

- a. Shop-fabricate Work to greatest extent possible. Comply with details shown and applicable requirements of SMACNA "Architectural Sheet Metal Manual" and other recognized industry practices.
- b. Fabricate for waterproof and weather-resistant performance, with expansion provisions for running Work sufficient to permanently prevent leakage, damage or deterioration of Work.
- c. Form Work to fit substrates. Comply with material manufacturer instructions and recommendations for forming material. Form exposed sheet metal work without excessive oil-canning, buckling, and tool marks, true to line and levels indicated, with exposed edges folded back to form hems.

2. Seams:

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- a. Fabricate nonmoving seams in sheet metal with flat-lock seams.
 - b. Form aluminum seams with epoxy seam sealer. Rivet joints for additional strength where required.
 - c. For metal other than aluminum, tin edges to be seamed, form seams, and solder.
3. Expansion Provisions:
- a. Where lapped or bayonet type expansion provisions in Work cannot be used, or would not be sufficiently water or weatherproof, form expansion joints of intermeshing hooked flanges, not less than 1 in. deep, filled with mastic sealant (concealed within joints).
4. Sealant Joints:
- a. Where movable, non-expansion type joints indicated or required for proper performance of Work, form metal to provide for proper installation of elastomeric sealant in compliance with SMACNA standards.
5. Separations:
- a. Provide for separation of metal from non-compatible metal or corrosive substrates by coating concealed surfaces at locations of contact with bituminous coating or other permanent separation as recommended by manufacturer/fabricator.

2.08 FINISHES

- A. General: Comply with NAAMM "Metal Finishes Manual" for finish designations and application recommendations indicated below, except as otherwise indicated.
1. For components assembled or welded in factory, apply finish after fabrication complete.
- B. High Performance Coating:
1. Cleaned with inhibitive chemicals, conversion coated with acid-chromate-fluoride-phosphate treatment, and painted with organic coating specified below.
 2. Apply in compliance with coating and resin manufacturer's instructions using licensed applicator.
 3. Fluorocarbon Coating: Inhibitive thermocured primer, minimum 0.2 mil dry film thickness, and thermocured fluorocarbon coating containing "Kynar 500" resin, minimum 1.0 mil dry film thickness.

PART 3 EXECUTION

3.01 INSTALLATION

- A. Coordinate with installation of roof deck and other substrates to receive Work of this section with vapor retarders, roof insulation, roofing membrane, flashing, and wall construction; required to ensure each element of Work performs properly and combined elements waterproof and weathertight.
- B. General:
1. Except as otherwise indicated, comply with manufacturer's installation instructions and recommendations and with SMACNA "Architectural Sheet Metal Manual."
 2. Anchor to structural substrates to withstand lateral and thermal stresses, and inward and outward loading pressures.
 3. Conceal fasteners where possible, set units true to line, and level as indicated.
 4. Install Work with permanently watertight and weatherproof laps, joints, and seams.

5. Isolation: Where metal surfaces of units are installed in contact with dissimilar metal or corrosive substrates including wood, apply bituminous coating on concealed metal surfaces, or provide other permanent separation as recommended by aluminum producer.
- C. Bed flanges of Work in thick coat of bituminous roofing cement where required for waterproof performance.
 - D. Install reglets to receive counterflashing in manner and by methods indicated.
 1. Where shown in concrete, furnish reglets for installation with concrete work.
 2. Where shown in masonry, furnish reglets for installation with masonry work.
 3. Install counterflashing in reglets by snap-in seal arrangement or wedging in-place for anchorage and filling reglet with mastic or elastomeric sealant, as indicated and depending on degree of sealant exposure.
 - E. Install elastic thru-wall flashing in accordance with manufacturer's recommendations. Where required, provide for movement at joints by forming loops or bellows in flashing width. Locate cover or filler strips at joints to facilitate complete drainage of water from flashing. Seam adjacent flashing sheets with adhesive, seal, and anchor edges in accordance with manufacturer's recommendations. Extend stainless steel lip 2 in. from inside face of wall to 1/2-in. past joint and bend down to 45-degree angle.
 - F. Nail flanges of expansion joint units to curb nailers at maximum spacing of 6 in. Fabricate seams at joints between units with minimum 3-in. overlap to form continuous waterproof system.
 - G. Install continuous gutter guards on gutters. Provide hinged units to swing open for cleaning gutters. Install beehive type strainer guard at conductor heads removable for cleaning downspouts.
- 3.02 CLEANING
- A. Clean exposed metal surfaces removing substances causing metal corrosion or finish deterioration.
- 3.03 PROTECTION
- A. Protect flashings and sheet metal work during construction to ensure Work will be without damage or deterioration, other than natural weathering, at time of Substantial Completion.

