ADDENDUM NO. 4

April 4, 2022

WESTCHESTER INTERMEDIATE SCHOOL ADDITIONS AND RENOVATIONS
Chesterton, IN 46304

TO: ALL BIDDERS OF RECORD

This Addendum forms a part of and modifies the Bidding Requirements, Contract Forms, Contract Conditions, the Specifications, and the Drawings dated March 1, 2022 by Gibraltar Design. Acknowledge receipt of the Addendum in the space provided on the Bid Form. Failure to do so may subject the Bidder to disqualification.

This Addendum consists of Pages ADD 4-1 through ADD 4-2 and attached Addendum No. 4 from Gibraltar Design dated April 4, 2022 and consisting of 2 pages, Specification Section 23 73 00 - Interior Central Station Air Handling Units, and 1 drawing.

A. **SPECIFICATION SECTION 00 00 20 - TABLE OF CONTENTS**

1. **Add:**

Specification Section 23 73 00 - Interior Central Station Air Handling Units

B. **SPECIFICATION SECTION 00 20 00 - INFORMATION AVAILABLE TO BIDDERS**

1. **Add:**

Attached Thin-Set Epoxy Terrazzo Drawing

C. **SPECIFICATION SECTION 01 12 00 - MULTIPLE CONTRACT SUMMARY**

1. **L. BID CATEGORY 12 - HVAC/FIRE PROTECTION**

a. **Add:**

Specification Section 23 73 00 - Interior Central Station Air Handling Units

ADDENDUM FOUR

Addendum Four (AD.04) to the drawings and specifications prepared by Gibraltar Design for **Westchester Intermediate School Additions and Renovations** for Duneland School Corporation, Chesterton, Indiana.

All Contractors bidding on this project shall read all of the items covered below and shall comply with all of the requirements as set forth, including any necessary refinements or additions generated by this Addendum and required by the intent of the original contract documents. All Contractors shall acknowledge on their bid form that they have received this Addendum, Addendum One, Addendum Two and Addendum Three, and include the appropriate content of same within their bid proposal.

SPECIFICATIONS

1. Specification Section 23 09 23 Temperature Controls

A. Add paragraph 2.18 to read as follows:

1. GENERAL:
    a. Control electronically with dedicated field-installed DDC controller.
    b. Occupied/Unoccupied/Off: The unit shall be indexed on and off and indexed into occupied/unoccupied modes of operation by the FMS.
    c. Provide room temperature sensor (type as indicated on plan) to monitor/control space temperature.
2. OCCUPIED MODE:
    a. During this mode, the fan will run continuously and outside air damper will open to minimum position. When the room temperature is between the occupied heating and cooling setpoints (inside of the bias), the heating valve will be closed, and the cooling valve will be closed. On a rise in room temperature above the cooling setpoint, the cooling valve will modulate open and the heating valve will remain closed. On a drop in room temperature below the heating setpoint, the heating valve will modulate open and the cooling valve will remain closed.
3. UNOCCUPIED (NIGHT SETBACK) MODE:
    a. During this mode, the fan will cycle off and outside air damper will be closed. On a rise in room temperature above the unoccupied cooling setpoint, the fan will cycle on, the cooling valve will modulate open, and the heating valve will remain closed. On a drop in room temperature below the unoccupied heating setpoint, the fan will cycle on, the heating valve will modulate open and the cooling valve will remain closed.
4. SYSTEM STOP:
    a. The unit fan shall be off and outside air damper closed. The hot water and chilled water control valves shall remain at their last commanded positions.
5. SAFETIES AND ALARMS:
    a. An alarm shall be noted in the event of a low and/or high temperature limit in the zone sensor.

b. An alarm shall be noted if the command and status value of the unit fan do not match.

6. FAILURE MODE:
   a. The control valves shall fail to their last commanded position.
   b. The unit fan shall fail off and outside air dampers closed.

