MEMORANDUM
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To: CPH Corp.

From: Bailey Engineering Consultants, Inc.

Date: September 21, 2020

Project: **Sanford WTP #1**

CPH Project No.: S06153

Subject: **ADDENDUM NO. 2**

A. <u>Response to Comments</u>

Comment No. 1: *Sheet E4 calls for a 20kva UPS, however there does not appear to be a spec section for this UPS. Please provide guidance.*

Response No. 1: Refer to specification section 16265 issued as part of this addendum.

Comment No. 2: *The specifications list Allen-Bradley as the only manufacturer for the main breakers, please clarify if this is actually the case or are other manufactures acceptable?*

Response No. 2: Refer to revisions to specification 16107 issued as part of this addendum for manufacturer requirements.

Comment No. 3: *Electrical Sheet E4, Note 4, calls out QED-2 Style Switchboard. Please clarify the location on this switchboard as it does not appear to be on this Sheet.*

Response No. 3: Note 4 applies to MCB-1, MCB-2 and EDP. Refer to revised E4 attached issued as part of this addendum for clarification.

Comment No. 4: *The electrical specs call for 2000V VFD cable, however the drawings don`t appear to call it out. Is VFD cable required to be used on the output side of the VFD`s?*

Response No. 4: VFD cable is required between the VFD and the motor per specification section 16120, 1.03, C.

B. Changes to Specifications

1. **Delete** the following from specification section 11306, 2.03, A:
   "The full load current shall not exceed 10.8 amps at 230 volts."
   Insert the following in its place:
   "The full load current shall not exceed 4.8-amps at 480-volt, 3-phase."

2. **Delete** the following from specification section 11306, 2.07, A:
   "Each duplex pump station control shall be designed for 120/240 Volt, single phase, and 3-wire service. The panel shall also be designed for two (2), 2.4 horsepower pumps with 10.8 full load amps each."
   Insert the following in its place:
   "Each duplex pump station control shall be designed for 480 Volt, 3-phase, and 3-wire service. The panel shall also be designed for two (2), 2.4 horsepower pumps with 4.8 full load amps maximum each."

3. **Insert** the following from specification section 11306, 2.07, C:
   "i. 277/480-volt ASCO 430 series MOV type surge projection device or equal.
   j. 480V-120VAC single phase step down control power transformer with 120-volt control circuits.
   k. 120V-24VAC single phase step down control power transformer with 24-volt float control circuits and intrinsically safe relays"

4. **Delete** the following from specification section 11306, 2.07, D, 3, d:
   "The circuit breakers shall be Square 'D' QOU or FAL series or approved equal."
   Insert the following in its place:
   "120-volt circuit breakers shall be Square 'D' QOU or approved equal. 480-volt circuit breakers shall be type HJ frame or approved equal. The control panel shall be rated for 65kAIC."

5. **Delete** the following from specification section 11306, 2.07, D, 15, b:
   "The circuit breakers shall be Square 'D' QOU or FAL series or approved equal."

6. **Delete** the following from specification section 11306, 2.07, D, 16, c:
   "The phase monitor relay shall be a Diversified Electronics, Model SLA-230-ASA, or approved equal."

   Insert the following in its place:
   "The phase monitor relay shall be a Diversified Electronics, Model SLA-440-ASA, or approved equal."

7. **Insert** the following into specification section 11340, 2.02, E:
   "17. Terminal Junction Box

   a. The terminal junction box shall be provided with copper terminals and barriered separation between power and control wiring. Skid terminal junction box shall be a NEMA 4X FRP enclosure.
   b. Facing the front of the skid, the skid terminal junction box shall be cantilevered mounted to the left of the skid with a minimum of 42 inch clearance working space in front.

8. **Delete** the following from specification section 13310, 2.03, A:
   "Provide the field instruments shown in Table 13310-1, presented at the end of this Section, and as further defined herein."

Insert the following in its place:
"Provide the field instruments shown on the Contract Drawings and as further defined herein."

9. **Delete** the following from specification section 16107, 2.01, A:
   "1. Allen Bradley
   2. No Equal"

   Insert the following in its place:
   "1. Square D
   2. Eaton
   3. Approved Equal"

10. **Delete** the following from specification section 16216, 2.06, C:
    "Door hinges shall be Type 316 stainless steel."

    Insert the following in its place:
    "Door hinges shall be stainless steel."

11. **Delete** the following from specification section 16216, 2.06, F:
    "Fasteners used shall be corrosion resistant (Type 316 stainless steel), and designed to minimize marring of the painted surface when removed for normal installation or service work."

    Insert the following in its place:
    "Fasteners used shall be corrosion resistant stainless steel and designed to minimize marring of the painted surface when removed for normal installation or service work."

12. **Delete** the following from specification section 16216, 2.06, J:
    "The enclosure manufacturer shall be Phoenix Products or Advanced Manufacturing & Power Systems"

    Insert the following in its place:
    "The enclosure manufacturer shall be Phoenix Products, Advanced Manufacturing & Power Systems or Kohler."

13. **Delete** the term "Type 316" from the following from specification sections without substitution:

    - Section 16216, 2.06, H, 2, f
    - Section 16216, 2.06, H, 3, c
    - Section 16216, 2.06, H, 5, b
    - Section 16216, 2.06, H, 5, d
    - Section 16216, 2.06, H, 5, e
    - Section 16216, 2.06, H, 6, a
    - Section 16216, 2.06, H, 6, b

    Insert the following in its place:
    "The enclosure manufacturer shall be Phoenix Products, Advanced Manufacturing & Power Systems or Kohler."