END OF SECTION 07600

SECTION 07720-ROOF ACCESSORIES

PART 1 GENERAL

1.01 SUMMARY

A. Section Includes:

1. Procurement of prefabricated curb and equipment support units.
2. Installation of prefabricated curb and equipment support units.

1.02 QUALITY ASSURANCE

A. Standards:

1. SMACNA "Architectural Sheet Metal Manual" details for fabrication of units, including flanges and cap-flashing to coordinate with type of roofing indicated.
2. NRCA "Roofing and Waterproofing Manual" and SPRI (Single-Ply Roofing Institute) details for installation of units.
3. Roof accessories and roofing manufacturer's details for warrantee coverage.

PART 2 PRODUCTS

2.01 MANUFACTURERS

A. Prefabricated Curb and Equipment Support Units:

1. Curbs, Inc.
2. Custom Curb, Inc.
3. The Pate Co.
4. Roof Products and Systems Corp.
5. ThyCurb Div./ThyBar Corp.

2.02 MATERIALS, GENERAL

- A. Structural-Quality Galvanized Steel Sheet:** ASTM A446 with G90 coating complying with ASTM A525, Grade C, or to suit manufacturer's standards.
- B. Galvalume-Coated Steel Sheet:** ASTM A792 with class AZ-50 coating, Grade 40, or to suit manufacturer's standards.
- C. Insulation:** Manufacturer's standard rigid board of thickness indicated.
- D. Wood Nailers:** Softwood lumber, pressure treated with water-borne preservatives for aboveground use, complying with AWWPA C2; not less than 1-1/2-in. thick.
- E. Fasteners:** Same metal as metals being fastened, or nonmagnetic stainless steel or other noncorrosive metal as recommended by manufacturer. Match finish of exposed fasteners with finish of material being fastened.
1. Where removal of exterior exposed fasteners affords access to building, provide nonremovable fastener heads.
- F. Gaskets:** Manufacturer's standard tubular or fingered design of neoprene or polyvinyl chloride, or block design of sponge neoprene.

- G. Bituminous Coating: SSPC-Paint 12, solvent-type bituminous mastic, nominally free of sulfur and containing no asbestos fibers, compounded for 15-mil dry film thickness per coating.
- H. Mastic Sealant: Polyisobutylene; nonhardening, nonskinning, nondrying, nonmigrating sealant.
- I. Roofing Cement: ASTM D4586, nonasbestos, fibrated asphalt cement designed for trowel application or other adhesive compatible with roofing system.

2.02 PREFABRICATED CURBS AND EQUIPMENT SUPPORTS

- A. General: Confirm loading and strength requirements where unit is supporting other equipment. Coordinate dimensions with rough-in information or Shop Drawings of equipment to be supported.
 - 1. Fabricate of structural-quality, hot-dip galvanized or galvalume sheet steel, factory-primed and prepared for painting with welded or sealed mechanical corner joints.
 - 2. Provide complete with base profile coordinated with roof insulation thickness. Provide preservative-treated wood nailers at tops of curbs, coordinate with thickness of insulation and roof flashing as indicated, tapered as necessary to compensate for roof deck slopes.
 - 3. Unless otherwise indicated or required for strength, fabricate units of minimum 14 ga (0.0747-in. thick) metal, and to minimum height of 12 in.
 - 4. Provide metal sheet liner at all conditions where interior of curb is exposed to view.

PART 3 EXECUTION

3.01 INSTALLATION

- A. General: Comply with manufacturer's instructions and recommendations. Coordinate with installation of roof deck and other substrates to receive accessory units, vapor barriers, roof insulation, roofing and flashing, as required, to ensure that each element of the Work performs properly and that combined elements are waterproof and weathertight. Anchor units securely to supporting structural substrates, adequate to withstand lateral, uplift and thermal stresses, as well as inward and outward loading pressures.
 - 1. Except as otherwise indicated, install roof accessory items according to construction details of NRCA "Roofing and Waterproofing Manual."
 - 2. Install roof curbs provided with equipment specified elsewhere herein.
- B. Isolation: Where metal surfaces of units are to be installed in contact with incompatible metal or corrosive substrates, including wood, apply bituminous coating on concealed metal surfaces, or provide other permanent separation.
- C. Flange Seals: Unless otherwise indicated, set flanges of accessory units in a thick bed of roofing cement to form a seal.
- D. Cap Flashing: Where cap flashing is required as component of accessory, install to provide adequate waterproof overlap with roofing or roof flashing (as counterflashing). Seal with thick bead of mastic sealant, except where overlap is indicated to be left open for ventilation.

