

The School District of Palm Beach County

Project Name:

SDPBC Project No.:

## SECTION 26 05 00 ELECTRICAL MATERIALS AND METHODS

### **PART 1 GENERAL**

#### **1.1 SCOPE**

- A. The work shall include the furnishings of systems as defined in Section 26 08 00 "Work Included".
- B. Drawings for the work are diagrammatic, intended to convey the Scope of the Work and to indicate the general arrangement and locations of the work.
  - 1. Because of the scale of the drawings, certain basic items such as conduit fittings, access panels, sleeves, pull, and junction boxes may not be shown.
  - 2. Where such items are required by Code or by other sections, such items shall be included.

#### **1.2 RELATED DOCUMENTS**

- A. The other Contract Documents complement the requirements of this Section.
- B. The General Requirements apply to the work of this Section.

#### **1.3 TEMPORARY POWER**

- A. Furnish, install, and maintain temporary power used by all trades during construction.
  - 1. See Section 16 00 00 for in/out" fees
  - 2. The entire system shall be grounded and bonded to building steel prior to energizing temporary power, follow NEC for any other conditions.
  - 3. Payment for monthly power consumption shall be the responsibility of the General Contractor.
  - 4. Provide overcurrent protection for all circuits.
  - 5. Use thermal magnetic breakers or cartridges fuses only for overcurrent protection.
  - 6. All receptacles shall be GFI protected.
- B. The Building Department and Utilities Department Manager shall review and approve any connection to the existing School District owned electrical service on existing facilities.
  - 1. Contractor is responsible for all cost of temporary power.

#### **1.4 SUPERVISION OF THE WORK**

- A. Provide field supervisor for electrical work, who has had a minimum of 4-year previous successful experience on projects of comparable sizes and complexity.
- B. The supervisor shall be providing on the job site supervision at all times during the performance of any work under this Division or if the work under this Division is affected.
- C. Supervisor shall have a valid Palm Beach County Electrical Journeyman Certificate of Competency with a copy on file at the General Contractors site office.
- D. Submit a resume of the Foreman's experience to Engineer before starting work.

#### **1.5 DELIVERY AND STORAGE**

- A. Handle, store and protect equipment and materials in accordance with the manufacturer's recommendations and with the requirements of NFPA 70B, Appendix-I, titled "Equipment Storage and Maintenance during Construction".
  - 1. Replace damaged or defective items with new items.

#### **1.6 ELECTRICAL CONNECTIONS**

- A. Tighten all connections to the torque values per hat device manufacturer's instructions.
- B. If manufacturer does not provide the values, tighten to pound-inch or pound-foot values in UL Standard 486B, a summary is in Section 110-14 of the NEC Handbook.

#### **1.7 ACTIVE SERVICES**

- A. Protect all existing active services; water, gas, sewer, electric, when encountered, against damage.

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- B. Do not prevent or disturb operation of active services, which are to remain.
- C. If contractor encounters active services, which require relocation, make request to authorities with jurisdiction for determination of procedures.
- D. Where existing services are to be abandoned, they shall be terminated in conformance with requirements of the utility or Municipality having jurisdiction and Architectural and Electrical Demolition Drawings.
- E. The Contractor at his expense shall immediately restore any damaged active services to its original condition, and with properly licensed and trained people.
- F. Inform the District Representative immediately of any damage.
- G. Contractor shall use lock out/tag out procedures when active services; gas, water, sewer, electric, mechanical, and life systems have been interrupted.
  - 1. Tag shall have company name, acting supervisor's contact phone number and date of interruption.
  - 2. This applies to work in all buildings as well as portable installations and relocatable buildings.

1.8 TESTS

- A. System Functional Performance Testing is part of the Commissioning Process.
  - 1. The Contractor shall perform the Functional Performance Testing and the Commissioning Authority shall witness and document the test.
  - 2. Refer to Section 01 91 00, Commissioning, for functional performance tests and commissioning requirement.
  - 3. Approved test results shall be available for the Electrical Inspector at the time of inspection.
- B. Prior to beginning work, all electrical equipment and systems shall be operated in the presence of representatives of the Contractor and Representatives of the School District, in order to establish that all systems are in proper working order at the start of the project.
  - 1. Upon completion of the above test, the Contractor shall submit a detailed listing indicating any items noted which are not in operational condition.
  - 2. All parties present at the test shall sign the listing.
  - 3. Commencement of work prior to the above shall constitute acceptance of all systems by the Contractor in as operational system.
  - 4. The Contractor shall have all electrical systems back in working order at the end of the project.
- C. After work is completed, perform a load balance test for each panel board to demonstrate that with full lighting and mechanical load, the balance between phases is within 15%.
  - 1. Correct any unbalance beyond this limit, maintaining proper phase relation to neutral at all times.
  - 2. The Contractor shall reproduce as many copies of load-balance report sheet, located at end of this Section, as required and submit to Engineer prior to request for final inspection.
- D. Test all grounding electrodes to demonstrate that the ground resistance does not exceed 25 ohms. (See Section 26 05 26 for report requirements.)
- E. Perform such test as required by authorities having jurisdiction over the site.
  - 1. The Engineer of Record shall witness all required tests, unless approved by SDPBC.
  - 2. The Contractor shall record and submit typewritten results to the Engineer for approval.
- F. Provide a copy of the test results approved by the Engineer at the time of the equipment inspection by the Building Department and the Commissioning Agent.

