TO: All Prospective Bidders

The following changes are made a part of the Drawings and Specifications for the subject project, dated September 19, 2022. Receipt of this Addendum is to be acknowledged, in the space provided in the Bid Form. Failure to do so may subject the Bid to be considered as non-responsive.

A. CHANGES TO SPECIFICATIONS

1. Section 00 0100, INSTRUCTIONS TO BIDDERS: Paragraph 3.1: Change “… drawings and specifications which will be mailed by registered mail with return receipt requested or faxed to all prospective bidders (at the respective addresses furnished for such purpose.” to “… drawings and specifications which will be posted to HCPS Website/EMMA for prospective bidders to access”.

2. Section 00 0100, INSTRUCTIONS TO BIDDERS: Paragraph 7.1: Change “… compact disc…” to “…flash drive…”.

3. Section 00 0100, INSTRUCTIONS TO BIDDERS: Paragraph 8.2: Add “Contractors may submit the Contractor’s Qualification Statement by e-mail to construction@hcps.org.

4. Section 00 0100, INSTRUCTIONS TO BIDDERS: Paragraph 12.1: Change “… compact disc…” to “…flash drive…”.

5. Section 00 0100, INSTRUCTIONS TO BIDDERS: Paragraph 12.1: Delete “If the Contractor needs additional sets, he may purchase them from the Architect by paying the actual reproduction costs plus handling charge.” to “If the Contractor needs additional sets, he shall make them from the flash drive they were provided.”

6. Section 01 1000, SUMMARY, Paragraph 1.9.A, Delete and add the following: A. The minimum Contractor’s parts and labor warranty shall be 2 years after substantial completion unless indicated to be longer.

7. Section 01 2900, PAYMENT PROCEDURES, Paragraph 1.5.C, Delete and add the following: C. Payment Application Times: Submit Application for Payment to Engineer
by the 25th of the month. The period covered by each Application for Payment is one month, ending on the last day of the month.

8. Section 01 3233, PHOTOGRAPHIC DOCUMENTATION, Delete entire section and remove from the Table of Contents.

9. Section 23 0600, HEATING, VENTILATING AND AIR CONDITIONING EQUIPMENT: Add the following:

2.4 VARIABLE SPEED DRIVES

A. Provide variable speed drive controllers for pumps as indicated on contract drawings.

B. The adjustable frequency controller (AFC) shall convert three phase 60 Hertz utility power to adjustable voltage and frequency, three phase, AC power for stepless motor control from 5 percent to 110 percent of base speed.

C. The AFC shall be a voltage source type with a PWM output utilizing power transistor semi-conductors.

D. The AFC together with all options and modifications shall mount within a standard NEMA 1 enclosure suitable for continuous operation at ambient temperature of 0 to 40 degrees C. with relative humidity to 95 percent non-condensing. All high voltage components within enclosure shall be isolated with steel covers. The complete unit shall be UL approved and UL labeled.

E. Circuits shall provide DV/DT and DI/DT protection for semi-conductors. AFC shall be capable of starting into a rotating load without delay. Protective circuits shall cause instantaneous trip (IET) should any of the following faults occur:

1. Motor overload.
2. Short circuit.
3. Motor overtemperature fault.
4. Reverse phase.
5. 110 percent of controller maximum sine wave current rating is exceeded.
6. Output phase to phase and phase to ground short circuit condition.
7. High input line voltage
8. Low input line voltage
9. Loss of input phase
10. External fault: This protective circuit shall permit, by means of the terminal strip, wiring of remote NC safety contacts such as high static, firestat, etc., to shut down the drive.

F. The following adjustments shall be available in the controller and retained in non-volatile memory:

1. Maximum frequency (15 to 400 Hz) factory set at 60 Hz.
2. Maximum frequency (3 to 60 Hz) factory set at 6 Hz.
3. Acceleration (.1 to 360 seconds) factory set at 20 seconds.
4. Deceleration (.1 to 360 seconds) factory set at 20 seconds.
5. Volts/Hertz ratio factory set for 460V at 60 Hz.
6. Voltage offset or boost factory set at 100 percent torque.
7. Current limit (50 percent to 110 percent sine wave current rating) factory set at 100 percent current.