3.02 CLEANING AND PROTECTION

- A. Clean exposed metal surfaces according to manufacturer's instructions. Touch up damaged metal coatings.

END OF SECTION 07720

SECTION 07920 - JOINT SEALANTS

PART 1 GENERAL

1.01 QUALITY ASSURANCE

- A. **Installer Qualifications:** Installer with not less than 3 yrs successful experience in joint sealant installations and acceptable to sealant manufacturer.
- B. **Single Source Responsibility of Joint Sealant Materials:** Obtain sealant materials from single manufacturer for each different product required.

1.02 DELIVERY, STORAGE, AND HANDLING

- A. Deliver material to Project site in original unopened containers or bundles with labels informing about manufacturer, product name and designation, color, expiration period for use, pot life, curing time and mixing instructions for multi-component materials.
- B. Store and handle materials to prevent their deterioration or damage due to moisture, temperature changes, contaminants, or other causes.

1.03 PROJECT/SITE CONDITIONS

- A. **Environmental Conditions:** Do not proceed with installation of joint sealant under following conditions:
 - 1. When ambient and substrate temperature conditions are outside limits permitted by joint sealant manufacturer.
 - 2. When joint substrates are wet due to rain, frost, condensation or other causes.
- B. **Joint Width Conditions:** Do not proceed with installation of joint sealant when joint widths exceed limits allowed by joint sealant manufacturer for application indicated.

PART 2 PRODUCTS

2.01 MATERIALS

- A. **Compatibility:** Provide joint sealants, joint fillers, backer rods, and other related materials compatible with one another and joint substrates under conditions of service and application, as demonstrated by testing and field experience.
- B. **Colors:** Provide color of exposed joint sealants indicated or, if not otherwise indicated, as selected by OWNER from manufacturer's standard colors.

2.02 ELASTOMERIC SEALANTS

- A. **Manufacturers:**
 - 1. Tremco
 - 2. GE
 - 3. Or Equal.

B. Joints on Vertical or Inclined Surfaces:

1. Joints:

- a. Expansion and control joints in concrete and masonry.
- b. Perimeters of window frames, door frames, louvers and similar openings, and where metal or other materials abut or join masonry and cast-place concrete, or each other.

2. Material:

- a. Tremco Dymeric.
- b. Multipart polyepoxide urethane sealant, FS TT-S-00227E, Class A, Type II, or ASTM C920, Type M, Grade NS (non-sag), Class 25, use NT, M, A, and O.

C. Joints on Horizontal Surfaces:

1. Joints:

- a. Sidewalks, concrete floors, and driveways.
- b. Where indicated on Drawings.

2. Material:

- a. Tremco THC-900/901.
- b. Multipart chemically curing polyurethane, FS TT-S-00227E, Class A, Type I, (Self-Leveling), or ASTM C920, Type M, Grade P, Class 25, use T, M, A, and O.

D. Sanitary Sealant:

1. Joints:

- a. Perimeters of plumbing fixtures.

2. Material:

- a. GE Sanitary Sealant

2.03 FIRE-STOPPING SYSTEM

1. Sealing Around Pipes through Walls:

- a. Tremco TREMstop WS Intumescent wrap strip.
- b. Tremco TREMstop MCR prefabricated metal collar.

2. Sealing Around Single and Multiple Cables through Walls:

- a. Tremco TREMstop FP intumescent putty.
- b. Tremco TREMstop M.

3. Accessory Materials:

- a. Provide wire, packing, and other accessory materials required for installation of fire-stopping sealants as applicable to installation conditions.

2.04 PREFORMED FOAM SEALANT

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- A. Manufacturer's standard preformed, precompressed, impregnated open-cell foam sealant manufactured from high-density urethane foam impregnated with nondrying, water repellent agent.
- B. Factory-produce in precompressed sizes and in roll or stick form to fit joint widths indicated and to develop watertight and airtight seal when compressed to degree specified by manufacturer.
- C. Provide products permanently elastic, mildew-resistant, non-migratory, non-staining, and compatible with joint substrates and other joint sealants.
- D. Backing: Pressure sensitive adhesive, factory-applied to one side, with protective wrapping.

