

## ADDENDUM NUMBER 1

### PARTICULARS

**1.01 DATE: AUGUST 17, 2023**

**1.02 PROJECT: MIDLANDS TECHNICAL COLLEGE - STUDENT CENTER CHILLER REPLACEMENT - AIRPORT CAMPUS.**

**TO: PROSPECTIVE BIDDERS:**

**2.01 THIS ADDENDUM FORMS A PART OF THE CONTRACT DOCUMENTS AND MODIFIES THE ORIGINAL PROCUREMENT DOCUMENTS DATED AUGUST 1, 2023, WITH AMENDMENTS AND ADDITIONS NOTED BELOW.**

**2.02 ACKNOWLEDGE RECEIPT OF THIS ADDENDUM IN THE SPACE PROVIDED IN THE BID FORM. FAILURE TO DO SO MAY DISQUALIFY THE BIDDER.**

**2.03 THIS ADDENDUM CONSISTS OF 1 PAGE AND THE FOLLOWING ATTACHMENTS, SPECIFICATIONS, AND DRAWINGS:**

- A. Pre-Bid Sign-in Sheet
- B. 232114 - Hydronic Specialties
- C. Drawing Cover Sheet

**2.04 LAST DAY FOR QUESTIONS SHALL BE SUBMITTED TO GMK BY 8/28/2023**

**2.05 LAST ADDENDUM WILL BE ISSUED ON 8/30/2023.**

**2.06 ANY AND ALL HAZARDOUS MATERIALS WILL BE REMOVED BY THE OWNER.**

**2.07 MTC IS AWARE THAT EQUIPMENT LEAD TIMES MAY EXCEED THE CONTRACT TIME OUTLINED IN SE-330 AND WILL WORK WITH THE LOW BIDDER IF THIS OCCURS. CONTRACTOR WILL NEED TO BID THE PROJECT ASSUMING EQUIPMENT LEAD TIMES WILL NOT BE AN ISSUE.**

**2.08 A 3RD PARTY INSPECTOR WILL BE OBTAINED BY MTC. CONTRACTOR MAYBE CHARGED FOR REINSPECTIONS BY 3RD PARTY INSPECTOR IF WORK IS NOT COMPLETED WHEN INSPECTIONS ARE SCHEDULED.**

**2.09 MTC WILL ISSUE NECESSARY PERMITS REQUIRED FOR THIS PROJECT.**

**CHANGES TO THE PROJECT MANUAL - SPECIFICATIONS:**

**3.01 SECTION 230923 DIRECT-DIGITAL CONTROL SYSTEM FOR HVAC**

- A. Delete Paragraph 2.01.A and replace with the following:  
"2.01 MANUFACTURERS  
A. Trane"

**3.02 SECTION 232114 HYDRONIC SPECIALTIES**

- A. Replace Section in its entirety

**CHANGES TO DRAWINGS:**

**4.01 DRAWING COVER SHEET**

- A. Replace Cover sheet with updated cover sheet.

**END OF SECTION**



**SECTION 232114  
HYDRONIC SPECIALTIES**

**PART 1 GENERAL**

**1.01 SECTION INCLUDES**

- A. Expansion tanks.
- B. Air vents.
- C. Air separators.
- D. Strainers.
- E. Suction diffusers.
- F. Pump connectors.
- G. Combination pump discharge valves.
- H. Pressure-temperature test plugs.
- I. Balancing valves.
- J. Combination flow controls.
- K. Flow meters.
- L. Relief valves.
- M. Pressure reducing valves.

**1.02 RELATED REQUIREMENTS**

- A. Section 232113 - Hydronic Piping.
- B. Section 232500 - HVAC Water Treatment: Pipe cleaning.

**1.03 REFERENCE STANDARDS**

- A. ASME B16.5 - Pipe Flanges and Flanged Fittings NPS 1/2 Through NPS 24 Metric/Inch Standard 2017.
- B. ASME BPVC-VIII-1 - Boiler and Pressure Vessel Code, Section VIII, Division 1 - Rules for Construction of Pressure Vessels 2019.

