

16100 BASIC MATERIALS AND METHODS

SPECIFIER:

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An optional keynote to the Drawings follows major product titles, for A/Es using National CAD Standard.

PART 1 GENERAL

1.1 SUMMARY

A. Provide a complete electrical system as shown on the Plans and as specified in Division 16 sections of M-DCPS Master Specifications. This work includes but is not limited to the following:

1. Complete distribution system for lighting and power, wiring devices, equipment and controls, panel boards and equipment provided by others.
2. Complete raceway system.
3. Transformer vault, bus stubs, underground duct bank, grounding, etc. rework as required for primary and secondary power system under the provisions of Florida Power and Light Company.
4. Fire Detection Alarm System.
5. Emergency Stand-By Generator, Transfer Switches. Fuel transfer pump(s), day tank, muffler, battery charger, control panel and related equipment rework as required for new addition.
6. Normal and Emergency Lighting System and Luminaries.
7. Interior and Exterior Light and Control Systems.
8. Conduit and wiring system for air conditioning electrical controls.
9. Marking of all junction boxes with system voltage inside and outside of box.
10. Painting of electrical and special equipment.
11. Furnishing and installing necessary access panels.
12. Complete electrical testing.

B. Coordination With Other Trades:

1. Examine drawings and specifications. Visit site to determine work to be performed by Electrical, Mechanical, HVAC, and other trades.
2. Follow as closely as possible, the drawings and riser diagrams, indicated in diagrammatic form which show the arrangements desired for the connection of electrical equipment, fixtures, principal apparatus, kitchen equipment, etc.
3. Provide required electrical materials and equipment to put work into operation, completely wired, tested, and ready for use including raceways, conductors, disconnects, starters/contactors, or other devices for proper operation and sequences of electrical, mechanical, or other systems or equipment.
4. Unless otherwise noted, conduit, wire for controls, and devices, both line and low voltage, shall be provided and installed as described in this or other parts of the Construction Documents.

- a. Install boxes or housings necessary for conduit and wire to controls, excluding items to be installed in piping, ducts, tanks, machinery, solenoid valves, pressure switches, aquastats, or similar devices.
 - b. These items are specified for installation in other sections. Connecting wiring is specified in this Division.
 - c. Temperature control equipment and water heater will be furnished. Installed and tested under provision of Division 15 and wired under provisions of Division 16.
- 5. Control wiring in separate conduit between HVAC sensing devices and control panels or motors, shall be installed under this Division after verification from approved shop drawings of the required locations and connections.
 - 6. All motors, unless otherwise specified herein shall be furnish and set in place under provision of Division 16.
 - 7. Seal penetrations through fire rated floors or walls with fire resistant compound as specified in Section 07840.
 - 8. Connect electrical equipment and devices as parts of the equipment or furniture furnished under other sections.
 - 9. Comply with provisions of Instructions to Bidders and General Conditions and Section 01340.
- C. Tradesperson Qualifications:
- 1. Contractor shall provide or cause to be provided by the appropriate subcontractors in the electrical trade for all work required by this Division 16, a ratio of one licensed master or journeyman for every three trainees at all times as those terms are defined by Chapter 10 of the Miami-Dade County Code. No other workers shall be allowed.
 - 2. Where the work of these trades is subcontracted:
 - a. The contractor shall include this requirement in those subcontracts.
 - b. The subcontractor shall show capacity to bond the subcontracted work. The decision to require such bond to be issued remains with the general contractor.
- D. To ensure compliance with the above tradesperson qualifications requirement, the General Contractor shall require the trade subcontractor to submit with each draw request, and shall in turn submit with the General Contractor's draw request, a certified payroll identifying each tradesperson employed for the work of this section during the payroll period, the qualification level of each tradesperson, and where licensed as a Master or Journeyman the license number of each individual.
- 1. This certified payroll shall also reflect the number of hours spent on this project performing the work of this section and shall reflect the appropriate ratio of qualified tradespersons as required by this section.
 - 2. Failure to comply with this section either in providing the appropriate number of required licensed personnel or failure to submit the appropriate certified payroll information as required herein shall be a major breach of the contract and shall result in rejection of the payment application where the breach occurs and be cause for termination of the contract.

1.2 SUBMITTALS

A. Manufacturer's Data:

Project Name
Project No.