G. The AFC shall have the following basic features:

1. Door-mounted operators controls consisting of a membrane command center which allows manual stop/start and speed control, local/remote indication and manual/or automatic speed control selection. In addition, the command center shall serve as a means to configure controller parameters such as min speed, max speed, acceleration and deceleration times, Volts/Hz ratio, torque boost etc. Potentiometers shall not be allowed for these settings.
2. Main input disconnect to provide a positive disconnect between the controller and all phases of the incoming A-C line. This disconnect shall be mounted inside the controller enclosure and have through-the-door interlocking toggle with provisions for padlocking.
3. Electronic motor overload relay.
4. EMI/RFI filters: All VFDS shall include EMI/RFI filters. The on board filters shall allow the VFD assembly to be CE marked and the VFD shall meet product standard EN61800-3 for the First Environment restricted level (Category C2).
5. Drive Options: Options shall be furnished and mounted by the drive manufacturer. All optional features shall be UL Listed by the drive manufacturer as a complete assembly and carry a UL Listing.
6. Automatic restart after power outage, drive fault or external fault, with drive in automatic mode. The circuit shall allow the user to select up to (10) restart attempts as well as the dwell time between attempts. The reset time between fault occurrences shall also be selectable. All settings shall be via the membrane command center.
7. Door-mounted LED display for digital indication of:
   a. Frequency output.
   b. Voltage output.
   c. Current output.
   d. First fault indication.
   e. Fan or Pump Speed (RPM).
8. Relay contacts for remote indication of drive fault and motor finning.
9. Three critical frequency avoidance bands, field programmable via the membrane command center. Each critical frequency avoidance band shall have a bandwidth adjustable via keypad entry of up to 10 Hz.
10. Three programmable preset speeds which shall force the AFC to a preset speed upon a user contract closure. The default minimum shall be 6 Hz and the maximum speed shall be 75 Hz.
11. Isolated process follower to enable VFC to follow a 4-20 mA signal.
12. The AFC shall have the capability to ride through power dips up to 500 msec without a controller trip depending on load and operating condition.
13. Line reactor to minimize line surges, line notching, and voltage distortions.
H. Motor protection per National Electrical Code shall be provided by a motor overload relay. The 115-volt A-C relay control logic, allowing common start/stop commands in the "controller" mode shall also be included within the enclosure.

I. The VFC and all components shall be supplied within a single NEMA 1 enclosure, and shall be U.L. Listed as a single unit. Furnish all components necessary to provide a minimum lead length between motor and drive of 400 ft. The VFC shall not generate damaging transistor pulses greater than the limits set by NEMA MG-1 at 400 Ft lead length.

J. The VFC manufacturer shall maintain and staff nationwide service centers. These service engineers shall be employed by the manufacturer and provide start-up service including physical inspection of drive and connecting wiring and final adjustments to meet specified performance requirements.

K. The VFC shall carry a full parts and labor warranty for five (5) years from date of Owner acceptance of the building.

L. Provide auto-reset phase protection; ICM-450 undervoltage, overvoltage, loss of phase, phase reversal protection and time delay with auto reset. Coordinate installation with Division 26.

M. Provide spare washable intake filter and fuses for each drive. Turn over spare filters and fuses to Owner.

N. The variable speed drive manufacturer shall coordinate with the ATC contractor and provide all necessary devices whether optional or not to perform complete and automatic operation as described in the sequence of operation.

O. BAS Interface: Factory-installed hardware and software to enable the BAS to monitor, control, and display VFC status and alarms. Allows VFC to be used with an external system within a multidrop LAN configuration; settings retained within VFC's nonvolatile memory.

P. Variable speed drives shall be carefully selected for the duty required. Variable speed drives shall be specifically designed for the specified equipment to be controlled.

Q. The variable speed drive shall be ABB, or approved equal of Accutrol, Cutler Hammer, York, Trane, Emerson, Danfoss, or as approved equal.