2.05 JOINT FILLERS FOR CONCRETE SLABS

- A. General: Provide for sidewalks and drives.
- B. Bituminous Fiber Joint Filler: Comply with ASTM D1751. Preformed strips of asphalt saturated fiberboard, or granulated cork with asphalt binder encased between 2 layers of saturated felt or glass-fiber felt of width and thickness indicated.

2.06 JOINT SEALANT BACKING

- A. General:
 - 1. Provide sealant backings of material and type which are non-staining; compatible with joint substrates, sealants, primers, and other joint fillers approved for applications indicated by sealant manufacturer based on field experience and laboratory testing.
- B. Backer Rods:
 - 1. Preformed, compressible, resilient, nonwaxing, non-extruding strips of plastic foam of material indicated below, and of size, shape and density to control sealant depth and otherwise contribute to producing optimum sealant performance.
 - 2. Flexible, open cell polyurethane foam or nongassing, closed-cell polyethylene foam.
- C. Bond Breaker Tape:
 - 1. Polyethylene tape or other plastic tape as recommended by sealant manufacturer for preventing bond between sealant and joint filler or other materials at back (3rd) surface of joint.
 - 2. Provide self-adhesive tape where applicable.

2.07 MISCELLANEOUS MATERIALS

- A. Primer:
 - 1. Provide type recommended by joint sealant manufacturer where required for adhesion of sealant to joint substrates indicated.
- B. Cleaners for Nonporous Surfaces:
 - 1. Provide nonstaining, chemical cleaner of type acceptable to manufacturer of sealant and sealant backing materials which are not harmful to substrates and adjacent nonporous materials.

PART 3 EXECUTION

3.01 PREPARATION

- A. **Surface Cleaning of Joints:** Clean out joints immediately before installing joint sealants to comply with recommendations of joint sealant manufacturers and following.
 - 1. Remove foreign material from joint substrates which could interfere with adhesion of joint sealant, including dust, paints (except for permanent, protective coatings tested and approved for sealant adhesion and compatibility by sealant manufacturer), oil, grease, waterproofing, water repellents, water, surface dirt, and frost.
 - 2. Clean porous joint substrate surfaces to produce clean, sound substrate capable of developing optimum bond with joint sealants. Do not use acid wash. Remove loose particles remaining from above cleaning operations by vacuuming or blowing out joints with oil-free compressed air.
 - 3. Remove laitance and form release agents from concrete.
 - 4. Clean nonporous surfaces by means which are not harmful to substrates or leave residues capable of interfering with adhesion of joint sealants.

- B. **Joint Priming:**
 - 1. Prime joint substrates where recommended by joint sealant manufacturer.
 - 2. Apply primer to comply with joint sealant manufacturer's recommendations.
 - 3. Confine primers to areas of joint sealant bond, do not allow spillage or migration onto adjoining surfaces.

- C. **Protection of Adjoining Surfaces:**
 - 1. Prevent contact of sealant with adjoining surfaces which otherwise would be permanently stained or damaged by such contact or by cleaning methods required to remove sealant smears.
 - 2. Remove protection immediately after tooling without disturbing joint seal.

3.02 **INSTALLATION OF JOINT SEALANTS**

- A. **General:** Comply with joint sealant manufacturers' printed installation instructions applicable to products and applications indicated, except where more stringent requirements apply and:
 - 1. **Elastomeric Sealant:** ASTM C962.

- B. **Installation of Sealant Backings:**
 - 1. Install joint fillers of type indicated to provide support of sealants during application and at position required to produce cross-sectional shapes and depths of installed sealants relative to joint widths which allow optimum sealant movement capability.
 - a. Do not leave gaps between ends of joint fillers.
 - b. Do not stretch, twist, puncture, or tear joint fillers.
 - c. Remove absorbent joint fillers which have become wet prior to sealant application and replace with dry material.
 - 2. Install bond breaker tape between sealants and joint fillers, compression seals, or back of joints where required to prevent third-side adhesion of sealant to back of joint.
 - 3. Install compressible seals serving as sealant backings to comply with requirements indicated above for joint fillers.

- C. **Installation of Sealants:**
 - 1. Sealants shall directly contact and fully wet joint substrates, completely fill recesses provided for each joint configuration and provide uniform, cross-sectional shapes, and depths relative to joint widths which allow optimum sealant movement capability.

