

# MADRAS HIGH SCHOOL IMPROVEMENTS

PROJECT NO.: 22055

## ADDENDUM NO. 4

DATE: December 1, 2022

## BID SET

DATED: October 31, 2022



### OWNER

Jefferson County School District 509J  
445 SE Buff Street  
Madras, OR 97741  
541.475.6192

### CM/GC

Griffin Construction, LLC  
1411 NW Murphy Ct.  
Prineville, OR 97754  
541.447.7237

### ARCHITECT

BLRB Architects  
721 SW Industrial Way, #130  
Bend, Oregon 97702  
541.330.6506

## PROJECT INFORMATION

Project Name: Madras High School  
Owner: Jefferson County School District 509J  
Architect: BLRB Architects  
Architect Project Number: 22055

## NOTICE TO BIDDERS

This Addendum is issued to all registered plan holders pursuant to the Instructions to Bidders and Conditions of the Contract. This Addendum serves to clarify, revise, and supersede information in the Project Manual, Drawings, and previously issued Addenda. Portions of the Addendum affecting the Contract Documents will be incorporated into the Contract by enumeration of the Addendum in the Owner/Contractor Agreement.

The Bidder shall acknowledge receipt of this Addendum in the appropriate space on the Bid Form.

At the time of bid opening Contractors can wait in front lobby and be escorted to the bid opening location

## PART 1: CONTRACTOR QUESTIONS AND CLARIFICATIONS

1. Question/Clarification: The bid date is being revised from ~~December 1<sup>st</sup>, 2022 at 2:00 PM.~~ **The new bid date is December 8<sup>th</sup>, 2022 at 2:00 PM.**

## PART 2: REVISIONS TO THE PROJECT MANUAL

1. Reference attached Morrison-Maierle Addendum #4 Narrative

## PART 3: REVISIONS TO THE WORKING DRAWINGS

There are no revisions to the working drawings as part of Addendum #4.

## PART 4: SUBSTITUTION APPROVALS

There are no substitution requests as part of Addendum #4.

**THE BIDDER SHALL NOTIFY ALL SUB-BIDDERS OF THIS ADDENDUM AND SHALL ACKNOWLEDGE RECEIPT OF THIS ADDENDUM BY INSERTING THE ABOVE ADDENDUM NUMBER IN THE SPACE PROVIDED ON THE BID FORM PRIOR TO SUBMITTING BIDS. FAILURE TO DO SO MAY SUBJECT THE BIDDER TO DISQUALIFICATION.**

**ATTACHMENTS:**

1. Morrison-Maierle Addendum #4 Narrative
2. Specification 23 74 16 Packaged, Rooftop Air-Conditioning Units

**END OF ADDENDUM NO. 4**

**ADDENDUM 4  
Madras High School  
Fire Protection – Plumbing  
Mechanical – Electrical – Telecommunications**

Date: 12/8/2022

TO: ALL PLANHOLDERS

The plans and specifications for the above captioned project are hereby modified and/or superseded by this Addendum:

**FIRE PROTECTION:**

**SPECIFICATIONS –**

No changes at this time.

**DRAWINGS –**

No changes at this time.

**PLUMBING:**

**SPECIFICATIONS –**

No changes at this time.

**DRAWINGS –**

**Field House:**

No changes at this time.

**CTE:**

No changes at this time.

**Re-roof:**

No changes at this time.

**MECHANICAL:**

**SPECIFICATIONS –**

Specification Section 237416 – Packaged, Rooftop Air-Conditioning Units: **REPLACE** specification with attached specification section 237416 – Packaged, Rooftop Air-Conditioning Units.

**DRAWINGS –**

**Field House:**

No changes at this time.

**Reroof:**

No changes at this time.

**CTE:**

No changes at this time.

**ELECTRICAL:**

**SPECIFICATIONS –**

No changes at this time.

**DRAWINGS –**

**Field House:**

No changes at this time.

**CTE:**

No changes at this time.

**Re-roof:**

No changes at this time.

**PRIOR APPROVAL –**

All material or products supplied by the contractor must meet or exceed the quality and performance of the material or product originally specified. It is the contractor's responsibility to ensure that substituted equipment matches the exterior dimensions, weight, and configuration of the equipment that was specified.

