

I. General

- a. Contractors shall perform and provide an equipment analysis along with an optimum maintenance schedule based on the systems required. The following maintenance tasks and interval are provided as minimums. The executed schedule shall incorporate the preventive maintenance data (available from the manufacturer), components make up, run time, application, system location, and the system Schneider Electric I/A Series required services intervals for all the system components.
- b. All work must be performed by workmen skilled in the trade required for the work. Mechanics and electronic systems service personnel must have a minimum of three years of experience repairing facility management systems. The Contractor must be qualified as a repairer and/or installer of the equipment.
- c. Contractor shall use the equipment analysis to develop and provide a program of standardized preventive maintenance routines to be performed on Schneider Electric I/A Series during the Contract period. The Contractor shall then create preventive maintenance work orders. Each preventive maintenance work order will list the individual equipment components to be serviced, equipment location, work to be performed and any special instructions. The work orders for every individual day of preventive maintenance for the entire Contract period will be furnished to the building manager at completion of the work being performed.
- d. Contractor shall maintain system integrity to be verified through physical point checks, point commanding techniques, selective disabling, system wide function and tests and examination and analysis of standard report logs by a trained specialist or field engineer.
- e. Contractor shall have the capacity to provide on-line service consisting of electronically communicating from Contractor's office location to Schneider I/A Series site location via regular voice grade dial-up phone line. Furnishing the phone line is not within the scope of this Contract. The purpose of this service is to remotely perform diagnostic and trouble-shooting procedures. Contractor will be provided with unrestricted communication access to Schneider I/A Series for these purposes. Contractor shall document each on-line call and furnish a copy showing time, date and a brief description of activity to the building manager.
- f. It is the intention of this specification to establish and define those services that are to be performed.

II. Service Company Qualifications

- a. The following requirements shall be considered as the minimum standards for the employees of the service company to be considered as qualified to provide services under the Contract and shall be a prerequisite to any award.

- b. Services that are to be provided shall be performed by qualified and trained service personnel. Subcontracting portions of the systems or services requested in these specifications shall not be allowed without prior consent. The building manager shall have the right to interview and to approve the Subcontractors. Subcontractors approved shall continue their portion of maintenance work as long as work remains acceptable to the State Archives building manager. Building manager shall reserve the right to require that the Contractor dismiss unacceptable personnel for due and just cause.
- c. The service company's preventive maintenance program shall be computer generated, based on run time, manufacturer's recommendations, and a historical data bank of similar equipment. Simple computer based, run time only, or hand schedule programs, are not acceptable.
- d. Contractor shall be required to provide all equipment necessary to perform the full extent of this Contract.
- e. Contractor shall attach to their bid a list of five systems in Louisiana of the same size and manufacture, which they have performed the scope of services required in this specification. Provide the name of the facility, number of automation panels, manufacturer and a contact at the site. Failure to provide these references can be considered reason for immediate disqualification of the bid.

III. Scope

- a. Preventive maintenance services shall be provided by the service company for the temperature control system. This includes thermostats, pressure controls, relays, limits, valve operators, damp motors, humidity controls, step switches, time clocks, contactors, capacity controls, safety controls, recorders, control panels, gauges, air compressors (for the pneumatic control systems), electronic computer systems, and the graphic operators interface hardware and software.
- b. The service company shall furnish all personnel, parts, materials, test equipment, tools and services in conformance with the terms and conditions as outlined below.
- c. The Office of the State reserves the right to request the service company to submit for evaluation a comprehensive and detailed technical and business prospectus, descriptively outlining the ability to adequately and satisfactorily perform the services as requested in this specification.
- d. All service companies desiring to provide services specified shall visit the jobsite to become familiar with the facility and equipment prior to submitting a proposal. No proposal shall be accepted from any service company unless it has been verified that there has been a visit and inspection prior to submittal.
- e. Reasonable means of access to the equipment being serviced shall be provided to the Contractor. The Contractor will be permitted to start and stop all equipment necessary to perform the proposed services.