D. Tooling of Nonsag Sealants:

1. Immediately after sealant application and prior to time skinning or curing begins, tool sealants to form smooth, uniform beads of configuration indicated, to eliminate air pockets and to ensure contact and adhesion of sealant with sides of joint.
2. Remove excess sealants from surfaces adjacent to joint.
3. Do not use tooling agents which discolor sealants or adjacent surfaces or are not approved by sealant manufacturer.
4. Concave joint configuration shall be in accordance with ASTM C962, Figure A, unless otherwise indicated.

3.03 INSTALLATION OF FIRE-STOPPING SEALANT

A. Install sealant, including forming, packing, and other accessory materials to fill openings around mechanical and electrical services penetrating walls.

1. Provide fire-stops with fire resistance ratings indicated for wall assembly in which penetration occurs.
2. At wall between Control Room 101 and Engine Generator 104 (2 hour equivalent).
3. At wall between Engine Generator 104 and Compressor 105 (4 hour equivalent).

3.04 PROTECTION

A. Protect joint sealants during and after curing period from contact with contaminating substances or from damage resulting from construction operations or other causes so they are without deterioration or damage at time of Substantial Completion. If, despite such protection, damage or deterioration occurs, cut out and remove damaged or deteriorated joint sealants immediately and reseal joints with new materials to produce joint sealant installations with repaired areas indistinguishable from original Work.

3.05 CLEANING

A. Clean off excess sealants or sealant smears adjacent to joints as Work progresses by methods and with cleaning materials approved by manufacturers of joint sealants and of products in which joints occur.

END OF SECTION 07920



SECTION 08110 - STEEL DOORS AND FRAMES

PART 1 GENERAL

1.01 SUBMITTALS

- A. **Product Data:** Submit for each type of door and frame specified, details of construction, materials, dimensions, hardware preparation, core, label compliance, sound ratings, profiles, and finishes.
- B. **Shop Drawings:** Include details of each frame type, elevations of door design types, conditions at openings, details of construction, location and installation requirements of door and frame hardware and reinforcements, and details of joints and connections. Show anchorage and accessory items.
 - 1. Provide schedule of doors and frames using same reference numbers for details and openings as those on Drawings.
 - 2. Indicate coordination of glazing frames and stops with glass and glazing requirements.
- C. **Submit in accordance with Section 01340.**

1.02 QUALITY ASSURANCE

- A. **Provide doors and frames complying with SDI 100 and as specified.**

1.03 DELIVERY, STORAGE, AND HANDLING

- A. **Deliver doors and frames cardboard-wrapped or crated to provide protection during transit and job storage. Provide additional protection to prevent damage to finish of factory finished doors.**
- B. **Inspect doors and frames upon delivery for damage. Minor damages may be repaired provided refinished items are equal to new Work and are acceptable to OWNER, otherwise remove and replace damaged items.**
- C. **Store doors and frames at Project site under cover. Place units on minimum 4-in. high wood blocking. Avoid use of non-vented plastic or canvas shelters which could create humidity chamber. If cardboard wrapper on door becomes wet, remove carton immediately. Provide minimum 1/4 in. spaces between stacked doors to promote air circulation.**

PART 2 PRODUCTS

2.01 MATERIALS

- A. **Hot-Rolled Steel Sheets and Strip:** Commercial quality carbon steel, pickled and oiled, ASTM A569.
- B. **Cold-Rolled Steel Sheets:** Carbon steel complying with ASTM A366 commercial quality or ASTM A620 drawing quality, special billed.
- C. **Galvanized Steel Sheets:** Zinc coated carbon steel complying with ASTM A526 commercial quality or ASTM A642 drawing quality, hot dipped galvanized in accordance with ASTM A525, with A60 or G60 coating designation, mill phosphatized.
- D. **Supports and Anchors:** Fabricate of not less than 18 ga sheet steel. Galvanize where used with galvanized frames.
- E. **Inserts, Bolts, and Fasteners:** Manufacturer's standard units.

1. Where items are to be built into exterior walls, hot-dip galvanize in accordance with ASTM A153, Class C or D as applicable.
2. Exposed Fasteners: Countersunk flat or oval heads for exposed screws and bolts.

F. Shop Applied Paint:

1. Primer: Rust inhibitive enamel or paint, either air-drying or baking, suitable as base for specified finish paints complying with ANSI A224.1.
2. Finish: Manufacturer's standard baked-on enamel paint.