2. Specification Section 23 73 00 Interior Central Station Air Handling Units

A. Add Specification Section 23 73 00, Interior Central Station Air Handling Units, included in this Addendum, to the Project Manual.

DRAWINGS

1. Sheet A

A. Refer to Drawing (30"x15"), included in this Addendum, for clarification of base bid and alternate scope of work for Thin Set Epoxy Terrazzo.

2. Sheet EP102

A. Delete LP-9 text from Office C-106. LP-09 to be shown only in Storage B-102 per Addendum #3.

3. Sheet E-502

A. Delete 60KVA UPS in its entirety, IDF Rooms will be fed by individual Owner provided UPS Units.

4. Sheet E-606

A. Revise LP10 panel schedule designation to LP9.

Pages 1 and 2, inclusive, Specification Section 23 73 00, and One (1) Drawing, constitute the total makeup of **Addendum Four**.

GIBRALTAR DESIGN

Y:\21-141 Duneland SC - Westchester Intermediate School Additions and Renovations\Specs\Addendum FOUR\AD04.docx

DIVISION 23 - MECHANICAL
Section 23 73 00 - Interior Central Station Air Handling Units

1.00 PART 1 - GENERAL

1.01 RELATED DOCUMENTS

A. Conform to applicable provisions of Section 23 05 00 and 23 88 00.

1.02 DESCRIPTION

A. This section of the work includes the furnishing and installing of interior central station air handling units of the size, capacity, and configuration where and as denoted on the drawings.

1.03 QUALITY ASSURANCE

A. Unit shall be tested, rated, and certified as complete unit in accordance with ARI for capacities and sound ratings.

B. Equipment or components of this specification section shall meet or exceed the requirements and quality of the items herein specified or as denoted on the drawings.

C. Units shall be UL, CSA or ETL listed.

1.04 PRODUCT HANDLING

A. Protection: Use means necessary to protect units before, during, and after installation.

B. Replacement and Repair: Scratched, dented, and otherwise damaged units shall be repaired or replaced as directed by the Architect/Engineer.

1.05 SHOP DRAWING SUBMITTALS:

A. Air Handling Unit Product Data

B. Variable Frequency Drive

C. Manufacturer's Start-up Report

2.00 PART 2 - MATERIALS

2.01 MANUFACTURERS

A. Unit shall be manufactured by Trane, Carrier, Daikin, York or Valent will be acceptable if equal (including dimensional arrangement).

2.02 CENTRAL STATION AIR HANDLING UNITS

A. Total cooling, heating, and cfm capacity of each unit shall be as scheduled on the drawings. Units shall be assembled for horizontal draw-thru applications, as indicated on the drawings, and shall be arranged with the type of sections and intake/discharge conditions, as indicated.

B. Ship units in one piece. Split units only where necessary for shipping and installation. Manufacturer shall provide detailed, step-by-step instructions for reassembly.

C. Units shall be of quality construction, braced and reinforced as required for smooth operation. Hinged doors shall provide access to internal parts. An insulated drain pan shall be provided under the complete fan and coil section of units.

D. Units shall be supplied with a longitudinal, 10-gauge, galvanized steel structural perimeter base rail. Units shall be shipped in the fewest sections to meet project requirements. Units less than 11' wide shall be capable of being suspended directly without an additional structural platform. When unit is shipped in sections, each section shall have mating flanges with full perimeter gasketing and bolted assembly.

E. Unit Cabinet:

1. Unit housing shall be constructed of minimum 2" thick double wall panels meeting thermal, acoustical, and structural requirements specified.

2. All unit panels shall be 2-inch solid, double-wall construction to facilitate cleaning of unit interior. Unit panels shall be provided with a mid-span, no through metal, internal thermal break. Casing thermal performance shall be such that condensation shall not form on the casing exterior.

