

SECTION 26 00 00

GENERAL ELECTRICAL REQUIREMENTS

PART 1 - GENERAL

1.1 SECTION INCLUDES

- A. Furnish all materials, labor, tools, transportation, incidentals, and appurtenances to complete in every detail and leave in working order all items of work called for herein or shown on the accompanying drawings, including work related to:
 - 1. Electrical service entrances.
 - 2. Electrical distribution including new circuit breaker panelboards, load centers, and associated feeders.
 - 3. Electrical branch circuits, including wiring and devices.
 - 4. Interior lighting including luminaires, lamps, wiring and controls.
 - 5. Exterior lighting including luminaires, lamps, wiring and controls.
 - 6. Raceway and boxes for the fire alarm system including initiating/notification devices, and all associated wiring.
 - 7. Raceway and boxes for the cable TV system, including outlets and wiring.
 - 8. Raceway and boxes for the carbon monoxide detection system, including outlets and wiring.
 - 9. Raceway and boxes for the voice-data system including outlets and wiring.
 - 10. Raceway and boxes for the door entry communications system.
- B. Include any minor items of work necessary to provide a complete and fully operative electrical system.
- C. The Contractor for this work is referred to Bidding Requirements, General Conditions, Special Conditions, Temporary Services and other pertinent Sections of these Specifications. These sections describe work that is a part of this Contract as contained in Division 1. The following General Provisions amplify and supplement these Sections of Specifications. In cases of conflicting requirements, the stipulations set forth in Division 1 supersede and must be satisfied by the Contractor.

1.2 REFERENCES

- A. ANSI/NFPA 70 - National Electrical Code.
- B. ANSI/NFPA 72 - National Fire Code.
- C. ANSI/NFPA 101 - Life Safety Code.
- D. OSHA 1910 - Occupational Safety and Health Act.
- E. ADA - Americans with Disabilities Act.

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1.3 GENERAL REQUIREMENTS

- A. Contractor shall read the entire specifications covering other branches of work. He is responsible for coordination of his work with work performed by other trades.
- B. Consult all Contract drawings which may affect the location of any equipment or apparatus furnished under this work and make minor adjustments in location as necessary to secure coordination.
- C. System layout is schematic and exact locations shall be determined by structural and other conditions. This shall not be construed to mean that the design of the system may be arbitrarily changed. The equipment layout is to fit into the building as constructed and to coordinate with equipment included under other Divisions of work.
- D. Contractor shall consult architectural interior elevations for mounting heights of wiring devices. Contractor shall consult architectural exterior elevations for mounting heights of wall mounted exterior lighting fixtures.
- E. Contractor shall contact the Owner's Representative immediately if he notices any discrepancies or omissions in either the drawings or the specifications, or if there are any questions regarding the meaning or intent thereof.
- F. Submit all changes, other than minor adjustments, to the Architect for approval before proceeding with the work.

1.4 SUBMITTALS

- A. Submit under provisions of the following:
- B. Submittal shall include complete Specifications, including type of materials, electrical characteristics, capacities, performance and power requirements to determine compliance with Contract Documents. All data submitted shall be complete and shall apply only to this specific project. All extraneous material shall be deleted or marked out. Items to be supplied shall be specifically indicated using a method that will be visible after photocopying.
- C. Regardless of any information included in the submittal submitted for review, the requirements of the Drawings and Specifications shall not be superseded in any way by the review. Review by the Architect-Engineer does not relieve responsibility for submittal errors or from meeting the requirements of the Contract Documents.
- D. It is intended that Submittal data be complete and accurate at the first submission. If the Submittal is returned marked "Resubmit" only one additional submission will be permitted.
- E. Submit related Submittal at one time. **SUBMIT ALL ITEMS IN A SPECIFICATION SECTION AT THE SAME TIME.** Incomplete submittal will be held until a complete submittal is accumulated or may be rejected without further review and returned to the applicable parties. Include a copy of the Specification Paragraphs pertaining to the items submitted.

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- F. If proposed equipment deviates from the Specifications or Drawings, indicate in writing on Company letterhead those differences and provide sufficient data to justify acceptance. FAILURE TO INDICATE DEVIATIONS OR SUBSTITUTIONS IMPLIES FULL COMPLIANCE WITH DRAWINGS AND SPECIFICATIONS.
- G. The term "by others" or similar wording shall not be used on Submittal. Submittal shall state by whom related items of work are to be provided. Where not indicated, it is implied that the work or item is provided under this Section.
- H. Shop Drawings: Provide shop drawings as required by the individual Specification Sections. Submit shop drawings indicating physical size and arrangement, (plans and elevations) construction details, provisions for conduits, access requirements for installation and maintenance, finishes, and materials used in fabrication for all equipment. Supplement shop drawings with wiring diagrams for all systems with wiring connections for multiple components.