2.02 DOORS

- A. Interior Doors: SDI 100, Grade II, heavy duty, Model 3 or 4, minimum 18 ga cold rolled sheet steel faces.
- B. Exterior Doors: SDI 100, Grade III, extra heavy duty, Model 4, minimum 16 ga galvanized steel faces.
- C. Door Louvers:
 1. Sightproof stationary louvers for interior doors where indicated, construct of inverted V- or Y-shaped blades formed of 24 ga cold-rolled steel set into minimum 20 ga steel frame.

2.03 FRAMES

- A. Provide metal frames for doors, transoms, side lights, borrowed lights, and other openings of types and styles shown on Drawings and schedules.
 1. Fabricate of minimum 16 ga cold-rolled steel.
 2. Fabricate exterior frames from minimum 14 ga galvanized steel.
 3. Conceal fastenings unless otherwise indicated.
 4. Miter or cope and continuously weld corners.
- B. Door Silencers: Except on weatherstripped frames, drill stops to receive 3 silencers on strike jambs of single door frames and 2 silencers on heads of double door frames.
- C. Plaster Guards: Provide minimum 26 ga steel plaster guards or mortar boxes at back of hardware cutouts where mortar or other materials might obstruct hardware operation and to close off interior of openings.

2.04 FABRICATION

- A. Door and frame shall be rigid, neat in appearance and free from defects, warp or buckle. Wherever practicable, fit and assemble units in manufacturer's plant.
 1. Internal Door Construction: Manufacturer's standard honeycomb, polyurethane, polystyrene, unitized steel grid, vertical steel stiffeners, or rigid mineral fiber core with internal sound deadener on inside of face sheets where appropriate in accordance with SDI standards.
 2. Clearances: Not more than 1/8-in. at jambs and heads except between non-fire-rated pairs of doors not more than 1/4-in. Not more than 3/4-in. at bottom.
 3. Tolerances: Comply with SDI 117.
- B. Fabricate exposed faces of doors and panels, including stiles and rails of non-flush units, from only cold-rolled steel.
- C. Fabricate frames, concealed stiffeners, reinforcement, edge channels, louvers and moldings from either cold or hot-rolled steel.
- D. Fabricate exterior doors, panels, and frames from galvanized sheet steel in accordance with SDI 112. Close top and bottom edges as integral part of door construction or by addition of minimum 16 ga inverted steel channels.

E. Thermal Rated (Insulating) Assemblies:

1. At exterior locations and elsewhere as shown or scheduled, fabricate as thermal insulating door and frame assemblies and test in accordance with ASTM C236 or ASTM C976 on fully operable door assemblies.
2. Provide with U-factor of 0.41 Btu/(hr x sq ft x °F) or better.

F. Sound Rated (Acoustical) Assemblies:

1. Fabricate door and frame assemblies as sound reducing type, test in accordance with ASTM E90, and classify in accordance with ASTM E413.
2. Provide sound ratings of STC 33 or better as indicated.

G. Hardware Preparation:

1. Prepare doors and frames to receive cylindrical and concealed hardware in accordance with hardware schedule and templates.
2. Comply with ANSI A115 for door and frame preparation.
3. Reinforce doors and frames to receive surface applied hardware. Drilling and tapping for surface applied hardware may be done at Project site.
4. Locate hardware as indicated on approved Shop Drawings or, if not indicated, in accordance with DHI.

H. Shop Painting:

1. Clean steel surfaces of mill scale, rust, oil, grease, dirt, and other foreign materials before application of paint.
2. Clean, treat, and paint exposed surfaces of steel door and frame units, including galvanized surfaces.
3. Apply shop coat of prime paint of even consistency to provide uniformly finished surface ready to receive finish paint.

I. Glazing Stops:

1. Minimum 20 ga steel or 0.040-in. thick aluminum.
2. Non-removable stops on outside of exterior doors and on secure side of interior doors for glass, louvers, and other panels in doors.
3. Screw applied removable glazing beads on inside of glass, louvers, and other panels in doors.

J. Fire Rated Assemblies:

1. At locations between fire zones as shown or scheduled, fabricate as fire rated door and frame assemblies and tested in accordance with UL 10B, UL 10C or UBC 7-2 on fully operable door assemblies.
2. Provide with 90 minute rating or better for NFPA 80 Class A installation.

PART 3 EXECUTION

3.01 INSTALLATION

- A. Install standard steel doors, frames, and accessories in accordance with approved submittals, manufacturer's instructions, and as specified.

B. Placing Frames:

1. Comply with SDI 105 unless otherwise indicated.
2. Except for frames located at existing concrete installations, place frames prior to construction of enclosing walls and ceilings.