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ADDENDUM No. 2

To become part of the Contract for the project:

BOILER REPLACEMENT
SOMERS HIGH SCHOOL
SOMERS, CT

QUESTIONS AND ANSWERS FROM THE PRE-BID WALKTHROUGH:

Following are questions from Various Bidders and RZDA Responses:

1. Q: Bidders questioned who was to provide Variable Speed Drives for the pumps and what the VFD specification is to be.

   A: The Mechanical Contractor shall furnish and install the new Variable Frequency (Speed) Drives. These are to replace the existing magnetic motor starters for Pumps P-3, 4, 5 & 6. Specification for the VFDs follows:

A. **VARIABLE FREQUENCY DRIVES:** Variable Frequency drives shall be ABB, Danfoss or Yaskawa.
   1. Variable frequency drives shall be UL listed and sized for the power and loads applied.
      a. Drives shall include built-in radio frequency interference (RFI) filters and be constructed to operate in equipment rooms and shall not be susceptible to electromagnetic disturbances typically encountered in such environments. Similarly, the drives must not excessively disturb the environment within which it is used.
      b. All VFDs over 3 horsepower shall be provided with an AC choke.
      c. VFDs shall be installed in strict conformance to the manufacturer's installation instructions, and shall be rated to operate over a temperature range of 14 to 104 F.
      d. VFD automatic operation shall be suitable for an analog input signal compatible with the digital controller output. (0-10VDC or 4-20ma.)
      e. Each VFD shall be fan cooled and have an integral keypad and alphanumeric display unit for user interface. The display shall indicate VFD status (RUN motor rotation, READY, STOP, ALARM, and FAULT), and shall indicate the VFD current control source (DDC input signal, keypad, or field bus control). In addition to the alphanumeric display, the display unit shall have three pilot lights to annunciate when the power is on (green), when the drive is running (green, blinks when stopping and ramping down), and when the drive was shut down due to a detected fault (red, fault condition presented on the alphanumeric display).

f. Three types of faults shall be monitored, “FAULT” shall shut the motor down, “FAULT Auto-reset” shall shut the motor down and try to restart it for a programmable number of tries, and “FAULT Trip” shall shut the motor down after a FAULT Auto-reset fails to restart the motor. Coded faults shall be automatically displayed for the following faults:
   1) Over current
      (a) Over voltage
      (b) Earth ground
      (c) Emergency stop
      (d) System (component failure)
      (e) Under voltage
      (f) Phase missing
      (g) Heat sink under temperature
      (h) Heat sink over temperature
      (i) Motor stalled
      (j) Motor over temperature
      (k) Motor underload
      (l) Cooling fan failure
      (m) Inverter bridge over temperature
      (n) Analog input control under current
      (o) Keypad failure
      (p) Other product unique monitored conditions

g. In addition to annunciating faults, at the time of fault occurrence the VFD shall capture and make available to the user certain system data for subsequent analysis during fault trouble shooting, including duration of operation (days, hours, minutes, seconds),output frequency, motor current, motor voltage, motor power, motor torque, DC voltage, unit temperature, run status, rotation direction, and any warnings. The last 30 fault occurrences shall be retained as well as the fault data listed in the previous sentence of each fault. New faults beyond 30 shall overwrite the oldest faults.

h. The display unit keypad shall allow setting operational parameters including minimum and maximum frequency, and acceleration and deceleration times. The display shall offer user monitoring of frequency, unit temperature, motor speed, current, torque, power, voltage, and temperature.

2. Note: VFDs are to be used as a soft start/balancing device. Terminal unit control valves throughout the system are 3 way/constant flow. No differential pressure control exists in the system.

2. VFD SCHEDULE: Contractor shall provide VFD's for Pumps P-3, P-4, P-5 and P-6. Pumps are 480V-3 Phase - 1.5 HP.

   P-3 & P-4: 5 HP

   P-5 & P-6: 7-1/2 HP

+++++ END OF ADDENDUM No. 1 +++++