ADDENDUM NO. #1
July 8, 2016

To all Bidders on the Project Titled:

**BID NUMBER – CL16-SM-0094**
**BID NAME – Costello Athletic Center Transformer Replacement**

**UNIVERSITY OF MASSACHUSETTS – Lowell**
Purchasing Department
Wannalancit Business Center
600 Suffolk Street, Rm 415
Lowell, MA 01854

Reference Contract Documents (specifications) dated **June 22, 2016**

The attention of bidders submitting proposals for the above subject project is called to the following addendum to the specifications. The items set forth herein, whether of omission, addition, substitution, or clarifications are all to be included in and form part of the proposal submitted.

**Correction:**

1. Attachment B added, missing from original documents.

**Change:**

1. The date for the General Bid Opening has been changed from Monday, July 11, 2016 at 11:00 am to Monday, July 18, 2016 at 11:00 am

THE NUMBER OF THIS ADDENDUM (#1) MUST BE ENTERED IN THE APPROPRIATE SPACE PROVIDED ON THE CONTRACT FORM ENTITLED “ATTACHMENT A - FORM FOR GENERAL BID.”

All other of the portions of the Contract Documents remain **unchanged.**

Please be reminded to acknowledge this Addendum on the bid forms.

--End of Addendum No. #1
PART 1 – GENERAL

1.01 GENERAL

A. This specification pertains to the requirements for two transformers:

1. A DOE 2010 rated, three-phase loop-feed fused distribution transformer, pad mounted; rated 150 KVA with a primary voltage of 4160 volts delta and a secondary voltage of 208Y/120 volts.

2. A DOE 2010 rated, three-phase loop-feed fused distribution transformer, pad mounted; rated 500 KVA with a primary voltage of 4160 volts delta and a secondary voltage of 480Y/277 volts.

B. Applicable Standards: The standards listed below form a part of this specification to the extent referenced. Contractor shall conform to the latest editions of the following standards, unless otherwise specified herein:

1. Military Specification (Mil. Spec.):
   MIL-P-28641 Primer Coating, Vinyl Chloride-Acetate Copolymer, High-Build (For Steel and Masonry)

2. American National Standards Institute (ANSI) Publications:
   C2 National Electric Safety Code
   C57.12.26 Pad-Mounted Compartmental-Type, Self-Cooled, Three-Phase Distribution Transformers, Separable Insulated High-Voltage Connectors; High-Voltage 34,500 GRDY/19920 Volts and Below; 2500 KVA and Smaller.
   Z35.1 Specifications for Accident Prevention Signs

3. American Society for Testing and Materials (ASTM) Publications:
   D 92 Test Method for Flash and Fire Points by Cleveland Open Cup
   D 117 Test Method for Electrical Insulating Oils of Petroleum Origin
   D 877 Test Method for Dielectric Breakdown Voltage of Insulating Liquids Using Disk Electrodes
   D 3487 Mineral Insulating Oil Used in Electrical Apparatus, Standard Specification for

4. Institute of Electrical and Electronic Engineers Inc. (IEEE) Publication:
   386 Separable Insulated Connectors for Power Distribution Systems Above 600 V
5. National Electrical Manufacturer's Association (NEMA) Publication:

   LA 1  Surge Arresters

6. National Fire Protection Association (NFPA) Publication:

   70  National Electrical Code

C. Acceptable Manufacturers: Subject to compliance with requirements in this specification, provide pad mounted transformers as manufactured by:

   - Cooper Power Systems
   - ABB
   - Square D
   - General Electric

D. Submittals:

1. Product data:

   a. Transformer: Submit manufacturer's technical product data including rated KVA, frequency, primary and secondary bus material, primary and secondary voltages, percent taps, no-load and full-load losses in watts, % impedance at 85°C, hot-spot and average temperature rise at 30°C ambient temperature, sound level in decibels and standard published data.

2. Time current curves: Submit manufacturer time current curves for the transformer primary fuse.

3. Transformer evaluation: Submit manufacturer loss data for standard loss and low-loss transformers.

4. Shop drawings: Submit manufacturer's drawings and specifications stamped, signed and certified for construction, showing all transformer dimensions, mounting details and electrical connections. In addition, the vendor shall provide technical documents relating to the manufacturer's recommended installation, adjustment operation and maintenance procedures for all equipment supplied.

PART 2 – PRODUCTS

2.01 DISTRIBUTION PAD-MOUNTED COMPARTMENTAL-TYPE TRANSFORMER

A. The unit shall contain the transformer, loop-feed switches, and separate compartments in a drip-proof weather-resistant, tamper-resistant enclosure, arranged for pad-locking. The transformer shall be Factory Mutual Approved Code Listed and Labeled, designed in accordance with the requirements of ANSI/IEEE C57.1200 and labeled by Factory Mutual Research Corporation as meeting the requirements of FMRC Approval Standard Class 3990, insulated with FM approved less-flammable fluid (R-Temp or Envirotrop FR3) all in compliance with the NEC Sections 110-3 and 450-23. High-voltage and low-voltage compartments shall be isolated from each other in a manner to require a separate unlatching or unbolting action to give access to the high-voltage compartment.
2.02 TRANSFORMER

A. DOE 2010 rated, dead-front, loop-feed, two position loadbreak switching containing less-flammable liquid, self-cooled type, three-phase, two winding, five-legged core, 60 Hz, 65 deg. C rise, with two 2-1/2 percent full capacity taps above and below rated primary voltage, copper primary and secondary windings. Provide external tap changing for de-energized operation only. Basic impulse level shall be 60 KV for the primary, and 30 KV for the secondary. Impedance shall be standard or less, with a minimum impedance of 5.18 percent. Provide lifting lugs.

