Houstonfirst

**DATE:** **February 1, 2018**

**SUBJECT:** **Letter of Clarification #2**

**RE:** **Air Handler Unit (AHU) Equipment Purchase and Delivery – Invitation to Bid**

**TO:** **All Prospective Bidders**

Houston First Corporation ("HFC") issues this Letter of Clarification regarding the Air Handler Unit (AHU) Equipment Purchase and Delivery Invitation to Bid to answer the following questions timely received:

## Questions and Answers

### I. Mechanical Shcedules for Air Handlers (WT-2-M.5.00.1)

**Question 1**: As the following items are not specifically listed on the schedules, can you please provide the following?

a. Number of fans required for each AHU?

   Answer: The design will be dictated by the fan wall / fan array technology necessary to achieve the required static pressure and stay within the acoustical requirements of the equipment.

b. Entering Wet Bulb Temperature for the Cooling Coil.

   Answer: Please refer to Table 1: Air Handling Unit Schedule (CHW) attached to this Letter of Clarification #2 for Entering Air Wet Bulb Temperatures for each AHU cooling coil.

c. Requirement for Outside Air, Return Air and Discharge Dampers by unit.

   Answer: Please refer to Table 1: Air Handling Unit Schedule (CHW) for more information.

   Additionally, please note the following:
   - Outside Air: OA dampers to be provided by mechanical contractor in ductwork. There are no OA dampers included in this contract.
   - Return Air: Provide Return Air Dampers per dimensions noted on schedule attached
   - Supply Air: Provide Supply Air dampers for all AHUs.

**Question 2**: Can you please clarify the following comments on the General Key Notes?

a. Item #7 under General Key Notes, refers to each fan motor having its own VFD enclosure, but in the written specification for Custom Indoor Units, 2.9 Electrical C., refers to “Dual” VFD’s per unit. Will you please confirm which is required?

   Answer**:**
   - For Custom AHUs (AHU numbers: B-1; B-4; B-6; B-7; B-8; B-9; B-12; B-13; B-14; B-15; B-16; and B-19): Please disregard the General Key Note indicating each fan motor requires its own VFD enclosure. Per the specification 237313-11 Section 2.9 Electrical C, “Provide fifty percent of fan motors with factory-wired to a VFD with integral disconnect, with a total of two fully wired, integral VFDs. The VFD shall be provided by the AHU manufacturer.”

   - For Standard AHUs (AHU numbers: B-2; B-5; B-10; B-11; B-17; and B-18): Per the specification 237313-12 Section 2.9 Electrical C, “Each motor shall be factory-wired to a VFD with integral disconnect. The VFD shall be provided by the AHU manufacturer.”

b. Item #15 Under General Key Notes, refers to the requirement for external flex connections. If fans are internally isolated and balanced to BV-5 are external flex connections required?

   Answer: Yes

c. Item #’s 15, 16, 20 Under General Key Notes, are typically provided by the installing contractor. Please confirm if they are to be part of this contract.

   Answer: General Key Notes #15, 16, and 20 are outside the scope of the equipment procurement; however, are applicable to equipment installation and are the responsibility of the installing contractor.

   For reference, notes referenced in this question are included below:
   - *15. INLET/ OUTLET DUCT SHALL HAVE FLEXIBLE ISOLATION JOINT.*
   - *16. CAULK JOINTS ALONG PERIMETER CONCRETE CURB. JOINTS SHALL BE WATER-TIGHT AT MATING SURFACE ADJACENT TO COIL AND FILTER SECTION.*
   - *20. DRAIN HEADER (2” MIN.) EXTEND OUTSIDE OF UNIT HOUSING. PROVIDE TRAP OUTSIDE OF UNIT AND RUN TO FLOOR DRAIN.*

## II. Specifications 237313-11 – Custom Indoor Central Station Air Handling

**Question 3**: (1.11, Delivery, Storage and Handling, C) Can you please provide specification 016000 for storage requirements and confirm if this is required on this contract?

Answer: Unloading and installation of the equipment will be the responsibility of the construction manager-at-risk through a separate subcontractor.

**Question 4**: (2.4 Unit Casings, B) This section calls for 4” walls but 2.4 Unit casings, G states minimum thickness shall be 3”. Please confirm the minimum wall thickness.

Answer: 4” minimum.

**Question 5**: (2.5 Fan, Drive, and Motor Section, H) This section calls for fan to be coated. Is this coating required for Aluminum fan wheels, which are typically not coated?

Answer: Aluminum fan wheels not required to be coated as long as they meet the specified performance and are installed per manufacturer's recommendations.

**Question 6**: (2.5 Fan, Drive, and Motor Section, R) If Fans are balanced to AMCA 204.96 Vibrations Level Standard, Cat. VB-5 is it also required that the units have internal flex connects?

Answer: The design and acoustical engineers will review submittal, prior to approval. Contractor shall provide balance report and is required to provide equipment as specified should the VB-5 standard is not met at no additional cost.