13. Section 23 0600, HEATING, VENTILATING AND AIR CONDITIONING EQUIPMENT: Add the following:

3.10 VARIABLE SPEED DRIVES

A. Provide variable speed drive controllers for equipment as indicated on the drawings unless otherwise specified with the equipment.
B. Install drive in accordance with NEC and manufacturers recommendations. Provide proper service, maintenance access around all variable frequency drives.

C. Variable speed drives shall be carefully selected for the duty required. Variable speed drives shall be specifically designed for the specified equipment to be controlled. Pump drives shall be selected for pumps.

D. Confirm wall construction can support the drive. Where the wall construction is inadequate, provide kindorf type supports extending from the slab to the structure above.

E. Provide a list of fault codes on a laminated document and attach to each drive.

F. Provide the services of manufacturer for start-up and Owner training. Training shall be a minimum of 8 hours and should include setup, normal operating instructions and trouble shooting.

G. Variable speed drives start-up shall include the minimum Hz setting of 6 Hz.

H. Variable speed start-up shall include the maximum amp draw for the motor being controlled as the high amp limit.

I. Variable speed start-up shall include the maximum frequency in Hz based on the pump impeller speed allowed.

J. Variable speed data shall be recorded for the TAB contractor to verify during testing and balancing.

K. All variable speed drive parameters set by the start-up shall be recorded for the Owner’s record.

L. All limits associated with variable speed drive setup shall be prior to starting testing and balancing.

M. Coordinate electrical characteristics of variable frequency drives with motor served.

B. CHANGES TO DRAWINGS

1. For all drawings provide “PSC#12.044.SR23” below each sheet number

C. RFI QUESTIONS AND ANSWERS

1. The power riser diagram shows a bold line on both demo and new installation for the chiller feed and from the chiller disconnect to the chiller. Will this feed be replaced in its entirety? Will the feed from the switch gear to the disconnect location be existing to remain?
   Answer: The existing chiller feeder conduits and/or cabling to the disconnect may be reused where feasible, IF in good condition AND the size matches (or exceeds) that
indicated for the new feeder. Test existing feeder cabling to verify condition per specifications.

2. Is chemical treatment required and if so, for how long? Is there a preferred treatment company?
   **Answer:** Yes, per Section 23 0600-2.3.

3. The existing refrigerant is supposed to be turned over to the customer - who is providing the recovery bottles?
   **The contractor is required to provide the approved containers.**

4. Is a cyclone separator required and if so, where is it to be installed? The detail does not show and I did not see it shown on the drawings.
   **Answer:** The detail states they are to be provided for pumps greater 30 psi. Pumps P-1 and P-2 meet that requirement.

5. Drawing M2.1 general note 6 - Temporary chiller and pumps are to be provided to provide chilled water to the building - Is a temporary chiller part of this project?
   **Answer:** The note clearly states that the “Contractor shall provide temporary chiller….”

6. When will we have access to begin the project?
   **Answer:** When HCPS provide the Notice to Proceed.

7. Is there a method in place to account for increases in material and labor costs between the bid due date and the start date of the project which is a year away?
   **Answer:** NO. The bid date and start date are not a year away. HCPS is planning to get the bids and forward info to IAC and then proceed to award.

8. Is certified payroll required?
   **Answer:** Refer to Specification Section 00 0200 Prevailing Wage for information.

9. Is a maintenance bond required?
   **Answer:** No.

10. Are high performance butterfly valves required?
    **Answer:** Butterfly valves are required to be high performance type per Section 23 0505 paragraph 2.2.A.1.f.

11. Is photographic/videographic documentation required on this project?
    **Answer:** Refer to the CHANGES TO THE SPECIFICATIONS above.

12. Spec's call for roller style hangers for 6” pipe. Existing hangers are clevis - Are roller style required or can clevis hangers be utilized?
Answer: Clevis hangers are acceptable.

13. Does this system utilize glycol?
   Answer: NO.

D. ATTACHMENTS

1. None

END OF ADDENDUM NO. 2