**1.04 SUBMITTALS**

- A. See Section 013000 - Administrative Requirements, for submittal procedures.
- B. Product Data: Provide product data for manufactured products and assemblies required for this project. Include component sizes, rough-in requirements, service sizes, and finishes. Include product description and model.
- C. Certificates: Inspection certificates for pressure vessels from authority having jurisdiction.
- D. Manufacturer's Installation Instructions: Indicate hanging and support methods, joining procedures.
- E. Maintenance Contract.
- F. Project Record Documents: Record actual locations of flow controls.
- G. Maintenance Data: Include installation instructions, assembly views, lubrication instructions, and replacement parts list.

**1.05 QUALITY ASSURANCE**

- A. Manufacturer Qualifications: Company specializing in manufacturing the type of products specified in this section, with minimum three years of documented experience.

**1.06 DELIVERY, STORAGE, AND HANDLING**

- A. Accept valves on site in shipping containers with labeling in place. Inspect for damage.
- B. Provide temporary protective coating on cast iron and steel valves.

- C. Provide temporary end caps and closures on piping and fittings. Maintain in place until installation.
- D. Protect piping systems from entry of foreign materials by temporary covers, completing sections of the work, and isolating parts of completed system.

## **PART 2 PRODUCTS**

### **2.01 EXPANSION TANKS**

- A. Manufacturers:
  - 1. Amtrol Inc: [www.amtrol.com/#sle](http://www.amtrol.com/#sle).
  - 2. ITT Bell & Gossett: [www.bellgossett.com/#sle](http://www.bellgossett.com/#sle).
  - 3. Taco, Inc: [www.taco-hvac.com/#sle](http://www.taco-hvac.com/#sle).
- B. Construction: Welded steel, tested and stamped in accordance with ASME BPVC-VIII-1; supplied with National Board Form U-1, rated for working pressure of 125 psi, with flexible EPDM diaphragm or bladder sealed into tank, and steel support stand.
- C. Accessories: Pressure gauge and air-charging fitting, tank drain; precharge to pressure specified in drawings.
- D. Automatic Cold Water Fill Assembly: Pressure reducing valve, reduced pressure double check back flow preventer, test cocks, strainer, vacuum breaker, and valved by-pass.

### **2.02 AIR VENTS**

- A. Float Type:
  - 1. Brass or semi-steel body, copper, polypropylene, or solid non-metallic float, stainless steel valve and valve seat; suitable for system operating temperature and pressure; with isolating valve.
  - 2. Cast iron body and cover, float, bronze pilot valve mechanism suitable for system operating temperature and pressure; with isolating valve.

### **2.03 AIR SEPARATORS**

- A. Centrifugal Air Separators/Strainers:
  - 1. The Air & Sediment Separator shall be designed, constructed, and stamped in accordance with Section VIII, Division I of the ASME Boiler and Pressure Vessel Code, and registered with the National Board of Boiler and Pressure Vessel Inspectors.
  - 2. The Air & Sediment Separator shall have a maximum temperature rating of 350°F (171°C).
  - 3. The Air & Sediment Separator body shall be made of carbon steel.
  - 4. The Air & Sediment Separator body shall be three times the nominal inlet/outlet pipe diameter.
  - 5. The Air & Sediment Separator shall include an air collection tube to filter and direct collected air to the top of the unit so it can be removed. The air collection tube shall have 3/16" perforations and 51% open area. The air collection tube shall be made of 304 stainless steel.
  - 6. The Air & Sediment Separator shall include a dome style collection cap on the bottom of the unit to allow removed sediment to collect outside of the flow of the system fluid.
  - 7. The Air & Sediment Separator shall include an internal deflector screen on the inside of the tank body to direct sediment down to the collection cap. The deflector screen shall be made of carbon steel.
  - 8. The Air & Sediment Separator shall include threaded blow down connection to allow for sediment to be regularly cleaned out of the unit.
  - 9. The Air & Sediment Separator shall include a threaded air removal connection on top of the unit so an air vent or expansion/compression tank can be connected, allowing collected air to be removed from the unit.
  - 10. The Air & Sediment Separator shall be available with either flanged end connections.
  - 11. Flange end connections should be designed according to ANSI Standards

## 2.04 STRAINERS

- A. Size 2 inch and Under:
  - 1. Screwed brass or iron body for 175 psi working pressure, Y pattern with 1/32 inch stainless steel perforated screen.
- B. Size 2-1/2 inch to 4 inch:
  - 1. Provide flanged iron body for 175 psi working pressure, Y pattern with 3/64 inch stainless steel perforated screen.
- C. Size 5 inch and Larger:
  - 1. Provide flanged iron body for 175 psi working pressure, basket pattern with 1/8 inch stainless steel perforated screen.