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1.9 DEMONSTRATIONS

- A. Training of the Owner's operation and maintenance personnel is required in cooperation with the Owner's Representative.
- B. Provide competent, factory authorized personnel to provide instruction to operation and maintenance personnel concerning the location, operation, and troubleshooting of the installed systems.
- C. Schedule the instruction in coordination with the Owner's Representative after submission and approval of formal training plans.
- D. Refer to Section 01 91 00, Commissioning, for further contractor training requirements.

1.10 IDENTIFICATION

- A. Contractor shall provide identification for wiring systems and equipment in accordance with Section 26 05 33.
- B. Power and lighting circuits shall have conductors color banded, per 26 05 13 "Wire and Cable" in each junction and pull box.

1.11 NAMEPLATES

- A. The following items shall be equipped with nameplates:
  - 1. All motor starters, pushbutton stations, control panels, time switches, disconnect switches, Panelboards, contactors or relays in separate enclosures, power receptacles where the nominal voltage between any pair or contacts is greater than 150V, all switches controlling outlets or equipment where the outlets are not located within sight of the controlling switch, high voltage boxes and cabinets.
  - 2. Special electrical systems shall be identified at terminal cabinets and equipment racks.
- B. Power panels and switchgear without doors, shall have circuit breakers and switches identified by engraved plastic tags affixed to cabinet adjacent to device.
- C. Nameplates shall adequately describe the function of the particular equipment involved.
  - 1. Nameplates detailed on the drawings, inscription and size of letters shall be as shown on the approved shop drawings.
  - 2. Nameplates for panel board and switchboards shall include the panel designation, voltage, and phase of the supply.
  - 3. For example, "panel PA 120/208V 3-phase 4-wire".
  - 4. The name of the machine on the nameplates for a particular machine shall be the same as the one used on all motor starters, disconnect and P.B. station nameplates for that machine.
- D. Nameplates shall be laminated phenolic plastic, black front and back with white core, with lettering engraved through the outer covering.
  - 1. Attach with plated self-tapping screws or small brass screws.
  - 2. Nameplates to identify emergency devices shall be red laminate.
- E. Panelboards shall have typewritten circuit directories installed inside the doors under transparent plastic covers that identify components and corresponding room numbers.

1.12 SUBMITTALS

- A. Method of preparing and procedure for submitting Shop Drawings and submittal data shall comply with Division 1.
- B. Submittal data for electrical equipment shall consist of Shop Drawings and/or catalog cuts showing technical data necessary to evaluate the material or equipment, to include dimensions, wiring diagrams, performance curves, ratings, control sequence, and other descriptive data necessary to describe fully the item proposed and its operating characteristics.

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- C. Any submittal data in following electrical sections, peculiar to that section, is in addition to submittal requirements of this section.
- D. Where more than one item or option is on a single submittal sheet, clearly indicate which one you are proposing for the project.

#### 1.13 CONCRETE WORK

- 1. Where cutting sidewalks to route conduit concealed into buildings, this Contractor is responsible for all repair work to return concrete sidewalks to original conditions.
- 2. Furnish and install reinforced concrete pads for transformers, switchgear, generators, and motor control centers, of size as shown on the drawings or required.
  - a. Unless otherwise noted pads shall be 4" high and shall exceed dimensions of equipment being set on them, including future sections, by 4" on all sides, except when equipment is flush against a wall, then the side or sides against the wall shall be flush with the equipment.
  - b. Chamfer top edges ½".
  - c. Trowel all surfaces smooth.
  - d. Reinforce pads with 6" X 6" X 6/6 welded wire fabric.
- 3. This contractor shall furnish all equipment anchor bolts and shall be responsible for their proper installation and accurate location.

#### **PART 2 PRODUCTS**

2.1 Not Used

#### **PART 3 EXECUTION**

3.1 Not Used

END OF SECTION