3. All exterior and interior AHU panels will be made of galvanized steel.

4. Casing shall have baked enamel finish passing 500-hour salt spray test (ASTM B-117) for pre-painted steel and 125-hour marine level 1 prohesion test (ASTM G-85.A5) for pre-painted steel.

5. Panel insulation shall provide a minimum thermal resistance (R) value of 13 $ft^2 \cdot h \cdot {}^\circ F/Btu$ throughout the entire unit. Insulation shall completely fill the panel cavities in all directions so that no voids exist and settling of insulation is prevented. Panel insulation shall comply with NFPA 90A.

6. The casing shall be able to withstand up to 8 inches w.g. positive or negative static pressure. The casing shall not exceed 0.0042 inch deflection per inch of panel span at 1.5 times design static pressure up to a maximum of +8 inches w.g. in all positive pressure sections and -8 inches w.g. in all negative pressure sections.

7. The unit floor shall be of sufficient strength to support a 300-lb. load during maintenance activities and shall deflect no more than 0.0042 inch per inch of panel span.

8. Casing leakage rate shall be less than 1% at 8 in. wg of nominal unit airflow or 50 cfm, whichever is greater.

9. Access doors shall be of double wall construction and be installed on lift-off type stainless steel hinges for outward opening application. Multiple handles shall be provided to assure positive closure. Handles shall be epoxy coated or stainless steel. Internal latches shall be stainless steel. Doors shall open outward for negative pressure and inward for positive pressure applications. Operating pressure of unit shall always ensure that the door compresses the gasket seal. Doors shall always open against pressure for maximum safety considerations.

F. Unit shall be equipped with Variable Frequency Drive or ECM Motors to provide fan motor speed modulation. Fans shall be of the size and type scheduled to deliver the required airflow. Fans shall be direct-drive, single-width, single inlet plenum fans. Fan blades shall be backward-inclined airfoil. Fans shall be statically and dynamically balanced and tested. Fan shafts shall not pass through their first critical speed as unit comes up to rated rpm. Fan bearings are grease lubricated ball bearings selected for 200,000 hours average life with extended grease line. Fans shall be provided with the required drives.

1. Fans and motors shall be mounted on a structural steel base assembly which shall be isolated from the outer casing with factory installed 2" deflection spring isolators and vibration absorbent fan discharge seal.

2. Unit shall be equipped with Variable Frequency Drives and controllers to provide fan motor speed modulation. The VFD shall be provided with a metal enclosure and shall be factory-mounted, wired and -tested. The VFD shall control motor based on input from the FMS.

G. Coils shall be removable from the unit without dismantling the entire units. Coils shall have continuous plate-fin surface, with seamless copper tubes expanded into aluminum fin collars for secure bonding. Casings shall be galvanized steel. Each coil shall be leak tested before shipment.

1. Chilled and Hot Water Coils:

a. Water coils shall be of the size and type required for scheduled capacity and service. Coils shall be suitable for operation at working pressures up to 200 psig. Each coil shall be leak tested at 300 psig air pressure under water.

b. Water coils shall have a maximum face velocity of 550 fpm without extensions to the air handling unit.

c. The maximum allowable air pressure drop across the coils to be as follows:

1) Chilled Water Coils: 1.00" WC

2) Hot Water Heating Coils: 0.40" WC

d. The Maximum allowable water pressure drop through coils to be as follows:

1) Chilled and Hot Water coils: 12 FT HD

H. Fan motors to be of the horsepower, rpm, and voltage as required for scheduled capacity. Motors for all systems shall be energy efficient type suitable for variable speed application. Unit manufacturer shall provide drives and controls for variable speed operation. Motors shall be mounted on adjustable slide rails.

I. Provide air handling units with medium capacity filter sections capable of holding 2" pre-filter and 4" final filter as indicated on drawings. Filter sections shall be provided with filters, as indicated in Section 23 88 00, and shall contain a large, hinged access door.