14. **Insert** the following specification section in its entirety
    16265 (Static Uninterruptible Power Supply)

15. **Delete** section 2.03 (Integral Passive Harmonic Filter) in its entirety from specification section 16370

    Insert the following in its place:

    2.03 Active Front End for Harmonic Mitigation:

    A. The Ultra Low Harmonic construction of the VFD shall maintain current distortion levels at the VFD's input terminals to levels at or below those listed in "Harmonic Control in Electrical Power Systems, IEEE Std. 519." The input current to the VFD shall have a total harmonic content less than 5% of full rated capability at the input terminals of the VFD on power system sized according to IEEE 519 at line voltage unbalance up to 3% and under all motor load conditions. All harmonic management devices must be internal to the VFD enclosure and supplied as a complete solution.

    B. To maintain system integrity, the VFD must maintain UL519 compliance, at the input terminals of the VFD, without exception, with up to and including a 3% voltage imbalance, phase to phase.

    C. The VFD shall have an active line supply unit which controls the waveform of the input current and reduces the low order harmonic current drawn from the power line. Line currents and voltages shall be nearly sinusoidal. IGBTs shall be used in the rectifier and inverter circuits.

    D. Each input phase of the VFD shall incorporate a symmetrical LCL filter arranged in a T- configuration. The inductors are to be series power components that carry the full current of the VFD. Internally built with in the input section of the VFD to prevent high level harmonics

    E. The VFD shall operate at fundamental power factor 1.0 on the supply side under all motor load conditions. The input power factor shall be programmable from 0.8 lagging to 0.8 leading, allowing the VFD to be used as a compensating device for installations that are excessively inductive or excessively capacitive in reactive power.

    2.04 Stand-alone variable frequency drive enclosures shall be NEMA Type 1, gasketed, filtered, freestanding floor-mounted, force ventilated (with replaceable air filters) construction requiring front access only. Variable frequency drives requiring rear access for any maintenance are not acceptable. The cooling air required to dissipate heat generated by the power electronics shall be isolated from all drive electronics. Variable frequency drives using liquid-cooled assemblies in conjunction with associated pumps, piping, and separate remote mounted exchangers are not acceptable. The inverters and converters shall have complete unobstructed front accessibility with easily removable assemblies. The complete enclosure shall maintain a constant height, width and depth. The height for all floor-mounted enclosures shall be maximum 90" high. The enclosures shall

include the integral isolation/phase shift transformer.

16. **Delete** the following from specification section 16800, 1.02, C, 1, a:
"Six (6) new micro-processor based fixed cameras for perimeter surveillance, pole mounted at the locations shown on the Contract Drawings, and providing the following views:"

    Insert the following in its place:
"Eight (8) new micro-processor based fixed cameras for perimeter surveillance, pole mounted at the locations shown on the Contract Drawings, and providing the following views:"

17. **Revise** the Table in specification section 16800, 1.02, C, 1, a, as follows:
"Camera 2 East Perimeter Wall/Ornamental Fence (Looking North)
Camera 3 East Perimeter Wall/Ornamental Fence (Looking South)
Camera 5 West Perimeter Wall/Ornamental Fence (Looking North)
Camera 7 West Perimeter Wall/Ornamental Fence (Looking South)
Camera 8 North Perimeter Wall/Ornamental Fence"

18. **Delete** the following from specification section 16800, 1.02, D, 1, b, 1), b):
"ACP-2 shall also provide DC power to the fence system microwave receiver at the South Gate."

19. **Delete** specification section 16800, 1.02, E, in its entirety.

    Insert the following in its place:
"E <u>Fence Monitoring System</u>
    1. Perimeter fence security shall be provided using an Artificial Intelligence (AI) based application software package running on the Security System Server and fully integrated with the other security system software.
    2. The software shall utilize the surveillance camera streams for monitoring.
    3. The software shall provide the following features:
        a. Real Time Intrusion Detection and Alerts.
        b. Real Time Anomaly Detection.
        c. Video Search.
        d. Operational Insights/Statistics.
        e. Software Health Monitoring.
    4. The software shall be innoVI Enterprise CI or approved equal.
    5. All security system clients shall be automatically alarmed and display switched to the specific camera.
    6. The software shall also be configured to issue alarms via e-mail to OWNER selected addresses and to preclude alarms when access is validated by the access system."

20. **Delete** specification section 16800, 2.04 in its entirety renumbering subsequent paragraphs accordingly.

C. <u>Changes to Contract Drawings:</u>

1. **Delete:** Sheets E2, E4, E5, E7, E10, E11, E12, E13, E14, E15, E21, E23, SS1, SS2, SS3 and SS4 in their entirety

   Insert: Revised Sheets E2, E4, E5, E7, E10, E11, E12, E13, E14, E15, E21, E23, SS1, SS2 and SS3 in their entirety. (Note: The total number of security system sheets is now 3 in lieu of 4)

2. **Delete** the following from the 3rd row on the "Instantaneous Electric Water Heater Schedule" shown on Sheet P1

   "<u>Manufacturer & Model #</u> <u>Electrical (Voltage)</u>
   EEMAX EX48T 240"

   Insert the following in its place:

   "<u>Manufacturer & Model #</u> <u>Electrical (Voltage)</u>
   EEMAX EX4208T 208"

END OF ADDENDUM NO. 2