1.5 REGULATORY REQUIREMENTS

- A. Complete installation shall conform with all applicable Federal, State and Local laws, Codes and Ordinances, included but not limited to latest approved editions of the following:
 - 1. State Building Codes.
 - 2. Specific Construction Safety Requirements, State Industrial Commission.
 - 3. National Electrical Code - NFPA 70.
 - 4. National Fire Code - NFPA 72.
 - 5. Life Safety Code - NFPA 101.
 - 6. Occupational Safety and Health Act (OSHA) of 1971 and all amendments thereto.
 - 7. ADA - Handicap Accessibility Requirements.
- B. Nothing contained in the drawings and specifications shall be construed to conflict with these laws, codes, and ordinances and they are thereby included in these specifications. All work shall comply with the 2014 edition of NFPA 70, The National Electrical Code. It shall be the Contractor's responsibility to assure that electrical work is in full compliance with the *NEC*.
- C. Contractor shall visit the site to become familiar with all existing conditions affecting this work. No claim will be recognized for extra compensation due to failure of contractor to familiarize himself/herself with the conditions and extent of proposed work.
- D. Obtain and pay for all necessary permits. Request inspections from authority having jurisdiction.

1.6 ELECTRICAL MOTORS

- A. In general, motors will be furnished and installed under other Divisions of work as a factory-installed item. Unless they are factory installed on equipment units supplied under other Divisions, all safety switches and motor starters shall be furnished and installed by the Electrical Contractor. Coordinate prior to submission of bid.

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- B. Electrical Contractor shall obtain all wiring diagrams necessary to connect and control equipment requiring electrical energy.

1.7 RECORD DRAWINGS

- A. Record any changes in location of concealed boxes, underground utility service runs, and similar construction on a set of prints and deliver them to the Owner's Representative upon completion of the work.
- B. Record location and depth of exterior work carefully for future reference.

1.8 OPERATING AND MAINTENANCE INSTRUCTIONS

- A. Instruct the Owner's representative in all matters pertaining to the proper operation and maintenance of electrical equipment furnished under this contract.
- B. Submit three (3) sets of instructions in hard-bound three-ring notebooks, including installation, maintenance and operating instructions, pamphlets or brochures and warranties obtained from each manufacturer of principal items of equipment.

1.9 PROJECT/SITE CONDITIONS

- A. Install Work in locations shown on Drawings, unless prevented by Project conditions.
- B. Prepare drawings showing proposed rearrangement of Work to meet Project conditions, including changes to Work specified in other Sections. Obtain permission of Architect/Engineer before proceeding.

1.10 FIRESTOPPING

- A. Firestopping around electrical cable, conduit and/or boxes and firestopping within boxes shall be provided under Division 16 to maintain fire ratings at walls, floors and ceilings. The Contractor shall coordinate penetrations of rated surfaces with the architectural drawings and specifications to assure that the proper fire rating is achieved.

1.11 TEMPORARY POWER AND LIGHTING

- A. The Contractor shall be responsible for provision of temporary electrical power and lighting as required to facilitate construction work.
 - 1. Temporary electrical power shall be obtained from the existing electrical system. The Contractor shall make all necessary arrangements for the connection of a temporary power service.
 - 2. The Contractor shall provide temporary electrical power distribution as required to facilitate construction activities including:
 - a. Wire/conduit
 - b. Over-current protection
 - c. Receptacle outlets
 - d. Motor disconnect means

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- e. Grounding
- 3. The Contractor shall provide temporary lighting as required to facilitate construction activities.
- 4. All temporary electrical power and lighting shall be completely removed prior to substantial completion of the project.

1.12 ELECTRICAL SERVICE DESCRIPTION

- A. Electrical Service Description: The existing overhead CMP electrical utility line at the Federal Street be modified to provide a new 3-phase underground electrical service from a new riser pole as shown on the Contract Drawings. The contractor shall coordinate with the utility company all the work required to complete this project.
- B. Work associated with the new electrical services shall be coordinated with:
Central Maine Power Company (CMP)
- C. Arrange with *CMP* to modify the existing overhead utility line at Federal Street as required to provide a new underground secondary service. Arrange with *CMP* to provide a new underground secondary service from a new riser pole at Federal Street. The new pole shall include a new pole mounted service transformer, with a 208/120 volt, 3-phase secondary.
- D. Work by *CMP*: The Contractor shall make all necessary arrangements with *CMP* to provide the following:
 - 1. Modifications to the existing overhead utility line.
 - 2. Provision of a new riser pole.
 - 3. New pole mounted service transformer.
- E. Work by Contractor: The Contractor shall provide the following:
 - 1. All conduit and secondary service conductors from the pole mounted service transformer to the meter center at the building.
 - 2. Service meter centers.
 - 3. Service grounding.
- F. Work by General Contractor:
 - 1. Excavation and backfill.