B. Tank Construction: Transformer tank shall be sealed except for bolted handhole access.

2.03 REQUIREMENTS

A. All units shall meet the requirements of ANSI C57.12.00-1980 or latest revision, NEMA TR1-1980 or latest revision, and all other applicable IEEE, NEMA, and/or ANSI Standards unless otherwise indicated.

B. All units shall be liquid-filled, Class OA, 60-cycle, 65EC rise. Liquid in all units shall be the less-flammable type (RTEMP Fluid, Envirotemp FR3, or equivalent).

C. The manufacturer's warranty or guarantee policy in writing shall be submitted to the Owner.

D. The pad-mounted cabinet shall meet the security requirements of W.U.C. Guide 2.13.

E. The transformer enclosure must undergo an eight-stage pretreatment process, three-step epoxy powder coat finish, or undercoat the underside of the transformer enclosure including the steel base and the lowest 1 inch on the sides of the cabinet with a 4-mil thickness of a corrosion-resistant mastic-type undercoating material.

F. Transformer enclosure shall be designed to prevent water from dripping or splashing on the high voltage and low voltage components.

G. No labels or decals shall be attached to the outside of the transformer.


1. The nameplate shall comply with ANSI C57.12.26. In addition, the number of gallons of coolant shall be shown as well as weight. The transformer impedance, month and year of manufacture shall be readily visible on the nameplate. The nameplate shall also indicate that the transformer does not contain PCBs. In addition, a separate "non-PCB" label shall be affixed to the transformer on the inside of the secondary compartment.

2. The nameplate shall be readily visible and affixed to the transformer on the inside of the door of the secondary compartment, as a minimum.

3. The transformer shall have an additional nameplate with the FM approval mark specifying the following data: Tank Pressure rating, Fuse Part Number, Pressure relief device part number, and requirements particular to the installation.
I. Tank Construction: Liquid-immersed transformer shall have a totally sealed bolted or welded cover. Transformer tank rupture strength shall be a minimum of 15 psi.

J. Five-legged core or equivalent design.

K. Ground pads shall be provided for the transformer in both the low and high voltage compartments. Ground pad connectors shall be capable of accepting #4/0 AWG bare copper ground cable.

L. The transformer tank shall be provided with a pressure relief device to vent internal overpressures. The device must be capable of venting a minimum specified flow rate, based on the KVA of the transformer per the table in Section 2.3.3 of the FMRC Standard.

M. Transformer shall be equipped with an externally operable manual tap changer for de-energized operation. Taps shall be two 2-1/2 percent above and two 2-1/2 percent taps below rated primary voltage.

   1. Provide the no-load tap changer operating handle in the primary compartment. The tap settings shall be clearly visible upon opening the primary compartment door.

N. Primary Switching: Provide three-phase two-position primary oil-immersed loadbreak switches located within the transformers as indicated on the transformer one-line drawings. Two separate loadbreak switches are required for each transformer. Switches must be gang-operated for hookstick operation. Interlock the transformer load-break switch with the fuse holders. The on-off positions shall be clearly labeled. Minimum switch ratings shall be 15 KV, 200 amps continuous current, 60 KV BIL.

O. Units shall be supplied with externally clamped bushings to allow external replacement.

P. Provide Bay-O-Net under oil fusing in series with Current limiting ELSP fusing for the 4160 V primary. The transformer primary circuit shall have over-current protection which limits the I2T let-through to a specified maximum value, based on the table in Section 2.3.5 of the FMRC standard.

Q. Surge Arresters: Provide metal oxide distribution-type, insulated arresters, rated 4.5 KV for transformer protection at the primary voltage of 4160 VAC delta, mounted and directly connected to the high-voltage winding inside the transformer tank. Arresters shall meet or exceed the requirements of the latest edition of ANSI C26.1 and NEMA LA1.

R. Secondary terminals 600 V and less shall be NEMA 4-hole or 6-hole spade-type.

S. Transformer Accessories: Provide the accessories listed below:

   1. Drain and sampling valves.


   3. Ground pads in each enclosure compartment.


   5. Pressure-vacuum gauge.
6. Pressure-relief device.

7. Primary connected no-load tap changer.

8. Two primary two-position gang operable load break switches.

9. Primary overcurrent protection on the transformer.

10. Three phase two-piece bushings.

11. Low-voltage phase spade bushings 1.2 KV class.

12. Low-voltage neutral spade bushing 1.2 KV class.

13. Transformer nameplate.


15. Parking stands, one for each bushing.


17. Liquid dial-type thermometer.

18. One spare set of primary 4160V fuses.

T. Time current characteristic curves shall be provided for all transformer protective device(s).

U. Test Reports:

1. Manufacturer shall provide certified test reports in accordance with ANSI C57.12.26.

2. All loss data for no-load losses and full-load losses.

PART 3 – EXECUTION

3.01 DELIVERY

A. The transformers shall be shipped FOB destination to the University.

B. Delivery schedule of the transformers shall be coordinated with the University. A space will be identified on the campus for delivery of transformers.

C. The equipment supplier shall state in their bid the number of weeks required to deliver equipment after receipt of approved submittals.

End of Section