- f. To ensure that the investment in the system is protected and the value of the system increases over time, the Contractor must provide the latest version of firmware (as confirmed by Schneider factory) on a yearly basis as part of this agreement. As assurance of the Contractor's capabilities in this area, Contractor shall provide a list of available firmware upgrades with part numbers and identify the source of supply for this item as part of the bid.
 - g. To minimize the possibility of system downtime, the Contractor must carry local stock of system components on site. The Contractor must also be able to deliver any part or component of the system by the next day. Contractor shall submit as part of the bid a list of components by part number that are in local inventory.
- IV. Equipment Maintenance Service
 - a. Equipment to be serviced: Schneider Electric I/A Series
 - i. Successful Contractor shall provide as a minimum the services described below in section V on the existing system. The system is inclusive of existing stand along control unit (SCU) panels and associated field sensors and field transducers wired to the panels. The system also comprises all pneumatic and electric devices directly involved with HVAC control including the air compressor and air dryer and devices that are both connected to the field panels (for DDC), and those that are not. The system also includes the operator's terminal.
 - ii. The Contractor shall provide a graphical operators interface terminal with dynamic interactive graphical displays of all systems and associated equipment in the facility. The operators interface shall also have floor plans with equipment and sensor locations. All point information and operating parameters shall dynamically update on the graphics. The operator shall be able to command from the graphical interface without leaving the graphic. The graphical interface shall also serve as a database backup device and initiate automatic downloads to the field panels in case of a failure. The graphical interface computer hardware and software shall be equal to the current graphical operators interface in functionality and speed. The graphical interface shall remain the property of the owner. Contractor shall provide the owner with system remote access through such as PC Anywhere Apogee remote notification. Software shall be maintained and upgrades shall be supplied as they come available.
 - b. Equipment not included
 - i. Maintenance services, including repair, labor and parts replacement, for portions of the systems and equipment that are non-maintainable or non-moving are not required nor included as part of this specification.

- ii. Excluded items shall be considered as: foundations, structural supports, domestic water line, drains, plumbing, oil lines, gas lines, piping, oil storage tanks, air handling ductwork, boiler shell and tubes, unit cabinets, boiler trim and refractory material, cooling tower structures, etc.
- iii. The owner assumes that the system(s) being quoted upon are in a maintainable condition. If the initial inspection or initial seasonal start-up indicates repairs are required, a firm quotation will be submitted for owner's approval. Should owner not authorize system(s), component(s), or parts from its scope of responsibility, and adjust the monthly rate according or cancel this agreement.
- iv. This specification covers only that equipment as listed herein, and in the event the system is altered, changed, or if any equipment is added, or not included in this specification, then that portion shall be added or deleted as required, and shall be in accordance with this specification.

V. Specific Preventive Maintenance Tasks

a. System Software and Operators Console

- i. Perform the following a minimum of once a month for 12 months
 - 1. Check the functionality and run set-up diagnostics on the operator's terminal
 - 2. Verify consistency of terminal communication protocol

b. Graphical Operators Interface

- i. Perform the following software operations a minimum of once a month for 12 months
 - 1. Backup the system software
 - 2. Backup the graphic database
 - 3. Provide mandatory yearly software updates
 - 4. Provide yearly documentation updates
 - 5. Review new features with the system operators
 - 6. Review customer log book and fix all system problems
 - 7. Run systems software diagnostics
- ii. Perform the following hardware tasks a minimum of once a month for 12 months.
 - 1. Inspect work area, check cables and power connections
 - 2. Check monitor, keyboard, computer and printer
 - 3. Repair or replace as required

c. System stand-alone control panels (SCU)

- i. Perform the following software preventative maintenance routines on the SCU panels
 - 1. Periodic cold-start dump analysis to check for:
 - a. Number of cold starts

- b. Number of warm starts
 - c. Hardware errors
 - 2. Software errors
 - 3. Database check, including:
 - a. Process control language
 - b. Point database
 - c. Priority and operation of points
 - d. Functionality
 - 4. Analog point(s) analysis
 - a. Slope and intercept
 - b. Sensor/transmitter accuracy
 - 5. Check and reset system time
 - 6. Make update database backup
 - 7. Perform failed point report and cabinet report
- ii. Perform the following preventative maintenance routine on the SCU controller board
 - 1. Check voltage and adjust +5V power supply
 - 2. Check ribbon cable seating
 - 3. Check SCU backup battery voltage and determine if the battery is holding charge adequately
 - 4. Check SCU backup battery charging circuit
 - 5. Check all Transzorbers
 - 6. Check the transient protection and install replacement if necessary
- iii. Perform the following preventative maintenance routine on the SCU communication board
 - 1. Check trunk wiring for proper connections
 - 2. Check communication board for secure seating in the termination board
 - 3. Observe that the communication LED's are flashing properly
 - 4. Check the trunk biasing jumpers for proper positioning
 - 5. Check the trunk bias voltage
 - 6. Check the trunk drivers
- iv. Perform the following preventative maintenance routine on the SCU termination board
 - 1. Check metal oxide visitors (MOV) and replace if needed
 - 2. Check all digital output relays and replace if necessary
 - 3. Check all field wiring and correct as required
 - 4. Check fuses F1 and F2
 - 5. Check voltages and Molex connector and adjust the +5V supply if necessary