END OF ADDENDUM 4

## PART 1 - GENERAL

### 1.01 SUMMARY

A. Section Includes:

1. Roof Mounted Air Handling Units

B. Related Requirements:

1. 220553 "Identification for Plumbing and HVAC Piping and Equipment"
2. 230900 "HVAC Controls"
3. 233113 "Metal Ducts"
4. 233300 "Air Duct Accessories"

### 1.02 SUBMITTALS

- A. See Section 22 00 00 "General Requirements of Plumbing and HVAC" for submittal requirements.

B. Shop Drawings: Include the following

1. Unit dimensions and weight.
2. Cabinet material, metal thickness, finishes, insulation, and accessories.
3. Fans:
  - a. Certified fan-performance curves with system operating conditions indicated.
  - b. Certified fan-sound power ratings.
  - c. Fan construction and accessories.
  - d. Motor ratings, electrical characteristics, and motor accessories.
4. Certified coil-performance ratings with system operating conditions indicated.
5. Dampers, including housings, linkages, and operators.
6. Filters with performance characteristics.

### 1.03 QUALITY ASSURANCE

- A. Electrical Components, Devices, and Accessories: Listed and labeled as defined in NFPA 70, by a qualified testing agency, and marked for intended location and application.
- B. NFPA Compliance: Comply with NFPA 90A for design, fabrication, and installation of air-handling units and components.
- C. AHRI Certification: Air-handling units and their components shall be factory tested according to AHRI 430, "Performance Rating of Central-Station Air-Handling Unit Supply Fans," and shall be listed and labeled by AHRI.
- D. AHRI Certification: Air-handling units and their components shall be factory tested according to AHRI 410 - Forced-Circulation Air-Cooling and Air-Heating Coils.

- E. ASHRAE Compliance: Applicable requirements in ASHRAE 62.1, Section 5 - "Systems and Equipment" and Section 7 - "Construction and Startup."
- F. ASHRAE/IES 90.1 Compliance: Applicable requirements in ASHRAE/IES 90.1, Section 6 - "Heating, Ventilating, and Air-Conditioning."
- G. Comply with NFPA 70.
- H. Comply with NEMA MG1.
- I. All material shall comply with UL 723 – Test for Surface Burning Characteristics of Building Materials.
- J. Filters and filter racks shall comply with UL 900 – Test Performance of Air Filters Units.
- K. Comply with UL 1995 – Standard for Heating and Cooling Equipment.
- L. Damper performance will comply with AMCA 500.
- M. Motors will meet EPACT requirements.

1.04 DELIVERY STORAGE AND HANDLING

- A. Air handling units shall be delivered to site just in time for installation in the building. It is not acceptable to store air handling units on site for an extended period of time.
- B. Units shall be factory shrink wrapped prior to shipping. The Factory wrapping shall remain in place until the unit is placed in its final location in the building.
- C. Openings will be protected against damage during shipping.
- D. Units temporarily stored on site shall be placed on an elevated stand to ensure proper drainage of water and to prevent intrusion of dirt, dust and mud. Units stored on site shall be covered with tarps to ensure protection from water – even with the factory wrapping in place.
- E. Inspect the unit upon arrival to the site. Unit that have shipping damage shall be rejected and shall be repaired by factory technicians or replaced at no cost the owner.

## PART 2 - PRODUCTS

### 2.01

#### AIR HANDLING UNIT MANUFACTURERS

- A. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
  - 1. Aaon
  - 2. JCI
  - 3. Daikin
  - 4. Carrier
  - 5. Trane
  - 6. Prior approved equal

### 2.02 REQUIREMENTS

- A. Air handling unit manufacturer shall install all equipment furnished by others and provide all other equipment as specified to result in complete and operational unit. Unit manufacturer shall assume single source responsibility for all air handling unit components and accessories.
- B. Furnish units complete with fans, motors, coils, filter sections, damper sections, and controls meeting configuration and as shown on drawings, specified and scheduled. All unit components shall meet the requirements of this specification and all requirements specified in each section and division listed under related work.
- C. All Controls, sensors and actuators shall be furnished by the Controls contractor.
- D. All materials as applied shall meet NFPA 90A possessing flame spread rating of not over 25 and smoke developed rating of not over 50.
- E. Each fan and motor combination shall be capable of delivering 110% of air quantity scheduled at scheduled static pressure.
- F. Motor furnished with fan shall not operate into motor service factor in any cases.
- G. Where inlet and outlet ductwork at any fan is changed from that shown on drawings, submit scaled layout of the change and system effect factor calculations, indicating increased static pressure requirement as described in AMCA Publication 201. The mechanical contractor shall be responsible for any motor drive and/or wiring changes required as result of duct configuration changes.
- H. Air handling unit static pressure shall take into consideration actual static pressure loss of components furnished within unit.



