

SQ # 10388

**13.2 KV Feeder # 1 Repair**

**SECTION "C" TECHNICAL SPECIFICATIONS**

**OWNER**

**Board of Trustees  
Middlesex County College  
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**PREPARED BY**

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**SECTION C - TECHNICAL SPECIFICATIONS**

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## 1. SCOPE OF WORK

The purpose of these specifications is the completion of a contract to replace the existing 200 amp in-line Elastimold splices on Feeder #1 in Manhole 1A, repairs in Manhole 2A as well as the testing and inspection of feeders. This work will be performed at the main Middlesex County College campus in Edison, New Jersey.

The contractor shall provide all of the necessary labor, materials, tools and equipment required to complete the work described on the drawings and in these specifications as follows:

### Manhole #1A

- Clean and remove any debris from bottom of manhole #1A.
- Lower existing switch to the floor of manhole.
- Furnish and install two full lengths of PVC Coated Unistrut across the top sides of the switch. Mount them with stainless steel threaded rod/bolts and stainless steel anchors securely to the sides of the existing manhole.
- Drill two (2) ventilation holes, 2" inches in diameter into the existing switch, one (1) on the top of the switch and one (1) on the bottom of the switch.
- Furnish and install two (2) fiberglass non-metallic supports in manhole and re-secure cables as necessary. All anchors and bolts are to be stainless steel. These non-metallic supports will be utilized to fasten both feeder #1 and feeder #2 to the side walls of the manhole.
- On Feeder #1, furnish and install three (3) new Raychem #HVS-C-1521S 4/0 15KV heat shrink splices and three (3) 4/0 compression sleeves BCC-L-4/0 rated for 15KV. (All to be furnished by the Contractor).
- Arc proof all feeder # 1 cables in manhole.
- Repair and/or install fireproofing as needed. Existing Arc proof tape may be reused if not damaged. Any damaged tape shall be replaced with Scott 77C arc Proof tape applied in a half-lap layer starting from the exit point of the conduit and ending at the Raychem splice.
- Cable identification labels for manholes. Each set of cables to have plastic rectangular identification labels, with black background with white letters. The letters will be a minimum of ¼ inch size. Each label is to identify the voltage, feeder circuit number, and source breaker number. They will be properly secured

in each manhole to each set of cables with properly rated ty-raps.

**Manhole #2A (Note: This is a feed-thru manhole, no splices).**

- Clean and remove any debris from bottom of manhole #2A.
- Lower existing switch to the floor of manhole.
- Furnish and install two full lengths of PVC Coated Unistrut across the top sides of the switch. Mount them with stainless steel threaded rod/bolts and stainless steel anchors securely to the sides of the existing manhole.
- Drill two (2) ventilation holes, 2" inches in diameter into the existing switch, one (1) on the top of the switch and one (1) on the bottom of the switch.
- Furnish and install two (2) fiberglass non-metallic supports in manhole and re-secure cables as necessary. All anchors and bolts are to be stainless steel. These non-metallic supports will be utilized to fasten both feeder #1 and feeder #2 to the side walls of the manhole.

The following Drawings are attached for reference:

1. CAMPUS SITE PLAN
2. HIGH VOLTAGE ELECTRICAL PLAN

**2. MATERIALS**

The materials used under this contract shall be as specified on the drawings and in the specifications, be of a quality acceptable to the College and meet applicable codes.

**3. INSTALLATION/EXECUTION**

The Contractor must document previous experience with spicing Kerite cable, Elastimold modular spice kits and Raychem heat shrink splices. Include in the bid submission a listing of five projects completed within the past three years utilizing Elastimold splices including the name of the qualified electrician that completed the work.

The college will also require confined space training certificates for any personnel entering or monitoring confined space (manholes) during the course of the project.

All service vehicles must remain on the pathways so not to cause any lawn damage.

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Any damage caused by the contractor shall be repaired at no cost to the college.

**The HV Feeders #1 and #2 will be degenderized during this work.**

Pre and post testing of feeder #1 will be required. Visual and mechanical inspection of all the cables will be required. Cable inspection and testing shall consist of the following.