6. Check the digital input Optocouplers and replace if necessary
7. Check option board connections for proper seating
- v. Perform the following preventative maintenance routine on the SCU power supply
 1. Check that the power supply is tight to the chassis
 2. Check that the shielded power cable is used to connect to the termination board
 3. Check the two prong adapter plug
 4. Check fuses F3 and F4
 5. Check that the power supply wiring harnesses are tight
 6. Check and adjust the following power supply voltages while operating under load:
 - a. +5.7 VDC
 - b. -15.0 VDC
 - c. +5.0 VDC
 - d. +22.0 VDC
 - e. +26.0 VDC
 - f. +15.0 VDC
 - g. -23.0 VDC
 7. Check transformer for an abnormally hot condition
 8. Check and reinstall A/C power line filters if necessary
 9. Check +5 VDC supply for any A/C ripple and replace the power supply if ripple is outside of the manufacturer's limits
- vi. Perform the following preventative maintenance routine on SCU analog output pneumatic board
 1. Check for air leaks
 2. Check for proper seating of digital pneumatic valves connections
 3. Calibrate all digital pneumatic valves
 4. Check that all LEDs are flashing properly
- vii. Perform the following preventative maintenance routine on SCU analog input pneumatic boards three times annually
 1. Check air leaks
 2. Check for proper seating of board connectors
 3. Calibrate all analog input pneumatic transducer points
- viii. Perform the following preventative maintenance routines on all other option boards
 1. Check the proper board connection and seating
 2. Check slope/intercepts
 3. Check all wiring
 4. Test functionality of all points
 5. Check that all LEDs are flashing properly

- ix. Perform the following general preventative maintenance routing on the SCU
 - 1. Clean the inside of the cabinet (vacuum)
 - 2. Check all ground straps for good connections
- d. System Field Devices
 - i. Check the functionality and calibrate all electronic transducers as follows
 - 1. Flow – twice annually
 - 2. Humidity – four times annually
 - 3. Temperature – once annually
 - 4. Static pressure – four times annually
 - ii. Check the functionality and calibrate all electronic sensors as follows
 - 1. Flow – twice annually
 - 2. Humidity – four times annually
 - 3. Temperature – once annually
 - 4. Static pressure – four times annually
 - iii. Check the functionality and calibrate all pneumatic transmitters. Check for deterioration of all natural and unnatural materials within the device (diaphragms and elements) as follows
 - 1. Flow – twice annually
 - 2. Humidity – four times annually
 - 3. Temperatures – once annually
 - 4. Static pressure – four times annually
 - iv. Check the functionality and calibrate adjustable spring ranges of all control valves and damper actuators. Stroke all valves and actuators manually to both extreme positions. While stroking the valves, apply lubricants to ensure proper operation without excess tension and to ensure all components against corrosion. Perform these tasks once annually.
- e. Check functionality and make proper adjustments to all switching devices, those which terminate inside the stand alone control unit panels and those which do not. Perform these tasks once annually. These devices include but are not limited to:
 - i. EP switches
 - ii. Flow switches
 - iii. Hi limit thermostats
 - iv. Low limit thermostats
 - v. PE switches
 - vi. Damper end switches
 - vii. Static pressure switches

- f. Check the functionality and calibrate all thermostats, receiver-controller, humidistats, and differential/static pressure regulators; those that are directly reset by outputs from the stand alone control unit panes and those that are not. Check for deterioration of all natural and unnatural materials within the device (diaphragms and elements). Replace all fatigues humidity sending element when necessary. Perform these as follows:
 - i. Thermostats – once annually
 - ii. Receiver/controllers – twice annually
 - iii. Humidistats – four times annually
 - iv. DP/Static pressure regulators – three times annually
 - g. Temperature control compressed air system. Perform the following two times per year
 - i. Drain tank(s) and check traps
 - ii. Change oil and check oil pressure
 - iii. Check belts and sheaves and change as required
 - iv. Check high pressure safety valve
 - v. Check pressure reducing assembly
 - vi. Check motor operating conditions and lubricate
 - vii. Check starter
 - viii. Record compressor run time
 - ix. Clean as necessary
 - x. Clean all filters and replace as necessary
 - h. Service refrigerated air dryer
 - i. Check refrigerant pressure
 - ii. Check drain trap and bypass valves
 - iii. Check condenser and cover grilles
 - i. Contract requires a minimum of four man days a month
- VI. Parts and Labor Coverage
- a. Parts replacement
 - i. All parts, components, or devices for the automation systems as listed above that are worn or are not in proper operational condition shall be repaired and/or replaced with new parts, components or devices.
 - ii. When equipment or parts are replaced in the entirety and a new design of this device is available and is functionally equivalent and compatible, the device of the newer design shall be used as the replacement.
 - iii. All repair and replacement parts, components, and devices for the automation systems and equipment as listed shall be supplied by the service company and shall be included in the cost of the service program.