## 2.05 SUCTION DIFFUSERS

- A. Manufacturers:
  - 1. Grinnell Products: [www.grinnell.com/#sle](http://www.grinnell.com/#sle).
  - 2. ITT Bell & Gossett: [www.bellgossett.com/#sle](http://www.bellgossett.com/#sle).
  - 3. Taco
- B. Fitting: Angle pattern, cast-iron body, threaded for 2 inch and smaller, flanged for 2-1/2 inch and larger, rated for 175 psi working pressure, with inlet vanes, cylinder strainer with 3/16 inch diameter openings, disposable 5/32 inch mesh strainer to fit over cylinder strainer, 20 mesh start up screen, and permanent magnet located in flow stream and removable for cleaning.
- C. Accessories: Adjustable foot support, blowdown tapping in bottom, gauge tapping in side.

## 2.06 PUMP CONNECTORS

- A. Flexible Connectors: Flanged, braided type with wetted components of stainless steel, sized to match piping.
  - 1. Maximum Allowable Working Pressure: 150 psig at 120 degrees F.
  - 2. Accommodate the Following:
    - a. Axial Deflection in Compression and Expansion: 1 inch.
    - b. Lateral Movement: 1 inch.
    - c. Angular Rotation: 15 degrees.
    - d. Force developed by 1.5 times specified maximum allowable operating pressure.
  - 3. End Connections: Same as specified for pipe jointing.

## 2.07 COMBINATION PUMP DISCHARGE VALVES

- A. Valves: Straight or angle pattern, flanged cast-iron valve body with bolt-on bonnet for 175 psi operating pressure, non-slam check valve with spring-loaded bronze disc and seat, stainless steel stem, and calibrated adjustment permitting flow regulation.

## 2.08 PRESSURE-TEMPERATURE TEST PLUGS

- A. Construction: Brass body designed to receive temperature or pressure probe with removable protective cap, and Neoprene rated for minimum 200 degrees F.
- B. Application: Use extended length plugs to clear insulated piping.

## 2.09 BALANCING VALVES

- A. Manufacturers:
  - 1. Armstrong International, Inc: [www.armstronginternational.com/#sle](http://www.armstronginternational.com/#sle).
  - 2. Ferguson Enterprises Inc: [www.fnw.com/#sle](http://www.fnw.com/#sle).
  - 3. Hays Fluid Controls: [www.haysfluidcontrols.com/#sle](http://www.haysfluidcontrols.com/#sle).
  - 4. ITT Bell & Gossett: [www.bellgossett.com/#sle](http://www.bellgossett.com/#sle).
  - 5. Taco, Inc: [www.taco-hvac.com/#sle](http://www.taco-hvac.com/#sle).
- B. Size 2 inch and Smaller:
  - 1. Provide ball or globe style with flow balancing, flow measurement, and shut-off capabilities, memory stops, minimum of two metering ports and NPT threaded or soldered

- connections.
- 2. Metal construction materials consist of bronze or brass.
- 3. Non-metal construction materials consist of Teflon, EPDM, or engineered resin.
- C. Size 2.5 inch and Larger:
  - 1. Provide ball or globe style with flow balancing, flow measurement, and shut-off capabilities, memory stops, minimum of two metering ports and flanged connections.
  - 2. Valve body construction materials consist of cast iron, carbon steel, or ductile iron.
  - 3. Internal components construction materials consist of brass, aluminum bronze, bronze, Teflon, EPDM, NORYL, or engineered resin.

## **2.10 FLOW METERS**

- A. Manufacturers:
  - 1. Dwyer Instruments, Inc: [www.dwyer-inst.com/#sle](http://www.dwyer-inst.com/#sle).
  - 2. EMCO Flow Systems: [www.emcoflow.com/#sle](http://www.emcoflow.com/#sle).