## 2.03 DESCRIPTION

- A. Packaged rooftop unit shall include compressors, evaporator coils, filters, supply fans, dampers, air-cooled condenser coils, condenser fans, gas burner, exhaust fans, and unit controls as detailed in the drawings.
- B. Unit shall be factory assembled and tested including leak testing of the DX coils, pressure testing of the refrigeration circuit, and run testing of the completed unit. Run test report shall be supplied with the unit in the service compartment's literature pocket.

## 2.04 CONSTRUCTION

- A. Unit cabinet shall be constructed of galvanized steel, and shall be bonderized and coated with a prepainted baked enamel finish on all externally exposed surfaces
- B. Cabinet shall have rain break overhangs above access doors.
- C. Access to filters, dampers, cooling coils, exhaust fans, compressors, and electrical and controls components shall be through hinged access doors with quarter turn, zinc cast, lockable handles. Full-length stainless-steel piano hinges shall be included on the doors.
- D. Unit cabinet exterior paint shall be: film thick-ness, (dry) 0.003-in. minimum, gloss (per ASTM D523, 60°F/16°C): 60, Hardness:H-2H Pencil hardness. Coordinate paint color with architect and engineer prior to ordering to ensure all units are the same color.
- E. Cooling coils shall include double sloped 304 stainless steel drain pans.
- F. Unit shall be provided with base discharge and return air openings. All openings through the base pan of the unit shall have upturned flanges of at least 1/2 inch in height around the opening.
- G. Unit shall include lifting lugs on the top of the unit.
- H. Unit base shall be fabricated of 1/2 inch thick double wall, impact resistant, rigid polyurethane foam panels.
- I. Base of unit shall have a minimum of four locations for thru-the-base gas and electrical connections (factory-installed or field-installed), standard.

2.05 ELECTRICAL

- A. Wiring and conduit inside of unit shall be factory installed by unit manufacturer meeting requirements of appropriate specification sections of Division 26.
- B. The Temperature Controls Contractor shall provide all controls required to meet specified sequence of operations. Provide and install all transformers required by the control system.

2.06 SUPPLY FANS

- A. Unit shall be direct drive, unhooded axial or backward curved, plenum supply fans, single inlet (SWSI) airfoil centrifugal fan as indicated on the plans.
- B. Blowers and motors shall be dynamically balance and mounted on rubber isolators.
- C. Motors shall be premium efficiency ODP with ball bearings rated for 200,000 hours service with external lubrication points.
- D. Variable frequency drives shall be factory wired and mounted in the unit if required. Fan motors shall be premium efficiency.

2.07 EXHAUST FANS

- A. Exhaust dampers shall be sized for 100% relief.
- B. Fans and motors shall be dynamically balanced.
- C. Motors shall be premium efficiency ODP with ball bearings rated for 200,000 hours service with external lubrication points.
- D. Access to exhaust fans shall be through double wall, hinged access doors with quarter turn lockable handles.
- E. Unit shall include belt driven, unhooded, backward curved, plenum exhaust fans.
- F. Variable frequency drives shall be factory wired and mounted in the unit if required. Fan motors shall be premium efficiency.

2.08 EVAPORATOR COILS

- A. Coils shall be designed for use with R-410A refrigerant and constructed of copper tubes with aluminum fins mechanically bonded to the tubes and galvanized steel end casings. Fin design shall be sine wave rippled.
- B. Coils shall have interlaced circuitry and shall be standard capacity.
- C. Coils shall be hydrogen or helium leak tested.
- D. Coils shall be furnished with factory installed expansion valves.

2.09 REFRIGERATION SYSTEM

- A. Unit shall be factory charged with R-410A refrigerant.
- B. Compressors shall be scroll type with thermal overload protection and carry a 5 year non-prorated warranty, from the date of original equipment shipment from the factory.
- C. Compressors shall be mounted in an isolated service compartment which can be accessed without affecting unit operation with lockable hinged compressor access doors.
- D. Compressors shall be isolated from the base pan with the compressor manufacturer's recommended rubber vibration isolators, to reduce any transmission of noise from the compressors into the building area.
- E. Each refrigeration circuit shall be equipped with expansion valve type refrigerant flow control.
- F. Each refrigeration circuit shall be equipped with automatic reset low pressure and manual reset high pressure refrigerant safety controls, Schrader type service fittings on both the high pressure and low pressure sides and a factory installed replaceable core liquid line filter driers.
- G. See drawings for compressor stages.
- H. Each refrigeration circuit shall be equipped with a liquid line sight glass.
- I. Lag refrigeration circuits shall be provided with factory installed hot gas bypass to protect against evaporator frosting and to prevent excessive compressor cycling.