- iv. All replacement parts shall be original factory manufactured parts. Any substitution of parts of a different manufacture or model must be approved prior to installation.
- v. All miscellaneous parts and supplies necessary to maintain the automation system and control equipment shall be supplied by service company and shall be included in the cost of the service program (belts, valve packing, lubricants, tools paints, refrigerant, text instruments, meters, etc.)
- vi. The successful Contractor shall not be made responsible for repairs for replacement necessitated by reason of negligence or misuse of the equipment by other than the service company or by reason of any other cause beyond the control of the service company except ordinary wear and tear.
- vii. The successful Contractor shall be available, at no additional charge, for consultation, minor design and equipment changes or modifications to automatic temperature control and mechanical systems. The service company shall be expected to recommend energy saving modifications and low cost or no cost modifications and operating procedures changes to the owner.

b. Labor

- i. All labor, overtime, travel costs, parts, supplies and any expenses incurred and expended on such a call shall be provided by the service company and shall be included in the cost of the service program.
- ii. Emergency service shall be provided as often as needed on a 24 hour basis, weekends and holidays included.

VII. Maintenance Procedures and Records

- a. The successful Contractor shall utilize computer generated preventative maintenance directions, which indicate task functions to be performed on each scheduled service call, as determined by calendar periods, operating hours, run time, manufacturer's recommendations and historical databank, as pertinent to each task.
- b. As work is done, the successful Contractor shall issue, to his mechanic and technician on the job, the necessary and appropriate recommended maintenance procedures and a listing of any special lubricants, tools, etc., that are required for proper maintenance of the apparatus concerned.
- c. The successful Contractor shall provide a system for continuous updating of maintenance procedures and frequencies. Breakdown experience and frequency shall determine the on-site material inventory level of preventative maintenance frequencies.

- d. During the course of the service program, the successful Contractor shall advise and assist in the determination of improvements to the mechanical system that shall conserve energy and minimize utility expenditures.

VIII. Preventative Maintenance and Emergency Service Calls

- a. The service company shall schedule and perform the preventative maintenance services on no less than a monthly/quarterly/semi-annual basis
 - i. After each service call, a service report shall be left with the owner detailing work accomplished.
 - ii. Two of the scheduled service calls shall include the system start-up and the system shut-down for the appropriate season.
- b. The service company shall provide emergency service on an as required basis. Emergency service shall be considered as calls in addition to the scheduled preventative maintenance calls.
 - i. This emergency service shall be provided as often as needed on a 24 hour basis, weekends and holiday included.
 - ii. The service company shall be capable of responding to an emergency situation within two hours.
 - iii. Emergency service response system shall be a professionally manned telephone answering service. Automatic telephone answering/recording machines or home telephone numbers are not acceptable.

IX. Service Performance Guarantees

- a. Performance review
 - i. The owner's agent may review, at any time, the service provided and reports submitted to verify that the preventative service is being properly and adequately performed. Any lack of maintenance service, complaints, or deficiencies in the performance of the service shall be to the service company in writing for correction.
 - ii. For problems or deficiencies of significant importance or of a continual nature shall constitute cause for termination of the services and/or withholding of payment.
 - iii. Failure of the service company to correct the deficiencies with the time period agreed upon shall constitute cause for termination of the services and/or withholding of payment.

X. Special Conditions

- a. The successful Contractor's responsibility for injury to persons or property that may be caused by or arise through the maintenance, service, functioning, or use of the system, shall be limited to injury caused directly by the service company's negligence in performing the obligations as set forth in this specification.

- b. The successful Contractor shall not be made liable for any loss, delay, injury, or damage, whether direct or consequential, that may be caused by conditions by the service company's direct control, including but not limited to acts of government, strikes, lockouts, fire, explosion, theft, riot, civil commotion, war, malicious mischief, flood and other acts of God.
- c. Access to all devices to be serviced shall be provided for the successful Contractor. The successful Contractor shall not be held responsible for equipment malfunctions or damage should access to equipment or the inability to start and stop primary equipment incidental to the operation of the mechanical system be denied or not provided.
- d. This specification covers only that equipment as listed herein and in the event the system is altered, modified, changed or if any equipment is added or not included in this specification, then that portion shall be added or deleted as required and shall be in accordance with this specification.