### **VISUAL AND MECHANICAL INSPECTION**

1. Inspect exposed sections of the cables for physical damage.
2. Inspect bolted electrical connections/splices for high resistance using one or more of the following methods.
  - A. Use of a low-resistance ohmmeter.
  - B. Verify tightness of accessible bolted electrical splices by calibrated torque-wrench method in accordance with the manufacturer's recommendation.
3. Inspect compression-applied connectors for correct cable match and indentations.
4. Inspect shield grounding, cable supports, and terminations.
5. Inspect fireproofing.
6. Inspect for correct identification and arrangement.
7. Inspect cable jacket and insulation condition.

### **4. TESTING**

Shall be in accordance with ICEA, IEC, IEEE and other power cable consensus standards, testing shall be performed by means of very low frequency (VLF) alternating current. This method will be used to perform insulation-withstand testing and baseline diagnostic tests such as partial discharge analysis, and power factor or dissipation factor. Testing values shall be as follows:

#### **VERY LOW FREQUENCY TESTING LEVELS**

60.1 HZ TESTING VOLTAGE (RMS) "Root-Mean-Square"

System Voltage Phase to Phase (kv) (rms) = 15KV

Maintenance Voltage Phase to Ground (kv) (rms) = 15KV

Do not exceed cable rating of 15KV during testing.

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## **5. CHANGES TO SCOPE**

For all (extra or deleted) work performed, the gross (cost or credit) to the owner shall include the net cost of the work plus an allowance for overhead and profit not to exceed a total of 15% of the net cost. Overhead and profit shall include, but not be limited to the following; home office expenses, field office expenses, supervision, project management and estimation, small tools and equipment.

## **6. SAFETY COMPLIANCE**

The Contractor shall comply with all of the College's safety and work rules when performing work at the college. All contractor employees, subcontractors, etc. shall sign-in daily at the Facilities Management Building upon arrival on campus to be issued a contractor's identification badge. It is expected that all contractor employees will conduct themselves in a professional manner.

All campus buildings will not be occupied during this project.

Prior to any entry into the designated manholes, the contractor will be required to fill out confined space permits utilizing the College's Confined Space Entry Forms.

Any opened manhole shall be barricaded with manhole safety railings.

## **7. SITE CLEANUP**

The work area shall be cleaned on a daily basis. The contractor is to remove all trash, excavated materials, and other waste off site and disposed of it in accordance with current regulations. Provide the college with weight tickets for any materials that can be recycled if applicable. The cost for the testing of any materials prior to the removal from the campus as required by regulatory agencies is the responsibility of the contractor.

## **8. TIME CONSTRAINTS**

The work shall be completed on Friday, April 14, 2017 (Good Friday Holiday) during the hours of 6:00 am to 5:00 pm. Initial testing shall commence at 6:00 am.

Manhole activities can begin after testing is complete. At approximately 4:00 pm, after all shutdown activities have been completed, the post testing may begin.

If the Board of Trustees of Middlesex County College has approved an award on February 22, 2017 the Contractor can start shortly after all permits, insurance and written documentations are submitted to the Director of Purchasing and a Notice to Proceed is issued. If the Board has not approved the award on February 22, 2017,

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then the College will advise the contractor of an alternate start date. All work must be completed no later than 30 days from the date of the Notice to Proceed.

## 9. WORK HOURS

All work is to be performed during normal work hours 8:00 am to 4:30 pm, Monday through Friday. If additional work hours are required, they shall be included in the contractor's bid price and approval of the College shall be requested by the contractor in writing 48 hours prior to the desired work date.

The work hours in this section take precedent over, and will supersede any conflicting references to hours of work elsewhere in these plans and specifications.

## 10. WARRANTY

All materials and workmanship shall be replaced at no cost for a period of one year from the date of final payment unless noted otherwise.

## 11. PERMITS

No construction or electrical permits are required.

## 12. ADDITIONAL INFORMATION

Additional information may be obtained from the following individuals:

Facility/specifications:

Daniel J. Fuchs  
Associate Director of Facilities Maintenance  
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Proposal:

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