## **2.11 RELIEF VALVES**

- A. Bronze body, teflon seat, stainless steel stem and springs, automatic, direct pressure actuated, capacities ASME certified and labelled.

## **2.12 PRESSURE REDUCING VALVES**

- A. Operation: Automatically feeds make-up water to the hydronic system whenever pressure in the system drops below the pressure setting of the valve. Refer to Section 232113.
- B. Materials of Construction:
  - 1. Valve Body: Constructed of bronze, cast iron, brass, or iron.
  - 2. Internal Components: Construct of stainless steel or brass and engineered plastics or composition material.
- C. Connections:
  - 1. NPT threaded: 0.50 inch or 0.75 inch.
- D. Provide integral check valve and strainer.
- E. Maximum Inlet Pressure: 100 psi.
- F. Maximum Fluid Temperature: 180 degrees F.
- G. Operating Pressure Range: Between 10 psi and 25 psi.

## **2.13 AUTOMATIC FLOW LIMITING VALVES**

- A. Manufacturers:
  - 1. Griswold Controls LLC; Isolator R Valve: [www.griswoldcontrols.com/#sle](http://www.griswoldcontrols.com/#sle).
  - 2. Hays Fluid Controls: [www.haysfluidcontrols.com/#sle](http://www.haysfluidcontrols.com/#sle).
- B. Size 2.5 inch to 24 inch:
  - 1. Class: 150.
  - 2. Provide wafer style with flow balancing, flow measurement, and shut-off capabilities, memory stops, minimum of two metering ports and flanged connections.
  - 3. Valve body construction materials consist of cast iron, carbon steel, ductile iron, or gray iron.
  - 4. Internal components construction materials consist of brass, aluminum bronze, bronze, Teflon, EPDM, NORYL, or engineered resin.

## **PART 3 EXECUTION**

### **3.01 INSTALLATION**

- A. Install specialties in accordance with manufacturer's instructions.
- B. Provide automatic air vents at system high points and as indicated.
- C. Provide air separator on suction side of system circulation pump and connect to expansion tank.

- D. Provide valved drain and hose connection on strainer blow down connection.
- E. Provide pump suction fitting on suction side of base mounted centrifugal pumps where indicated. Remove temporary strainers after cleaning systems.
- F. Provide combination pump discharge valve on discharge side of base mounted centrifugal pumps where indicated.
- G. Support pump fittings with floor mounted pipe and flange supports.
- H. Provide relief valves on pressure tanks, low pressure side of reducing valves, heat exchangers, and expansion tanks.
- I. Select system relief valve capacity so that it is greater than make-up pressure reducing valve capacity. Select equipment relief valve capacity to exceed rating of connected equipment.
- J. Pipe relief valve outlet to nearest floor drain.

**END OF SECTION**

# MIDLANDS TECHNICAL COLLEGE

# MTC - STUDENT CENTER CHILLER REPLACEMENT AIRPORT CAMPUS

H59-N192-LC

A/E Project Number: 23025.01  
AUGUST 1, 2023  
ISSUED FOR  
CONSTRUCTION



Prepared by:  
**GMK**  
ASSOCIATES, INC.

Architects/Engineers/Planners  
1201 Main Street, Suite 2100  
Columbia, South Carolina 29201  
tel. 803-256-0000  
fax 803-255-7243

## DRAWING INDEX

### MECHANICAL

- M0.1 HVAC LEGENDS, NOTES, ABBREVIATIONS, AND SCHEDULES
- M1.0 SITE PLAN - HVAC DEMOLITION
- M1.2 PARTIAL SECOND FLOOR PLAN - HVAC DEMOLITION
- M2.0 SITE PLAN - HVAC RENOVATION
- M2.2 PARTIAL SECOND FLOOR PLAN - HVAC RENOVATION
- M5.1 HVAC CONTROL SCHEMATICS
- M6.1 HVAC DETAILS

### ELECTRICAL

- E0.0 ELECTRICAL NOTES, SYMBOLS, SCHEDULES, DETAILS, AND ABBREVIATIONS
- E1.0 ELECTRICAL PLANS - DEMOLITION AND NEW WORK
- E2.0 ELECTRICAL PLAN - 2ND FLOOR RENOVATION PLAN

### KEY PLAN

