

Attachment “A”

Specialty Trade: Commercial and Industrial Medium Voltage Electrical Services & Control Circuitry

Scope: Preventative maintenance, corrective action, troubleshooting, predictive maintenance. Must be available 24/7 – 365 days.

Typical Voltages: Terminating and splicing of high voltage and troubleshooting 12,470VAC, 4,160VAC, 480VAC, 277VAC, 120VAC, 110VAC, 125VDC, and 24VDC circuits

- Troubleshooting and repairs
- Disaster Recovery
- Installation and programming of new equipment
- Lightning / grounding protection
- UPS systems
- SCADA systems
- Temporary power systems
- Large conductor placing
- Emergency generator repairs
- Calibrating and balancing
- Industrial 12,470VAC and 4160VAC cables, 1000kVA station transformers, switchgear, chiller starters, HI Pot testing, VFD’s, and motor control centers
- Circuit transformer testing
- Service meter and instrument transformer installations (revenue-grade)
- Service meter and instrument transformer accuracy testing and reporting (revenue-grade)
- Assist OEM with performing 5.5-Megawatt generator housing inspections and testing under a Professional Engineer’s supervision
 - Perform MEGGER testing of the:
 - Main rotor
 - Main stator
 - Exciter field
 - Armature
 - PMG armature
- Assist OEM with performing dye penetrant testing for 5.5-megawatt generator’s main rotor shaft as required
- Provide field calibration certificate to UCF of all testing equipment used.
All visits will be documented and report(s) sent to the appropriate UCF plant operator for record retention.

Attachment “B”

Specialty Trade: Millwright

Typical required services:

- Machinery assembly and repair
- Machining Services
- Laser Alignment
- Long- or short-term maintenance support services
- Wastewater treatment
- Heavy rigging
- Onsite measuring and in-house custom designs
- Blasting and painting capabilities
- Industrial sheet metal
- Industrial ventilation
- Platforms and mezzanine installations (both temporary and permanent), catwalks, handrails, stairs, ladders, and decking

Attachment “C”

Specialty Trade: Industrial Distribution – Rotating Equipment

Typical required services:

- Perform motor rewinds for 10-300HP motors in 48-72 HRS
- Compressors
- Engineered fluid systems
- Industrial pumps:
 - Centrifugal pumps
 - Grinder pumps
 - Horizontal pumping systems
 - Rotary gear pumps
 - Seal-less pumps
 - Sewage pumps
 - Specialty pumps
 - Submersible pumps
 - Wastewater pumps
- Mechanical seals
- Monitoring and controls
- Alignments, vibration, and balance analysis
- Perform oil samples and analysis
- Lube / replace couplings
- Thermography scans
- Adjust / replace gland packing seals as required
- 230/480/4160VAC
- Provide capital replacement of VFD assemblies built to NEMA standards and suitable for use component to meet NEC requirements.
- Installation, testing, repair of reclaim, sewer, and potable water meters in both commercial and industrial applications.
- Provide VFD’s preventative maintenance services with corrective repair as required
- Provide warranty and as-built information for asset management

Attachment “D”

Specialty Trade: Mechanical

Typical required services: Critical infrastructure

- Equipment installation
- Horizontal directional drilling
- Direct pipe
- Dewatering
- Fabrication
- Remove asbestos insulated pipe
- Hot taps
- Drilling
- Pipeline construction
- Trenchless technology
- Transportation and heavy hauling
- Hydrostatic testing
- Gas and liquid pipeline construction
- Above ground gas pipes, riser valves / curb valves, bypass sets, regulators, and relief equipment installation / repair
- Pipeline integrity and anomaly repairs
- Road boring
- Station and facility construction
- Structural steel and pipe fabrication
- Code piping
- Cooling Towers
- Storage tanks
- Traffic control
- Code welding various metals, both above-ground / underground appurtenances
- Mechanical piping, small bore, large bore, low and high-pressure piping

Attachment “E”

Specialty Trade: Wastewater

Typical required services:

- Pump monitoring and replacement services
- Lift station maintenance
- Pump packages
- Pressure and flow condition analysis
- Functional test pump and controls
- Laser alignments
- SCADA
- Chopper pump repair, replacement and service
- Manufacturer warranty repair

Attachment “F”

Specialty Trade: Utility Locating

Administer the utility locating requirements in accordance with Chapter 556 F.S. to include responding, documenting, and maintaining the database in conjunction with physically locating and marking underground facilities. Upon notification, the statutory markings of the university’s utilities will be marked and responded to within two (2) full business days. Temporary marking practices for underground facilities shall meet the low-impact marking practices adopted for use in Florida when marking the horizontal route of any underground facility located within the university’s jurisdiction.

Typical required services:

- Locate underground facilities using utility locating / tracing equipment such as radio detection, ground penetrating radar, and non-destructive methods and means using flags, stakes or other temporary marks made of biodegradable material in accordance with AWS
- Provide statutory response codes to all State of Florida Sunshine One Call tickets generated for UCF-UES
- Perform design tickets for various campus expansion projects, third-party utilities and DOT projects
- Support in-house GIS staff as requested:
 - Pipe inventory, replacement, and condition assessments
 - Field verification
 - Emergency repairs
 - Delivery of GIS points, lines and polygons in a File Geodatabase as requested

Attachment “G”

Specialty Trade: Revenue Grade Meter Accuracy Testing & Reporting

Typical required services:

Electric:

- Testing and Reporting consisting of:
 - Current and Voltage Phase Angle Diagrams (Vectors)
 - Current and Voltage by Phase
 - Validation of Correct / Incorrect Polarity
 - Wire Install / Setup Verification (Form Type/Class/Wire/Service designations listed)
 - Harmonic Detail (THD Voltage/Current % by phase)
 - Power (by phase and system)
 - kVA/kVAR/PF values measured / reported
 - Ratio / Burden Summary (CT’s from 0 to max rated burden)
 - % Accuracy (Favoring Customer vs Utility)
 - Meter Accuracy (Socket Meter/Panel Meter)

Natural Gas:

- Testing and Reporting consisting of:
 - Small and Small Commercial Diaphragm Meters (1000 and under)
 - “As Found” and “As Left” accuracy proof test results demonstrating Open/Check/Error % Results for each meter removed and before every meter installed.
 - Test reporting to include all index readings, notes, dates, test staff, Meter ID, Model, Serial Number, Manufacturer.
 - Commercial/Industrial Rotary & Ultrasonic Metering (typical 1M – 11M):
 - On-Site portable proof testing capability
 - On-Site Validation/Testing of Corrector and Flowmeter Body along with input sensors.
 - Coordinate/shutdown/bypass/test any meters in place providing all necessary tools, parts, and labor to complete the work.
 - Test reporting to include all index readings, notes, dates, test staff, Meter ID, Model, Serial Number, and Manufacturer.
 - Equipment Testing:
 - Troubleshooting/testing/programming of Telemetry Equipment, Radio’s, Correctors, Sensors (P/T), Wiring and Input/Output signals for solar, battery powered, or hard-wired power connections.

Chilled Water:

- Testing and Reporting consisting of:
 - BTU Meter programming and configuration to site conditions and verification of site conditions against calibration sheets for each system/component.
 - Confirmation of proper insertion depth and directional/angled alignment of insertion flowmeters to chilled water piping.
 - Flow Rate and Flow Consumption Testing against Chilled Water Insertion and In-Line flowmeters utilizing a secondary portable clamp on ultrasonic flowmeter (or portable insertion meter where applicable).
 - Perform calculated vs displayed flow rate confirmation utilizing frequency output (if available)
 - Verification/Thermowell Probe Testing against existing Supply/Return temperature sensors
 - Setup verification/validation of piping, pipe schedule, calibration sheet verification and BTU meter configuration of chilled water system.
 - Complete documentation of all components and reporting validating components are measuring and displayed properly as tested with accuracy results and recommendations.

NOTE: All test equipment must be maintained and provided by the contractor. All calibration paperwork for test equipment must be provided to UCF before utilized onsite.