1. **GENERAL**
	1. RELATED DOCUMENTS
		1. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 1-specification sections, apply to work of this Section.
	2. DESCRIPTION OF WORK
		1. The work included under this Section consists of providing all labor, materials, supervision, and construction procedures necessary for the installation of the complete electrical systems required by these specifications and/or shown on the drawings of the contract.
		2. The Contract Drawings are shown in part diagrammatic intended to convey the scope of work, indicating the intended general arrangement of equipment, conduit, and outlets. Follow the drawings in laying out the work and verify spaces for the installation of the materials and equipment based on the dimensions of actual equipment furnished. Whenever a question exists as to the exact intended location of outlets or equipment, obtain instructions from the Architect/Engineer before proceeding with the work.
	3. QUALITY ASSURANCE
		1. Installers shall have at least 2 years of successful installation experience on projects with electrical installation work similar to that required by the project. All equipment and materials shall be installed in a neat and workmanlike manner and shall be aligned, leveled, and adjusted for satisfactory operation.
	4. REFERENCES
		1. The design, manufacture, testing, and method of installation of all equipment and materials furnished under the requirements of this specification shall conform to all codes, standards and regulations, etc. found in the front end of specifications:
		2. The latest adopted edition by the local and state inspection authorities of all standards and specifications listed in front end shall apply.
		3. Furthermore, the electrical work shall be in accordance with all applicable National and State Standards, and Local Codes and Building Ordinances. The electrical work shall merit the approval of the enforcing authorities having jurisdiction.
	5. MATERIALS AND EQUIPMENT
		1. Electrical materials and equipment for the entire project shall meet the requirements specified under the Supplementary Conditions Section of this specification.
		2. Equipment and fixtures shall be connected to provide circuit continuity in accordance with applicable Codes whether or not each piece of conductor, conduit, or protective device is shown between such items of equipment or fixtures and the point of circuit origin.
		3. The electrical work includes the installation or connection of certain materials and equipment furnished by others. Verify all connection details.
		4. All equipment over 50 pounds shall be provided with adequate lifting means.
2. **PRODUCTS (NOT USED)**
3. **EXECUTION**
	1. ACCESS TO EQUIPMENT
		1. Starters, switches, receptacles, pull boxes, etc. shall be located to provide easy access for operation, repair and maintenance. If the devices listed above are concealed, access doors shall be provided.
	2. SUBMITTALS