**Question 7**: (2.6 Coil Section, C. Condensate Drain)

a. Will you please confirm if Heating Coils need to have condensate drain pans and, if so, what length of pan downstream of the coil face is required and what material and gauge is required for construction?

   Answer: Condensate drain not required for Heating Coils.

b. (1. A., Length) Will you please confirm the length of drain pan downstream of the coil face?

   Answer: Condensate drain not required for Heating Coils.

**Question 8**: (2.8 Dampers, B) Are dampers required for all units and, if so, in which locations (Return Air; Outside Air; Discharge Air)?

Answer: Please refer to Table 1: Air Handling Unit Schedule (CHW) for more information.

Additionally, please note the following:

- Outside Air: OA dampers to be provided by mechanical contractor in ductwork. There are no OA dampers included in this contract.
- Return Air: Provide Return Air Dampers per dimensions noted on schedule attached.
- Supply Air: Provide Supply Air dampers for all AHUs.

**Question 9**: (2.9 Electrical) Are motor overload panels required between the VFD's and Fan Motors for the units with multiple fans? If so, what components need to be included in the panels?

Answer: Yes; thermal overload protection shall be provided on each motor individually.

**Question 10**: (Controls)

a. If the units do not have outside airflow scheduled do they need outside air flow stations?

   Answer: No outside air flow stations required if the unit does not have outside airflow scheduled. Provide air flow stations for each fan.

b. Can you please provide a list of terminal contacts needed for field connection?

Answer: Controls by others. A separate controls package will be issued at a later date.

c. Will Paragon Air Flow Devices be considered an acceptable manufacturer?

Answer: Ebtron, Air Monitor Corporation, or approved equal will be accepted. Paragon is an acceptable manufacturer.

**Question 11**: (2.11 Source Quality Control) Can testing be done in the field to help expedite the delivery time from the factory?

Answer: No. This solicitation is for equipment purchase and delivery only.

## III. Specifications 237313-12 – Modular Indoor Central Station Air Handling

**Question 12**: (1.11, Delivery, Storage and Handling, C) Will you please provide specification 016000 for storage requirements, and confirm if this is required on this contract?

Answer: Unloading and installation of the equipment will be the responsibility of the construction manager-at-risk through a separate subcontractor.

**Question 13**: (2.4 Unit Casings, B) This section calls for 2" walls but 2.4 Unit casings, G states minimum thickness shall be 3". Will you please confirm the minimum wall thickness?

Answer: 2" minimum.

**Question 14**: (2.5 Fan, Drive, and Motor Section, I) This section calls for fan to be coated. Is this coating required for Aluminum fan wheels, which are typically not coated?

Answer: Aluminum fan wheels not required to be coated as long as they meet the specified performance and are installed per manufacturer's recommendations.

**Question 15**: (2.5 Fan, Drive, and Motor Section, R) If Fans are balanced to AMCA 204.96 Vibrations Level Standard, Cat. VB-5 is it also required that the units have internal flex connects?

Answer: The design and acoustical engineers will review submittal, prior to approval. Contractor shall provide balance report and is required to provide equipment as specified should the VB-5 standard is not met (at no additional cost).

**Question 16**: (2.6 Coil Section, C. Condensate Drain)

a. Please confirm if Heating Coils need to have condensate drain pans and, if so, what material and gauge is required for construction?

Answer: Condensate drain not required for Heating Coils.

b. (1. A., Length.) Will you please confirm the length of drain pan downstream of the coil face?

Answer: Condensate drain not required for Heating Coils.

**Question 17**: (2.8 Dampers, B.) Can you please confirm if dampers are required for all units and, if so, in which locations (i.e., Return Air; Outside Air; Discharge Air)?

Answer: Please refer to Table 1: Air Handling Unit Schedule (CHW) for more information.

Additionally, please note the following:

- Outside Air: OA dampers to be provided by mechanical contractor in ductwork. There are no OA dampers included in this contract.
- Return Air: Provide Return Air Dampers per dimensions noted on schedule attached.
- Supply Air: Provide Supply Air dampers for all AHUs.

**Question 18**: (2.9 Electrical) Are motor overload panels required between the VFD and Fan Motor for the units with single fans? If so what components need to be included in the panels?

Answer: Yes; thermal overload protection shall be provided on each motor individually.

**Question 19**: (Controls)

a. If the units do not have outside airflow scheduled do they need outside air flow stations?

   Answer: No outside air flow stations required if the unit does not have outside airflow scheduled. Provide air flow stations for each fan.

b. Can you please provide a list of terminal contacts needed for field connection by Controls Contractor?

   Answer: Controls by others. A separate controls package will be issued at a later date.

c. Will Paragon Air Flow Devices be considered an acceptable manufacturer?