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SPECIFICATION GUIDELINES**

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1. Complete list of materials to be furnished under this section.
 2. Manufacturers' specifications and other data required to assure specification compliance.
 3. Catalog cuts, clearly marked for identification of items to be provided, including disconnects, breakers, fuses, starters, lighting fixtures, transformers, or other materials not requiring specially prepared Shop Drawings.
- B. Within thirty (30) days of Notice-to-Proceed, submit in loose-leaf bound form and indexed properly, at least ten (10) copies of shop and detail drawings, factory certified prints and material lists for items included but not limited to those listed below:
1. Switchboards and Panelboards.
 2. Disconnect switches, motor starters, fuses, time clocks, contactors and relays.
 3. Transformers.
 4. Terminal cabinets.
 5. Wiring devices and plates.
 6. Luminaires, dimmers and accessories.
 7. Conduit, fittings, supports, pull boxes, wire and cable.
 8. Fire Alarm System.
 9. Emergency Generator and Transfer Switches System.
 10. Motor control centers
- C. Shop Drawings for nonstandard items, including but not limited to anchoring layouts and details, lighting fixtures, or similar products.

PART 2 PRODUCTS

2.1 HARDWARE

- A. Provide all hardware, accessories and fittings for the intended use, and to complement the items with which they are used. All materials shall have corrosion protection suitable for the atmosphere in which they are installed. All such hardware shall be U. S. Standard Size.

2.2 EQUIPMENT

- A. Ensure that equipment of a similar nature are of the same manufacturer. Example: All panelboards are of the same manufacturer and of the same style.

2.3 MATERIAL PROTECTION

- A. Store and protect all materials from damage prior to installation. Do not store materials directly on the ground or floor and keep as clean and dry as possible and free from damage or deteriorating elements. Do not install damaged materials.

2.4 ELECTRIC SHOCK PROTECTION

- A. Provide ground fault protection in all temporary services.

PART 3 EXECUTION

3.1 INSTALLATION

- A. Factory paint or finish all enclosures, panels, cabinets, relays, safety switches, fixtures, gutters and other exposed equipment or accessories except as indicated otherwise.
- B. Group mounted items shall be similar in finish and color.

3.2 IDENTIFICATION

- A. Tag all conductors and identify major conduits in or at wire-ways, panels, pull boxes, switchboards, motor controllers, cabinets and similar items to assist in future circuit tracing. Conductor tags: non-conductive.
- B. Use Paint markers, or other approved methods except as indicated otherwise.
- C. All junction box covers shall be labeled on both sides indicating type of system and voltage.
- D. All gutters, terminal cabinets, starters, transformers, switchboards, panels and disconnects shall be identified with stencil labels indicating type of system, voltage, panel circuit designation and equipment being serviced. Provide screw on engraved white on black phenolic nameplates or permanent labeling for panelboards, switchboards and similar equipment (Do not use markers).

3.3 TESTS

- A. Show by demonstration in service that all circuits and devices are in good condition to operate.
- B. Test that each item of control equipment will function.
- C. Test all circuits for grounds, shorts and continuity.
- D. Provide all materials and equipment necessary for testing.

3.4 DEMONSTRATION

- A. Demonstrate the essential features of the following electrical systems upon completion of satisfactory testing:
 - 1. Emergency System.
 - 2. Lighting System.
 - 3. Motor Control.
 - 4. Contactors.
 - 5. Clock and Intercom System.
 - 6. Electrical Motors and Starters.
 - 7. Fire Alarm System.
- B. The demonstration by the Contractor shall be held in the presence of the Owner or his designated.

1. Demonstrate how to “start-stop”, reset, replace and emergency procedures.
2. Demonstrate one system at a time.

3.5 CONTRACT CLOSEOUT SUBMITTALS

- A. Record Drawings.
- B. Warranties.
- C. Operating Instructions, maintenance manuals, and parts lists.
- D. Point-to-point wiring diagrams.

3.6 DELIVERY, STORAGE, AND HANDLING

- A. Delivery and Storage:
 1. Deliver materials to jobsite in their original unopened containers with labels and certifications intact and clearly legible at time of use.
 2. Store materials according to manufacturers' recommendations and as approved by A/E.
- B. Replacement: In case of damage, pilferage, or other loss, make immediate repair or replacement of materials necessary to obtain approvals of A/E, without cost to the Board.
- C. Protection: Use necessary means to protect materials of this section before, during, and after installation, including protection of installed work and materials of other trades.

END OF SECTION