- J. Unit shall be provided with an adjustable compressor lockout.
- K. First capacity stage shall be provided with adjustable on/off condenser fan cycling and an adjustable compressor lockout to allow cooling operation down to 35°F.

## 2.010 AIR COOLED CONDENSER

- A. Condenser fans shall be a vertical discharge, axial flow, direct drive fans.
- B. Coils shall be designed for use with R-410A refrigerant. Coils shall be multi-pass and fabricated from aluminum microchannel tubes.
- C. Coils shall be designed for a minimum of 10°F of refrigerant sub-cooling.
- D. Coils shall be hydrogen or helium leak tested.

### 2.11.1 GAS HEATING

- A. Unit shall include a natural gas furnace with 2 stages of capacity control.
- B. Aluminized steel heat exchanger furnace shall carry a 15 year non-prorated warranty, from the date of original equipment shipment from the factory.
- C. Heat exchanger shall be of the tubular-section type constructed of a minimum of 20-gage steel coated with a nominal 1.2 mil aluminum-silicone alloy for corrosion resistance.
- D. Gas furnace shall consist of an induced draft blower and an electronic pressure switch to lockout the gas valve until the combustion chamber is purged and combustion airflow is established.
- E. Furnace shall include a gas ignition system consisting of an electronic igniter to a pilot system, which will be continuous when the heater is operating, but will shut off the pilot when heating is not required.
- F. Unit shall include a single gas connection and have gas supply piping entrances in the unit base for through-the-curb gas piping and in the outside cabinet wall for across the roof gas piping.

## 2.011 FILTERS

- A. Unit shall include 2 inch thick, pleated panel filters with an ASHRAE efficiency of 30% and MERV rating of 8, upstream of the cooling coil as a pre-filter. Unit shall also include a 4" thick, pleated panel filter with a MERV-13 rating downstream of the MERV-8 as the final filter.

## 2.012 ECONOMIZER

- A. See drawings for characteristics.
  
- B. Unit shall include 0-100% economizer consisting of a motor operated outside air damper and return air damper assembly constructed of extruded aluminum, hollow core, airfoil blades with rubber edge seals and aluminum end seals. Damper blades shall be gear driven and designed to have no more than 20 cfm of leakage per sq ft. at 4 in. w.g. air pressure differential across the damper. Low leakage dampers shall be Class 2 AMCA certified, in accordance with AMCA Standard 511. Damper assembly shall be controlled by spring return DDC actuator. Unit shall include outside air opening bird screen, outside air hood, and barometric relief dampers.

## 2.013 CONTROLS

- A. Unit shall be provided with terminal strip for controls contractor to connect to unit. See HVAC controls drawings and specifications for details.
  
- B. Constant Volume Controller
  - 1. Unit shall modulate cooling with constant airflow to meet space temperature cooling loads.
  - 2. Unit shall modulate heating with constant airflow to meet space temperature heating loads. Staged heating capacity shall modulate based on space temperature

## 2.014 MOUNTING CURB

- A. Curbs shall to be fully gasketed between the curb top and unit bottom with the curb providing full perimeter support, cross structure support and air seal for the unit. Curb gasket shall be furnished within the control compartment of the rooftop unit to be mounted on the curb immediately before mounting of the rooftop unit.
  
- B. See Section 22 05 48 "Vibration and Seismic Control for Plumbing and HVAC Piping and Equipment" for additional requirements.
  
- C. See schedule and detail for further information

## PART 3 - EXECUTION

### 3.01 EXAMINATION

- A. Examine substrates, areas, and conditions, with Installer present, for compliance with requirements for installation tolerances and other conditions affecting performance of RTUs.

- B. Examine roughing-in for RTUs to verify actual locations of piping and duct connections before equipment installation.
- C. Examine roofs for suitable conditions where RTUs will be installed.
- D. Proceed with installation only after unsatisfactory conditions have been corrected.

