

The School District of Palm Beach County

Project Name:

SDPBC Project No.:

**SECTION 25 50 00**  
**ENERGY MANAGEMENT AND CONTROL SYSTEM**

**PART 1 GENERAL**

1.1 SCOPE

- A. Provide power wiring and Network Conduit for the Energy Management and Control System (EMCS).

1.2 COORDINATION

- A. Review Division 23 EMCS contract documents in order to provide all labor, materials, and equipment required to install a complete and operational EMCS.
- B. Receive EMCS Panels, and other EMCS components in accordance with contract documents.
  - 1. Upon receipt of EMCS components, Electrical Contractor is responsible for the components until the School District accepts the EMCS.

1.3 COMMISSIONING

- A. Commissioning of a system or systems specified in this section is part of the construction process.
- B. Documentation and testing of these systems, as well as training of the Owner's operation and maintenance personnel, is required in cooperation with the Owner's Representative and the Commissioning Authority.
- C. Project Closeout is dependent on successful completion of all commissioning procedures, documentation, and issue closure.
- D. Refer to Section 01 77 00 - Contract Closeout, for substantial completion details.
- E. Refer to Section 01 91 00, Commissioning, for detailed commissioning requirements.
- F. Refer also to Section 23 09 00 – for commissioning requirements of the EMCS.

**PART 2 PRODUCTS**

2.1 Provide conduit and wiring in accordance with Division 26 specifications.

2.2 Do not pull bond or ground wires in conduit with sensor or communication wiring.

2.3 EMCS conductors

- A. Thermostat Wire – 4 conductor, unshielded, CMP white, AWG 22, Solid, 3 twists/foot nom, Low smoke PVC Plenum rated cable
- B. Underground Communication Wire – 2-conductor twisted pair, Shielded, Low Cap AWG 22, 6-twists/foot nom, foam FEP/E-CTFE, Plenum rated cable
- C. Above Ground Communication Wire – 2-conductor twisted pair, Shielded, Low Cap AWG 22, 6-twists/foot, foamed halar insulation, low smoke plenum jacket
- D. Input/Output Wiring 2 conductor – 2-conductor twisted pair, unshielded, Low Cap AWG 18, 28 pF/ft nom, 3-twists/foot nom, 0.01" PVC insulation
- E. Input/Output Wiring 3 conductor – 3-conductor twisted, unshielded, Low Cap AWG 18, 28 pF/ft Nom 3-twists/foot nom, 0.01" PVC insulation
- F. Fiber Optic Cable – 4-fiber 62.5/125-um multi-mode cable meeting the TIA-758 standard for water-blocked cables
- G. All wires installed underground shall be rated for wet locations.

**PART 3 EXECUTION**

3.1 Design, install, and commission the EMCS in a turnkey, fully implemented, and operational manner.

- A. In the work description below, the word, "provide" shall mean to "furnish and install."

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- 3.2 Mechanical Contractor shall provide smoke and/or fire/smoke dampers with factory mounted actuators.
  - A. Electrical Contractor shall wire and interlock smoke and/or fire/smoke dampers with the Fire Alarm System.
  - B. The fire alarm system shall activate the smoke dampers.
- 3.3 EMCS Contractor shall furnish EMCS Panels via the EMCS Contractor to the Electrical Contractor.
  - A. Electrical Contractor shall install EMCS Panels and shall provide dedicated 120vac circuit adjacent to each EMCS Panel.
  - B. EMCS Contractor shall provide 120vac switch and outlet inside of EMCS Panel
    1. Connect the power for EMCS panel to the optional standby power of the generator.
- 3.4 Wisch & Jackson shall furnish Variable speed drives to the Electrical Contractor.
  - A. Electrical Contractor shall install Variable Speed Drives and provide power wiring.
  - B. EMCS Contractor shall provide control conduit and wiring.
- 3.5 Electrical Contractor shall provide conduit with pull string and Class 1 earth grounding for the Network Conduit as shown by the Riser Diagrams and as specified below.
  - A. The connection of each EMCS Cabinet within the same building and between buildings that are physically separated and require EMCS controls.
  - B. Connection from the EMCS cabinet as specified in 23 09 00 to the Electric Meter.
  - C. Connection from the Gateway Communications EMCS Cabinet to the data closet as specified in 23 09 00.
  - D. For air-cooled chillers and chilled water pumps, located in the chiller enclosure, connection from the chiller EMCS cabinet, located within the building, to each chiller control panel and to each pump starter.
  - E. For direct expansion split systems greater than 5 tons, connection from the AHU EMCS cabinet to the condensing unit control panel.
  - F. For direct expansion packaged units greater than 5 tons, connection from the packaged unit EMCS cabinet, located within the building, to the packaged unit control panel.
  - G. For chilled water penthouse AHU's, connection from the AHU EMCS cabinet, located within the building, to the penthouse AHU control panel.
  - H. EMCS Contractor provides control wiring and School District Telephone Staff provides telephone wiring.
  - I. Run one-inch conduit from power metering device(s) at main switchboard(s) to nearest EMCS terminal cabinet(s).
  - J. Run one 2" conduit from the irrigation pump controller to the nearest EMCS terminal cabinet.
  - K. EMCS conduits from building to building shall be minimum 2".
  - L. EMCS conduit to chiller plant shall be minimum 2".
  - M. Underground EMCS conduits shall be minimum 2".
  - N. For stadium elevators and elevators that open to the exterior of a building, provide a float switch in the elevator pit connected to the EMCS to send an alarm signal to the EMCS monitoring station when the water level in the pit reaches above the steel grate of the dry sump.
    1. General contractor shall coordinate the installation of the raceway system for the float switch.
    2. General contractor shall coordinate with the elevator inspector.
  - O. Do not provide temperature sensors in electrical rooms.
  - P. Monitor temperature only in dry food storage.

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- Q. EMCS is not required to control water heater/pump for kitchen, lockers, and home economic rooms.
- R. Lighting amperage status is not required for parking lights.
- 3.6 Electrical Contractor shall provide all 120-vac power wiring.
  - A. This work includes fans and/or other equipment that are manually controlled by toggle switches, push buttons and/or light switches which interrupt line voltage power and that are automatically controlled by line voltage thermostats.
- 3.7 Electrical Contractor shall provide the power wiring and the relay or contactor where a relay or contactor ties to the EMCS, and controls multiple pieces of equipment and/or lighting circuits.
  - A. EMCS Contractor provides the control conduit and wiring.

END OF SECTION