



## **SPECIFICATIONS FOR NETWORK PROTECTORS** **PREVENTIVE MAINTENANCE AND TESTING**

### **1.0 General Information**

#### **1.1 *Term of Contract***

- A. This contract shall provide a competitive bid for Network protectors Maintenance and Testing for the Georgia Tech Facilities Department.
- B. Term of contract is for one year from date of award with the option to renew for four additional one year terms as long as the terms and conditions of the contract stay the same.
- C. Prices quoted for the first twelve (12) months shall remain fixed
- D. Georgia Tech Facilities Infrastructure Department shall reserve the right to add, delete and to prioritize equipment as needed.
- E. State of Georgia terms and conditions supersede all vendor's terms and conditions.

#### **1.2 Price Escalation.**

Price increases shall be permitted during the renewal of contract. Price increment shall not be more than a five percent (5%) of the original amount .Request for increase must be based on CPI supported by adequate written justification.

#### **1.3 Deviation from Scope of Work**

No deviations shall be made from this contract. Should the contractor find at any time during the progress of the work, that in his/her judgment, conditions make desirable or necessary modifications in the requirements covering any particular item or items, he/she shall report such matters promptly to the owner's representative for their decision and instructions.

#### **1.4. Sub contracting.**

The contractor shall not sub contract the work in any way unless the Georgia Tech Preventive Maintenance Project Manager is informed in writing and the request is accepted.

#### **1.5 Emergency Contact**

The contractor shall be available for telephone consultation during the term of the contract and shall provide an up-to-date list of phone numbers to the Georgia Tech Project Manager.

## **1.6 Training**

There are no training needs identified in the scope of this contract

## **1.7 Reference Standards**

The work shall comply with the manufacturer's recommendations, these Specifications, and the applicable NEMA, NETA, NFPA, ANSI, OSHA and ASTM standards. Work shall be carried out in compliance with applicable safety regulations.

## **2 Scope of Work**

The equipment included under this contract is identified in appendix A

### **2.1 *General***

- A. The work described under any of the following sections shall not commence for any particular item of equipment until the subject equipment has been de-energized, disconnected, tested and grounded as appropriate. All switching will be performed by Georgia Tech personnel. Testing and grounding means as well as all other safety equipment for the contractor's personnel are the responsibility of the contractor to comply with safety regulations.
- B. For all the tests, adjustments, cleaning, and lubrication variations from the following general procedures outlined in Sections 2.2 to 2.3 may be allowed with the written permission of the Georgia Tech Preventive Maintenance Project Manager.
- C. This section refers to manufacturer's published instruction manuals for specific requirements for each item of equipment. The items included below are intended to indicate the required level of testing and maintenance rather than specific procedures.
- D. Each day the contractor leaves the work site, the equipment has to be left in working condition.
- E. If a network protector is required to be removed so that the transformer is isolated from the switchgear, the contractor will perform the required operation under Georgia Tech's representative supervision.
- F. All pad-mounted equipment shall be inspected for evidence of rainwater Leakage, excessive condensation, insect and animal infestations or interference from vegetation.
- G. The Contractor shall provide all equipment, material, labor, and necessary supervision to perform the duties outlined in Section 2.0, Scope of Work.

### **2.2 Scope of Work Outline**

The contractor will perform the following:

- i. Visual scan
- ii. Thermographic Scan
- iii. Megger Test
- iv. Note physical condition of network protectors

### **2.3 Network Protectors**

In some location, network protectors will be serviced with the transformer secondary

terminals and or secondary (network) bus energized .Contractor personnel will remove the network protector from service for testing and maintenance. Upon completion of work Contractor personnel will return the network protector to service.

- A. Record the counter reading as found. Clean the compartment, viewing windows to allow observation of open /closed indication and counter reading.
- B. Test enclosure for leaks in accordance with manufacturer's instruction
- C. Remove protective enclosure, arc chutes, etc necessary. Clean the insulating surfaces, arc chutes as per manufacturer's instruction. Clean and lubricate the network protector operating mechanisms.
- D. Check connections to network and phasing relays and other devices for tightness and tighten as per manufactures instruction.
- E. Inspect relays and covers for contamination and corrosion. Clean as per the manufactures instruction and Burnish relay contacts if needed.
- F. Test network protector with a Multi-Amp NTS-300 or equivalent network protector test. All tests should be in accordance with the manufacture's instruction. The results must be recorded.
- G. Operate the network protector manually and check operation of auxiliary contacts and interlocks. Clean and dress contacts as needed. Check and adjust primary and arcing contact gap and wipe.
- H. Test contact resistance with a low resistance ohmmeter having a test current of at least 10 Amps.
- I. Test insulation resistance with appropriate mega ohmmeter.
- J. Record the counter reading as left.