1.13 UTILITY SERVICE QUALITY ASSURANCE

- A. Conform to the requirements of ANSI/NFPA 70 - National Electrical Code.
- B. Conform to the requirements of:
 - 1. *Central Maine Power Company.*

1.14 UTILITY SERVICE CHARGE ALLOWANCE

- A. The Contractor shall include under Division 26 an allowance of \$40,000.00 to cover the cost of utility service charges. This allowance will be paid according to actual utility company invoices received.

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PART 2 - PRODUCTS

2.1 MATERIALS

- A. Furnish new and undeteriorated materials and of a quality not less than what is specified.
- B. Contractor to furnish and install only those brands of equipment mentioned specifically or accepted by the Engineer as equivalent substitutes.
- C. Conduit shall be as specified in Section 26 05 33.
- D. Electrical service conductors shall be as specified in Section 26 05 19.
- E. Service grounding shall be as specified in Section 26 05 26.
- F. Service Meters
 - 1. Manufacturers:
 - a. *Square D*
 - b. *Anchor*
 - c. *Landis & Gyr*
 - d. *Milbank*
 - e. *Murray*
 - 2. UL listed, multi-gang meter center with ringless meter sockets and main circuit breaker service sections as detailed on the Drawings.
 - 3. Meter Centers shall be NEMA Type 1 construction, rated for use on a three-wire 240/120-volt system. Meter sockets shall have a fifth terminal in the 6 o'clock position, and shall include a simple handle lever operated by-pass. Meter sockets shall be rated as indicated on the Drawings. Main devices shall have 65K AIC ratings.
 - 4. All meters shall be supplied with an output branch circuit breaker, in sizes as indicated on the Drawings.
 - 5. Approval: Meter centers shall be approved by the *Central Maine Power Company*.

2.2 EQUIPMENT SELECTION AND APPROVAL

- A. The selection of materials and equipment to be furnished shall be governed by the following:
 - 1. Where single trade name, brand of manufacturer or material is listed in the specification, the exact equipment listed shall be used in the bid.
 - 2. Where more than one name is listed, Contractor may select any one of the several brands specified.
 - 3. Where trade name, brand of manufacturer of equipment or material is listed in the specification followed by the word "or approved equal," the Contractor may substitute product of equal quality from another manufacturer for consideration by the Engineer.

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PART 3 - EXECUTION

3.1 PROTECTION AND CLEANING

- A. Protect all electrical work and products against damage during construction and pay the cost of repair or replacement of electrical products made necessary by failure to provide suitable safeguards or protection.
- B. After all work has been inspected and approved, thoroughly clean all equipment, provided under this work.
- C. Repair all dents and scratches in factory prime or finish coated on all electrical equipment.

3.2 CUTTING AND PATCHING

- A. Cut and patch as required to install new work. Patching shall match existing surfaces in kind and finish.
- B. Obtain prior approval from the Engineer before cutting any structural members.

3.3 EQUIPMENT CONNECTIONS

- A. Use wire and cable with insulation suitable for temperatures encountered in heat-producing equipment.
- B. Make conduit connections to mechanical equipment using flexible cable or flexible conduit.
- C. Make wiring connections in control panel or in wiring compartment of pre-wired equipment in accordance with manufacturer's instructions. Provide interconnecting wiring where indicated.
- D. Install all controllers, control stations, and control devices such as limit switches, speed switches, and temperature switches that are supplied with equipment items. Connect with conduit and wiring.
- E. Provide a local means of disconnect for all motor loads except where factory supplied controllers are provided which contain disconnecting means.
- F. Reference to specification Section where control connection and wiring provisions are specified.
- G. Provide appropriate cords and caps for living unit appliances as required.

3.4 MECHANICAL SYSTEMS EQUIPMENT CONNECTIONS

- A. Except where provided as an integral element by the equipment manufacturer, provide a combination type magnetic motor starter for all 208-volt fans and/or pumps. Mount starters locally at equipment item as shown on Drawings. Starters shall be as specified under Section 26 29 13.

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- B. Except where provided as an integral element by the equipment manufacturer, provide a SPST manual motor starter switch for all 120-volt motors that are part of mechanical systems equipment items. Mount manual switches locally at motors. Manual switches shall be as specified under Section 26 29 13.
- C. Where noted on the Drawings that an equipment item is to be connected with a local speed switch, make all necessary connections to the speed switch (furnished under Division 23) and to the equipment motor.
- D. Interlock the elevator shaft smoke relief vent with the fire alarm system as directed by the local fire department.

END OF SECTION