J. Provide drain pans as follows:

1. All cooling coil sections shall be provided with an insulated, double-wall, stainless steel drain pan.

2. Where 2 or more coils are stacked in a coil bank, intermediate drain pans shall be provided and the condensate shall be piped to the bottom drain pan. The bottom coil shall not serve as a drain path for the upper coil.

3. Provide drain pan located below intake or discharge sections that connect to roof mounted hoods.

4. To address indoor air quality (IAQ), the drain pan shall be designed in accordance with ASHRAE 62.1 being of sufficient size to collect all condensation produced from the coil and sloped in two planes promoting positive drainage to eliminate stagnant water conditions. The outlet shall be located at the lowest point of the pan and shall be sufficient diameter to preclude drain pan overflow under any normally expected operating condition.

5. All drain pan threaded connections shall be visible external to the unit. Drain connections shall be of the same material as the primary drain pan and shall extend a minimum of 2 1/2 inches beyond the base to ensure adequate room for field piping of condensate drain traps.

6. Coil support members inside the drain pan shall be of the same material as the drain pan and coil casing.

K. UNIT CONTROLS:

1. Unit is to be controlled by Facility Monitoring System (FMS).

3.00 PART 3 - EXECUTION

3.01 INSTALLATION:

A. Equipment Installation:

1. Provide permanent placard attached to unit identifying unit number.

2. Install filters.

3. Do not operate unit for any purpose, temporary or permanent, until ductwork is clean, filters are in place, bearings lubricated and fan has been test run under observation.

4. Provide additional belts, pullies, drives, sheeves, etc. to properly air balance air handling units.

B. Ductwork Installation:

1. Connect supply and return air ductwork to equipment with flexible connections.

2. Furnish and install supports, vibration isolators, duct extensions, and other such related items as required for a complete and operational system.

C. Piping Installation:

1. Connect supply and return chilled and hot water piping to equipment.

2. Install piping as required for a complete and operational system. Provide accessories as required based on actual field pipe routing and system requirements.

3. Piping shall be brought to equipment connections in such a manner so as to prevent the possibility of loads or stresses being applied to the connections.

4. Install condensate drain piping from unit connection to roof and provide properly sized trap as per manufacturer's recommendations. Size of drain line to be the size of the connection to the unit.

D. Temperature Control Installation:

1. Unit is to be controlled by FMS. Coordinate installation of controls, thermostats, sensors, tubes, etc. with FMS contractor.

2. Control wiring is to be in accordance with local, federal, state, and national electric wiring codes.

E. Manufacturer Start-up:

1. Arrange and pay for tests and start-up fee required for installation of equipment.

2. Manufacturer shall work with and assist in the initial equipment controls set up for a complete and operational system.

3. Equipment manufacturer shall provide a factory trained service technician to completely check-out and start-up equipment, associated controls, and accessories. Manufacturer's representative shall instruct the maintenance personnel in the care and operation of the equipment.

4. Submit manufacturer's start-up report for review. As a minimum, start up report shall contain the following information:

    a. Electrical connections and terminals have been connected and are tight.

    b. Piping has been checked for leaks.

    c. Fan sheaves are aligned and belts are properly tensioned.

    d. Dampers open and sequences are functioning properly.

    e. Temperature control points are communicating with FMS system.

    f. Maintenance personnel have been instructed in the care and operation of the equipment.

    g. Equipment shuts down upon fire alarm activation.