### **3.0 Reports**

- A. As the inspection and maintenance of each network transformer is completed, a report will be created entitled "Inspection and Maintenance Report" (IMR). A hard copy of the IMR will be delivered to the Utilities Preventive Maintenance Project Manger within 20 business days of completing each Transformer inspection. Also, an electronic copy in an acceptable format, Adobe Acrobat, \*.PDF, or Microsoft Word, \*.DOC, will be provided to the Preventive Maintenance Project Manger.
- B. The Inspection and Maintenance Report will include the following sections:
  - a. SUMMARY OF PROJECT
  - b. EQUIPMENT TESTED
  - c. DESCRIPTION OF TEST
  - d. ANALYSIS AND CONCLUSIONS
  - e. UPDATED LIST OF EQUIPMENT IN AN EXCEL FORMAT SIMILR TO APPENDIX A.
- C. The Inspection and Maintenance Report shall be of sufficient detail to specify the condition of equipment and work to be performed to correct deficient or damaged components. The equipment will be listed by manufacturer, year of manufacture component model/part number,

component name, and component description. IMR recommendations that merely state "Repair of peripheral devices as noted" are not considered adequate deficiency reports.

All of the aforementioned inspections and maintenance actions will be fully documented.

**4.0 Bid Requirements**

- A. Bid shall be awarded based on the total price of all equipment listed in Appendix A with the understanding that about 15 - 20 of the network protectors of the list in Appendix A will be accomplished in a 12 month period.
- B. Bid shall include a total for each Network protectors listed in Appendix A. The price for each network protector will be based on rated electrical capacity. The contractor shall price their work on a "per unit" basis to allow for a variance in the total number of net work protectors included in a year.
- C. The following ranges will define the units on which each bid price will be based. The contractor shall provide price based on network protectors load ratings. This price will be used for any addition or deletion of Network protectors

No	Amperage	
1	Up to 2000 Amps	
2	Above 2000 to 3000 Amps	
3	Above 3000 Amps	

- D. Contractor shall provide two unit prices, one for all network protectors to be completed outside of normal business hours (weekends) and one for all Network Protectors to be completed on normal business hours as listed in Appendix A.
- E. The bid shall be awarded based on the total price of service. Vendors must provide pricing for both weekend and weekday service in both sections regardless of criteria for evaluation. The awarded vendor will be required to honor these prices should GIT decide to change the service schedule
- F. The contractor shall provide hourly rate for Normal working hours 8:00 a.m. to 5:00 p.m. Monday through Friday, after hours (after 5.00PM), Weekends and holidays.
- G. Each bid shall include:
  - a. Labor and Materials costs
  - b. Transportation cost
  - c. Analytical, consulting, Testing and management services costs
  - d. Deliverables included in this specification
- H. At the time of testing verify Appendix A, if the actual equipment doesn't correspond with equipment listed in Appendix A the contractor shall do the following:-
  - 1. If the actual equipment is not listed in Appendix A, the contractor shall provide to the preventive Maintenance Project Manager for approval a written quote to include the information and price of the equipment .The price

shall be based on the unit price offered and shall not exceed the price of similar Network protector in Appendix A.

2. If the equipment listed in Appendix A is in the location other than the listed location on appendix A, contractor shall provide a written explanation stating the name and location of equipment with details to the preventive Maintenance project Manager. The price shall be the same as similar equipment in appendix A.
- G. Repairs not exceeding a total of \$1500.00 may be performed with the written authorization of Georgia Tech's Preventive Maintenance Project Manager.
- H. All repairs will be billed at the above (4F) labor rate with the material price not to exceed the Vendor's actual cost plus 10%. Georgia Tech reserved the right to request documentation of the Vendor's actual cost.

## **5.0 Scheduling**

### **A. Business Hours**

- a. The Scope of Work, Sections 2.0 to 2.3, will be performed with in normal working hours or outside normal working hours. The work may be accomplished in several sessions. It may not be possible to schedule the entire job on one site visit. All work shall be scheduled at Georgia Tech's convenience and in cooperation with Georgia Tech's representative.
- b. The schedule will be provided after the award of contract and thermographic report has been submitted to the Georgia Tech Preventive Maintenance Project Manager.
- c. Work on site will commence no later than 10 business days from the approval of the contract. Within additional 10 business days from the approval of the contract the thermographic inspection will be conducted and the thermographic report will be submitted to the Georgia Tech Preventive Maintenance Project Manager for review. After submission of the thermographic report, within 10 business days, Georgia Tech Preventive Maintenance Project Manager will provide the contractor with an outage schedule. The contractor will have 30 business days from the approval of the contract to review schedule and begin work on site

### **B. Completion of Work**

The work indicated on the scope must be completed without additional cost to Georgia Tech. Every quarter, the contractor must provide to the owner of contract a completed list of the equipment tested.