### 3.02 INSTALLATION

- A. Installation, Operation, and Maintenance manual shall be supplied with the unit.
- B. Installing contractor shall install unit, including field installed components, in accordance with Installation, Operation, and Maintenance manual instructions.
- C. Roof Curb: Install on roof structure, level and secure, according to AHRI Guideline B. Install RTUs on curbs and coordinate roof penetrations and flashing with roof construction specified in Section 07 72 00 "Roof Accessories." Secure RTUs to upper curb rail, and secure curb base to roof framing or concrete base with anchor bolts. Coordinate sizes and locations of roof curbs with actual equipment provided.

### 3.03 CONNECTIONS

- A. All Duct connections to the units shall be made with flexible duct connectors in compliance with Sections 233300 "Air Duct Accessories" and 233113 "Metal Ducts"
- B. Comply with duct installation requirements specified in other HVAC Sections. Drawings indicate the general arrangement of ducts. The following are specific connection requirements:
  - 1. Install ducts to termination at top of roof curb.
  - 2. Remove roof decking only as required for passage of ducts. Do not cut out decking under entire roof curb.
  - 3. Connect supply ducts to RTUs with flexible duct connectors specified in Section 23 33 00 "Air Duct Accessories."
  - 4. Install return-air duct continuously through roof structure.
- C. Install piping as to not impede service or maintenance access. Arrange all valves, fitting and accessories to allow access for service or replacement.
- D. All field installed piping inside the unit cabinet shall be insulated.
- E. Where installing piping or electrical adjacent to RTU, allow space for service and maintenance.

- F. Gas Piping: Comply with applicable requirements in Section 23 11 23 "Facility Natural-Gas Piping." Connect gas piping to burner, full size of gas train inlet, and connect with union and shutoff valve with sufficient clearance for burner removal and service.
- G. Connect electrical wiring according to Section 26 05 19 "Low-Voltage Electrical Power Conductors and Cables."
- H. Ground equipment according to Section 26 05 26 "Grounding and Bonding for Electrical Systems."
- I. Install electrical devices furnished by manufacturer, but not factory mounted, according to NFPA 70 and NECA 1.
- J. Install nameplate for each electrical connection, indicating electrical equipment designation and circuit number feeding connection.
  - 1. Nameplate shall be laminated acrylic or melamine plastic signs as specified in Section 26 05 53 "Identification for Electrical Systems."
  - 2. Nameplate shall be laminated acrylic or melamine plastic signs as layers of black with engraved white letters at least 1/2 inch high.
  - 3. Locate nameplate where easily visible.

### 3.04 CONTROLS

- A. See section 23 09 00 "HVAC Controls" for additional requirements.

### 3.05 ADJUSTING

- A. Adjust damper linkages for proper damper operation.
- B. Comply with requirements in Section 23 05 93 "Testing, Adjusting, and Balancing for HVAC" for air-handling system testing, adjusting, and balancing.
- C. Occupancy Adjustments: When requested within 12 months from date of Substantial Completion, provide on-site assistance in adjusting system to suit actual occupied conditions.

### 3.06 FIELD QUALITY CONTROL

- A. Testing Agency: Engage a qualified testing agency to perform tests and inspections.
- B. The unit installation shall be inspected by the start-up agent prior to beginning start-up procedures. Any deficiencies shall be corrected by the mechanical contractor prior to beginning start-up.

- C. Perform the following tests and inspections with the assistance of a factory-authorized service representative:
  - 1. After installing RTUs and after electrical circuitry has been energized, test units for compliance with requirements.
  - 2. Inspect for and remove shipping bolts, blocks, and tie-down straps.
  - 3. Operational Test: After electrical circuitry has been energized, start units to confirm proper motor rotation and unit operation.
  - 4. Test and adjust controls and safeties. Replace damaged and malfunctioning controls and equipment.
- D. RTU will be considered defective if it does not pass tests and inspections.
- E. The Start-up agent shall provide a start-up report that includes any deficiencies in the installation, the action taken by the mechanical contractor to correct the deficiencies, any problems encountered during start-up and the final settings of all equipment and controls at the completion of the start-up procedure.

### 3.07 TRAINING

- A. Once the equipment has been stated and is fully operational, provide up to 2 hours of training to the owner maintenance staff to each type of unit installed. Provide up to 2 additional hours of training and assistance during the first year of operation to address questions or changes due to seasonal variations.

END OF SECTION - 237416