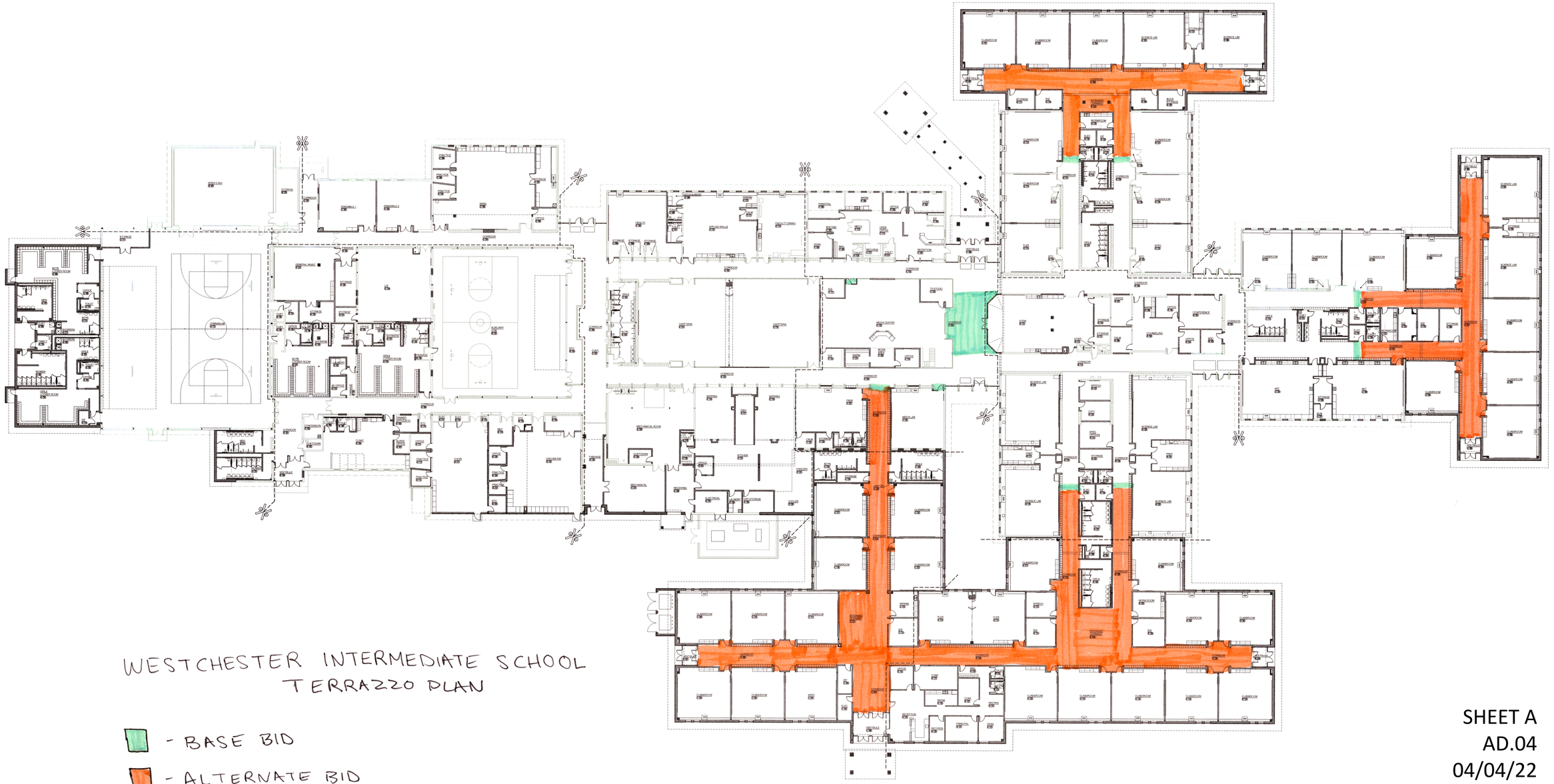
    h. Remote start/stop and reset are functional.

    i. Heating and cooling capacity control functions properly.

    j. Fan controller and VFD's are set for proper CFM.

5. List all field set point values (i.e., system pressure set-points, occupancy schedules, supply air temperature set-point, economizer temperature set-point, etc.).

END OF SECTION



WESTCHESTER INTERMEDIATE SCHOOL
TERRAZZO PLAN

- BASE BID
- ALTERNATE BID

SHEET A
AD.04
04/04/22