### **C. Scheduled Equipment**

1. The proposed schedule of Network protectors is included in Appendix A.
2. Georgia Tech reserves the right to amend the list in Appendix A, by adding or removing equipment as necessary.

## **6.0 Contractor Qualifications**

### **A. Experience**

1. The contractor shall have minimum of 20 years experience in the field of Electrical High Voltage (20KV) and minimum of 10 years experience in the field of Network protector service and repair. The contractor shall furnish three references for past jobs.
2. Contractor shall have minimum of two full time employees at master level in the network protector service and repair GA Tech may request proof of employment.
3. Technicians working on the GA Tech equipment shall have minimum of three years consecutive employment with the contractor prior to the award of the contract. GA Tech may request proof of employment.
4. Technicians working at GA Tech campus shall be at master level.

**B. Work Oversight**

All work must be performed or directly supervised by a technician meeting the experience requirements listed above.

**7.0 Safety**

**A. Switching**

All switching shall be done by Georgia Tech personnel. The contractor shall observe the switching operations to satisfy himself that the equipment is de-energized. The contractor shall furnish testing means and safety grounds as well as hardhats and equipment as necessary to comply with safety regulations.

**B. Work Plan**

The contractor in cooperation with Georgia Tech personnel shall develop and review a work plan in accordance with OSHA regulations for each day's work.

**C. Georgia Tech Escort**

At least one Georgia Tech electrician or representative will be on site with the contractor throughout the work.

**8.0 Invoice Requirements**

Furnish three bound copies of type written test reports containing all test results, technician's comments, and other pertinent information as indicated in the reporting section of this contract. Equipment shall be identified in the report by manufacturer, model number, location, year of manufacturing and serial number as well as by the feeder or bus name as noted in the field or as stated by Georgia Tech personnel. Where applicable, reports shall include "as-found" and "as-left" conditions. All invoices must specify this contract Number, building name, manufacturer, and serial number. Invoices must be sent to Preventive Maintenance Project Manager.

**9.0 Payment Schedule**

The contractor must submit invoices to Preventive Maintenance Project Manager after each network protectors location is completed and accepted by Georgia Tech representative and deliver the report indicated in the contract.

NOTE: Payments shall not be processed until Georgia Tech's representative receives the required records.

Appendix A

## Appendix A List of Network Protector

Location	Manufacturer	Model Type	Load Rating	Quantity (Qty)	Weekday \$ Unit Price	Weekday \$ Qty Price	Weekend \$ Unit Price	Weekend \$ Qty Price
Rich Computer	Westinghouse	CM-22	1600	2				
Rich Chiller	Westinghouse	CMD	3000	2				
Boggs Chemistry	General Electric	MG-8U	2500	2				
Boggs Chemistry	General Electric	MG-8U	1600	2				
Howey Physics	General Electric	MG-8U	1600	2				
Pettit Microelectronics	Westinghouse	CMD	1875	2				
Institute of Bioengineering & Bioscience (IBB)	Cutler-Hammer	CMD	3000	2				
MARC/MRDC	General Electric	MG-8U	3000	2				
MARC/MRDC	General Electric	MG-8UA	3000	1				
MRDC II	Cutler-Hammer	CMD	3000	2				
Student Center	General Electric	MG-8U	1600	2				
Crossland Library	Cutler-Hammer	CM-52	1875	2				
BME	Cutler-Hammer	CM-52	2500	2				
MS&E	Cutler-Hammer	CM-52	3500	2				
MS&E	Cutler-Hammer	CM-52	4500	2				
Commander Commons	Westinghouse	CMD	1875	1				
Commander Commons	Cutler-Hammer	CM-52	1875	1				
Weber SSTC # 1	Cutler-Hammer	CM-52	1200	2				



Location	Manufacturer	Model Type	Load Rating	Quantity (Qty)	Weekday \$ Unit Price	Weekday \$ Qty Price	Weekend \$ Unit Price	Weekend \$ Qty Price
Montgomery-Knight SSTC # 2	Cutler-Hammer	CM-52	1875	2				
College of Computing	General Electric	MG-8U	3000	2				
ES&T	Cutler-Hammer	CMD	3000	3				
Klaus	Cutler-Hammer	CM-52	3000	2				
Bunger Henry	Eaton	CM-52	3500	2				
Marcus Nanotechnology BLDG- #181	Cutler-Hammer	CM-52	4500	2				
OIT Print Shop- #138	Richards	147NP	2500	2				
<b>Total Price (Award will be based on Total Weekend Qty: Price)</b>								\$