**NOTE TO SPECIFIER: EDIT LIST BELOW TO MEET PROJECT REQUIREMENTS.**

* + 1. Operation and Maintenance Manuals: Operation and Maintenance Manuals shall be provided according to Division 1 requirements. In general, during the time of the contract, and before substantial completion of the electrical installation, submit to the Architect/Engineer three (3) copies of descriptive literature, maintenance recommendations (from the equipment manufacturer), data on initial operation, wiring diagrams, performance curves, engineering data and tests, operating procedures, routine maintenance procedures, and parts lists for each item of electrical equipment installed under this contract and submit all manufacturer's guarantees and warranties.
		2. Shop Drawings: The Contractor shall furnish shop drawing portfolios and proper transmittal forms for all materials, equipment, and lighting fixtures to be incorporated in the work in accordance with the General Conditions, Supplementary Conditions, and all other applicable Conditions.
			1. Shop drawings on component items forming a system or that are interrelated shall be submitted at one time as a single submittal in order to demonstrate that the items have been properly coordinated and will function properly as a system. A notation shall be made on each shop drawing submitted as to the item's specific use, either by a particular type number referenced on the drawings or in the specifications, by a reference to the applicable paragraph of the specifications, or by a description of its specific location. The shop drawings shall be organized and bound into sets with each set collated.
			2. The Architect/Engineer shall have the final authority as to whether the equipment or material submitted is equal to the specified item. Proposed substitutions may be rejected for aesthetic reasons if felt necessary or desirable. In the event the proposed substitutions are rejected, the Contractor shall furnish the specified item.
	1. EXISTING UTILITIES
		1. The Contractor shall verify the location of all existing utilities with the Owner and Utility Companies prior to commencing excavation work. The drawings and survey data of the contract documents indicate the available information on the existing power and communication services, and on new services to be provided to the project by utility companies. Accuracy of this information is not assured.
	2. ELECTRICAL SERVICE
		1. The Contractor shall provide all material and pay all fees required by the local utility company for the connection of the new electrical service as shown on the plans. The Contractor shall also meet all equipment requirements of the local utility company. The Contractor shall provide all necessary materials for construction of the temporary electrical service and shall coordinate all details with the local utility company.
	3. TELECOMMUNICATIONS SERVICE
		1. The telecommunications services to the building are as indicated on the drawings. Arrange all service details with the local telecommunications companies and pay all costs and fees assessed to the project. All work shall be in accordance with the local telecommunications companies’ standards and subject to their approval. Coordinate the installation of service entrance equipment with the telecommunications companies prior to the start of construction.
	4. SMOKE AND SMOKE/FIRE DAMPERS
		1. Provide all necessary connections, including power supply circuits (fed from the nearest panelboard of the appropriate voltage) to smoke dampers and smoke/fire dampers so that upon fire alarm conditions or integral smoke detector activation, the dampers close. Coordinate damper and control locations with the mechanical and controls contractors. Refer to the mechanical drawings for damper schedule and locations. Connect to emergency backup power.
	5. ELECTRICAL-MECHANICAL EXTENT OF WORK
		1. The responsibility of work specified under Divisions 21, 22, 23 and 26 is clarified under, Sections 210500, 220500 and 230500. Said Sections areincorporated herein by reference.
	6. ELECTRICAL PRODUCT COORDINATION
		1. Refer to Division 2 through Division 32 and the electrical drawings for the power characteristics required and available for the operation of each power-consuming item of equipment. Coordinate purchases to ensure uniform interface with every item requiring electrical power.
	7. CUTTING AND PATCHING
		1. The Electrical Contractor shall be responsible for all cutting and patching of holes in building construction which are required for the passage of electrical work. Cutting and patching shall conform to the requirements of Division 1 and, if applicable, Division 2 of these specifications.
		2. Cutting of structural framing, walls, floors, decks and other members intended to withstand stress is not permitted.
	8. PAINTING, FINISHING
		1. Painting of electrical work exposed in occupied spaces, except mechanical and electrical machine rooms and maintenance/service spaces; and work exposed on the exterior of the facility is specified and performed under other divisions of these specifications.
		2. Factory finishes, shop priming, and special protective coatings are specified in the individual equipment specification sections.
		3. Where factory finishes are provided on equipment and no additional field painting is specified, all marred or damaged surfaces shall be touched up or refinished so as to leave a smooth, uniform finish at the time of final inspection.
	9. EXCAVATION AND BACKFILLING
		1. Contractor shall perform all excavation and backfilling necessary to install the required electrical work. Coordinate the work with other excavating and backfilling work in the same area. Except as indicated otherwise, comply with the applicable sections in Division 31 of these specifications, excavation filling and backfilling (for structures) to 5' outside the building line, and exterior utilities sections for beyond 5' from the building line.
		2. Landscape work, pavement, flooring and similar exposed finish work that is disturbed or damaged by excavation shall be repaired and restored to their original condition by the Contractor.
	10. CONDUITS AND SUPPORT, GENERALLY
		1. Conduits, except electrical conduits run in floor construction, shall be run parallel with or perpendicular to lines of the building unless otherwise noted on the drawings. Electrical conduits shall not be hung on hangers with any other service, unless specifically approved by the Engineer. Electrical conduits shall be hung above all other service pipes. Hangers on different service lines running close to and parallel with each other shall be in line with each other and parallel with, or perpendicular to, the lines of the building. Exact location of electric outlets, piping, ducts, and the like shall be coordinated to avoid interferences between lighting fixtures, piping, ducts, and similar items.
	11. ACCESS PANELS
		1. Furnish and install panels for access to junction boxes and similar items where no other means of access, such as a readily removable, sectional ceiling is shown or specified.
		2. Panels shall not be less than 12-inches by 16-inches in size. Larger panels shall be furnished where required. Panels in tile or other similar patterned ceilings shall have dimensions corresponding to the tile or pattern module.
		3. Access panels shall be flush type and of all steel construction, with a No. 16 gauge wall or ceiling frame for masonry or plaster and a No. 14 gauge panel door. Doors shall be secured with concealed hinges and flush locks of either the cylinder type or approved, positive acting, screwdriver operated type. Doors for wall panels may be secured with suitable clips and countersunk screws. Panels shall be painted with a rust-inhibitive primer at the factory. Panels in rated wall shall also be rated.
	12. INSTALLATION OF EQUIPMENT
		1. Install and connect all appliances and equipment as specified and indicated for this project, in accordance with the manufacturers' instructions and recommendations. Furnish and install complete electric connections and devices as recommended by the manufacturer or required for proper operation.
	13. COORDINATION
		1. Coordinate the electrical work with work of the different trades so that:
			1. Interferences between mechanical, electrical, architectural, and structural work, including existing services, will be avoided.
			2. Within the limits indicated on the drawings, the maximum practicable space for operation, repair, removal and testing of electrical and other equipment will be provided.
			3. Pipe, conduits, ducts, and similar items, shall be kept as close as possible to ceiling, walls, and columns, to take up a minimum amount of space. Pipes, conduits, ducts, and similar items shall be located so that they will not interfere with the intended use of other equipment.
		2. Furnish and install, without additional expense to the Owner, all offsets, fittings and similar items necessary in order to accomplish the requirements of coordination.
		3. Before any sleeves or inserts are set, or any electrical equipment or foundations are installed, prepare and submit for approval composite coordination drawings for all equipment rooms, and other areas in which work of two or more trades or subcontractors is to be installed and in which the probability of interference exists. Drawings shall show the work of all trades covered, shall be drawn to a scale not smaller than 1/2" = 1'-0", and shall show clearly in both plan and elevation that all work can be installed without interference.
		4. Any work installed prior to approval of coordination drawings shall be at the Contractor's risk. Subsequent relocations required to avoid interference’s shall be made without additional expense to the Owner.
	14. SINGULAR NUMBER
		1. Where any device or part of equipment is herein referred to in the singular number (such as "the switch"), such reference shall be deemed to apply to as many such devices as are required to complete the installation as shown on the drawings.
	15. WARRANTY
		1. Refer to the General Conditions section of this Specification for warranty requirements and information.
	16. CLOSE OUT AND OPERATION INSTRUCTIONS
		1. Sequence operations properly so that all work of this project will not be damaged or endangered. Operate each item of equipment and each system in a test run of appropriate duration to demonstrate sustained, satisfactory performance. Adjust and correct operations as required for proper performance.
		2. Conduct a full-day walk-through instruction seminar for the Owner's personnel to be involved in the continued operation and maintenance of electrical equipment and systems. Explain the identification system, operational diagrams, emergency and alarm provisions, sequencing requirements, security, safety, efficiency and similar features of the systems.
		3. At the time of substantial project completion, turn over the prime responsibility for operation of the electrical equipment and systems to the Owner's operating personnel. Until the time of final acceptance, provide full time operating personnel, who are completely familiar with the work, to consult with and continue training the Owner's personnel.