   Answer: Ebtron, Air Monitor Corporation, or approved equal will be accepted. Paragon is an acceptable manufacturer

**Question 20**: (2.11 Source Quality Control) Can testing be done in the field to help expedite the delivery time from the factory?

Answer: No. This solicitation is for equipment purchase and delivery only.

## IV. Additional Clarifications

**Question 21**: Will CAPS will be acceptable for the AHUs over 8500cfm that require 4" walls?

Answer: Yes, as long as they meet all specification requirements and can be delivered by the project deadline.

**Question 22**: If we can get proper sound attenuation through fan selections and/or internal silencers – will 2" walls be acceptable for the AHUS over 8500cfm?

Answer: Yes, as long as they meet all specification requirements and can be delivered by the project deadline.

**Question 23**: If these are site built units, do you have maximum allowable dimensions that fit on elevator – through the path to get to the site where AHU will be located?

Answer: If a larger access to the mechanical room is required, modification to CMU wall is acceptable within reason. The service elevator dimensions are 12’ x 18’ x 10’H. Please refer to plans for maximum corridor width.

**Question 24**: For the AHUS under 8500cfm and the fan coils, will rebranded JCI/York be acceptable?

Answer: Yes, as long as they meet all specification requirements and can be delivered by the project deadline.

Letters of Clarification become a part of the Invitation to Bid automatically upon issance and supersede any previous specifications and/or provisions in conflict therewith. By submitting a bid, bidders are deemed to have received all Letters of Clarification and to have incorporated them into their bid.

| Table 1: AIR HANDLING UNIT SCHEDULE (CHW) | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| ITEM | SUPPLY FAN | | | | COMBINED COIL PERFORMANCE | | AIR | | | |
| | | | | | | | ENT | | LVG | |
| NO. | SUPPLY AIRFLOW [CFM] | DESIGN OUTSIDE AIRFLOW [CFM] | Outdoor Air Damper | Ducted Return to Unit | TOTAL CAP [BTU] | SENS CAP [BTU] | DB [°F] | WB [°F] | DB [°F] | WB [°F] |
| B-1(N) | 10,000 | 2,890 | N/A | N/A | 387 | 304 | 80 | 64.3 | 51.5 | 51.5 |
| B-2(N) | 1,850 | 250 | Ductwork | 38"x14" | 60.9 | 48.3 | 76.9 | 63.2 | 52.3 | 52.3 |
| B-3(N) | 500 | 0 | N/A | N/A | 41 | 32 | 100 | 82.3 | 60 | 59.4 |
| B-4(N) | 5,000 | 600 | Ductwork | 24"x26" | 165.3 | 137 | 78.1 | 63.2 | 53 | 52.3 |
| B-5(N) | 1,600 | 0 | N/A | N/A | 41 | 32 | 78.4 | 66.8 | 60 | 59.4 |
| B-6(N) | 2,000 | 0 | N/A | N/A | 85.4 | 76.8 | 100 | 82.3 | 52 | 51.7 |
| B-7(N) | 36,800 | 0 | N/A | 174"x100" | 1,277 | 994 | 77.9 | 63.5 | 53 | 52.5 |
| B-8(N) | 10,000 | 0 | N/A | 92"x28" | 374 | 259 | 46.9 | 64.5 | 53 | 52.5 |
| B-9(N) | 20,000 | 0 | N/A | 74"x38" | 694 | 590 | 80.2 | 63.8 | 53 | 52.5 |
| B-10(N) | 1,000 | 90 | N/A | 40"x20" | 44 | 32 | 79.5 | 63.9 | 50 | 49.5 |
| B-11(N) | 1,000 | 90 | N/A | 40"x20" | 41 | 32 | 79.5 | 62.8 | 50 | 49.5 |
| B-12(N) | 21,860 | 5,000 | N/A | N/A | 738.2 | 582.9 | 76.6 | 62.8 | 52 | 51.5 |
| B-13(N) | 8,200 | 880 | N/A | N/A | 284.8 | 224.6 | 77.2 | 63.5 | 52 | 51.5 |
| B-14(N) | 5,200 | 500 | Ductwork | 54"x22" | 239 | 179.7 | 81.9 | 63.8 | 50 | 49.5 |
| B-15(N) | 3,900 | 490 | N/A | N/A | 99 | 88 | 72.8 | 60.1 | 52 | 51.5 |
| B-16(N) | 5,600 | 540 | N/A | N/A | 222 | 163 | 81.9 | 63.1 | 50 | 49.5 |
| B-17(N) | 2,700 | 300 | N/A | N/A | 91.2 | 72.9 | 76.8 | 63.1 | 52 | 51.5 |
| B-18(N) | 3,500 | 0 | N/A | 30"x22" | 118.3 | 102 | 78.9 | 63.2 | 52 | 51.5 |
| B-19(N) | 7,500 | 0 | N/A | 28"x28" | 409 | 380 | 80.1 | 62 | 52 | 51.5 |