

## Addendum Two

### Wardlaw AHU-3 Replacement

Project Number: H27-1940

June 12, 2013

NOTE: The following amendments, additions, and deletions shall be made to the Construction Documents and Contract Documents. Insofar as those documents are at variance with this Addendum, this Addendum shall govern.

#### General

1. A non-mandatory pre-bid conference was held on 06/05/13 at 1:00 pm EST, and a subsequent site visit was made available. A site visit is highly recommended. Attached is a list of attendees.
2. A question was asked at the pre-bid conference about field cutting the return duct opening into the bottom of the new unit. Access to the return duct roof opening is very limited with the existing unit still in place therefore it will be allowable to field cut the return opening.

#### Drawings

<u>Item No.</u>	<u>Description</u>
3.	<u>Delete Drawing S1.0</u> New AHU-3 shall be located on new structural steel beams provided under separate roofing contract. This contractor shall be responsible for attachment of new unit to structural steel and associated certified seismic and wind loading calculations.

#### Specifications

<u>Item No.</u>	<u>Description</u>
4.	<u>Refer to Section 230010</u> On page 230010-6, under "Air Handling Units", add Governair Corp. as an approved manufacturer.
5.	<u>Refer to Section 230010</u> On page 230010-6, under "Automatic Flow Control Valves", add Nexus Valve as an approved manufacturer.

6.

Refer to Section 230500

On page 230500-8, under “UNIT PERFORMANCE”, in the paragraph about air handling equipment casing replace references to “R –value of 18.8” with “R-value of 12.7”. The air handling unit casing shall be 2” thick double wall construction with a minimum R-value of 12.7.

7.

Refer to Section 230500

On page 230500-18, under “Automatic Temperature Control:”, add the following:

Control Valves (Chilled Water):

1. All modulating control valves shall be of the “pressure independent” type configured with one integrated valve body that incorporates one chamber with an adjustable Cv and a separate pressure regulating chamber used to maintain a constant differential pressure across the control surface.
2. Each control valve shall be individually flow tested at the factory and verified to deviate no more than  $\pm 5\%$  through the selected operating pressure range. A calibrated performance tag shall be provided with each valve that verifies the flow rate in 10° rotation increments up to full rated flow (option with 1/2”). All testing shall be performed with instruments calibrated to the requirements of ANSI/ISA-S75.11-1985, with traceability to NIST and/or ISO standards.
3. Control valve rangeability shall be 100:1 minimum.
4. Each control valve shall be subjected to 70 psid and tested to exceed ANSI/FCI 70-2-1998 leakage ratings. Class IV leakage or better is required for control valves 2" nominal size and less. Class III leakage or better is required for control valves larger than 2".
5. In all control valves 8” and smaller, it shall be possible to modify the valve flow characteristics without removing the valve from the piping system.
6. Balancing valves and associated balancing shall not be required where pressure independent modulating control valves are installed.
7. The control valve actuator shall modulate all valves up to 8" in nominal size from 0 to 100% design flow while rotating the valve stem a maximum of 90°.
8. There shall be three ports installed at the factory integral to each valve and capable of being used to measure pressure or temperature. The first port shall be installed at the inlet to the valve. The second shall be installed between the Cv chamber and the pressure regulating chamber. The third shall be installed at the outlet of the valve. Should the ports not be

provided as part of the valve body than they shall be installed in a spool piece and attached to the body.

9. The differential pressure between the first and the third port shall be used in commissioning to verify that the minimum differential pressure (typically 5 psid) required for pressure independent operation is available.
10. The differential pressure between the first and second ports shall be used to verify proper valve operation and flow regulation. It shall be possible to verify the flow rate through the control valve using the valve stem position and the differential pressure measurement between the first and second port in the valve. If these valve features are not available, a flow meter shall be installed to verify actual flow rate in operation through the valve.
11. CB valves to be standard modulating.
12. All valves shall be warranted by the manufacturer for no less than 5 years from the date of purchase.
13. Acceptable manufacturers: Johnson Controls, Danfoss, Delta

#### Control Valves (Hot Water):

1. All automatic control valves shall be fully proportioning and provide near linear heat transfer control. The valves shall be quiet in operation and fail-safe open, closed, or in their last position. All valves shall operate in sequence with another valve when required by the sequence of operations. All control valves shall be sized by the control manufacturer, and shall be guaranteed to meet the heating and cooling loads, as specified. All control valves shall be suitable for the system flow conditions and close against the differential pressures involved. Body pressure rating and connection type (sweat, screwed, or flanged) shall conform to the pipe schedule elsewhere in this Specification.
2. Valves shall be modulating plug, ball, and/or butterfly, as required by the specific application. Modulating water valves shall be sized per manufacturer's recommendations for the given application. In general, valves (2 or 3-way) serving variable flow air handling unit coils shall be sized for a pressure drop equal to the actual coil pressure drop, but no less than 5 PSI. Valves (3-way) serving constant flow air handling unit coils with secondary circuit pumps shall be sized for a pressure drop equal to 25% the actual coil pressure drop, but no less than 2 PSI. Mixing valves (3-way) serving secondary water circuits shall be sized for a pressure drop of no less than 5 PSI. Valves for terminal reheat coils shall be sized for a 2 PSIG pressure drop, but no more than a 5 PSI drop.

3. Acceptable manufacturers: Johnson Controls, Danfoss, Delta Flow

8. Refer to Section 230500

On page 230500-17, under “DUCTWORK, GENERAL”, add the following: All ductwork on roof shall be protected with a composite membrane consisting of a multi-ply embossed UV-resistant aluminum foil/polymer laminate to which is applied a layer of rubberized asphalt. Membrane product shall be Alumaguard, with white Alumaguard Cool Wrap coating, by Polyguard Products, Inc. or equal by Ventureclad. Membrane shall be installed in accordance with manufacturer’s published instructions.

9. Refer to Section 230700

On page 230700-2, under “DUCTWORK INSULATION”, change the Return Duct and Double Wall Medium Pressure Round Supply Duct insulation thickness to 2” thick. Insulation shall have a minimum R-value of 8.0.

10. Refer to Section 230700

On page 230700-2 and 230700-4 delete the “OUTDOOR DUCT INSULATION” section. Outdoor ductwork will not be externally insulated.

END OF ADDENDUM

Attachments



# University of South Carolina - Pre Bid Sign In Sheet

Columbia, South Carolina

Project Name & Number: Wardlaw AHU -3 Replacement/H27-1940  
 Pre Bid Date & Time: June 5, 2013 @ 1pm

Name	Company	Address	Phone #	Email
Gill Holland	ICI	146 bobcross bl Columbia, SC 29212	803-237-8888	gillce@hollandjci.com
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\* Please make sure you list your company name as registered with LLR.  
 \* By signing and providing your email address, you are authorizing the University of South Carolina to send you information electronically.



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Pre Bid Date & Time: June 5, 2013 @ 1pm

Name	Company	Address	Phone #	Email
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Tony Walker	Mc Carter Mech	685 John Dodd Spurthys SC.	864-599-7883	SCOTT@MC CARTER MECH .COM

\*Please make sure you list your company name as registered with LLR.  
\* By signing and providing your email address, you are authorizing the University of South Carolina to send you information electronically.