**NOTE TO SPECIFIER: CHECK IF SUBSTITUTION PARAGRAPH IS REQUIRED.**

* 1. SUBSTITUTIONS
		1. All proposals shall be based on providing and installing the materials or items of equipment which are hereinafter specified by name and/or manufacturer. Substitutions, for materials or items of equipment specified, will not be allowed, unless approved by Engineer prior to (14 days before) bid date.
		2. Refer to Instructions to Bidders for complete requirements for substitutions.
	2. AS-BUILT DRAWINGS
		1. Contractor shall provide the Owner with as-built drawings for all electrical systems as described in these specifications and/or shown on the Drawings.

END OF SECTION 260500

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| **MOTOR TEST REPORT** |
|  |  |  |  | DATE:\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ |
|  |  |  |  | SHEET NO. \_\_\_\_\_\_\_ OF \_\_\_\_\_\_\_\_ |
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| PROJECT NAME: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ |  |
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| DESIGNATION |  |  |  |  |  |  |
| LOCATION |  |  |  |  |  |  |
| HORSEPOWER |  |  |  |  |  |  |
| NEMA STARTER SIZE |  |  |  |  |  |  |
| MAXIMUM HEATER AMPS |  |  |  |  |  |  |
| MEASURED |  | PHASE |  |  | PHASE |  |
| CONDITIONS | **A** | **B** | **C** | **A** | **B** | **C** |
| ACTUAL MOTOR CURRENT |  |  |  |  |  |  |
| NAMEPLATE MOTOR CURRENT |  |  |  |  |  |  |
| NO LOAD VOLTAGE |  |  |  |  |  |  |
| FULL LOAD VOLTAGE |  |  |  |  |  |  |
|  |  |  |  |  |  |  |
| DESIGNATION |  |  |  |  |  |  |
| LOCATION |  |  |  |  |  |  |
| HORSEPOWER |  |  |  |  |  |  |
| NEMA STARTER SIZE |  |  |  |  |  |  |
| MAX HEATER AMPS |  |  |  |  |  |  |
| MEASURED |  | PHASE |  |  | PHASE |  |
| CONDITIONS | **A** | **B** | **C** | **A** | **B** | **C** |
| ACTUAL MOTOR CURRENT |  |  |  |  |  |  |
| NAMEPLATE MOTOR CURRENT |  |  |  |  |  |  |
| NO LOAD VOLTAGE |  |  |  |  |  |  |
| FULL LOAD VOLTAGE |  |  |  |  |  |  |
| **ELECTRICAL TEST REPORT** |
|  |  |  |  |  |  | DATE:\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ |
|  |  |  |  |  |  | SHEET NO. \_\_\_\_\_\_ OF \_\_\_\_\_\_\_\_ |
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| SERVICE |  |  |  |  |  |  |  |  |  |
| TRANSFORMER SIZE |  |  |  |  |  |  |  |  |  |
| NO LOAD |  |  |  |  |  |  |  |  |  |
| SERVICE VOLTAGE |  |  |  |  |  |  |  |  |  |
| FULL LOAD |  |  |  |  |  |  |  |  |  |
| SERVICE VOLTAGE |  |  |  |  |  |  |  |  |  |
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| DESIGNATION |  |  |  |  |  |  |  |  |  |
| LOCATION |  |  |  |  |  |  |  |  |  |
| MEASURED |  | PHASE |  |  | PHASE |  |  | PHASE |  |
| CONDITIONS | **A** | **B** | **C** | **A** | **B** | **C** | **A** | **B** | **C** |
| NO LOAD FEEDER |  |  |  |  |  |  |  |  |  |
| VOLTAGE |  |  |  |  |  |  |  |  |  |
| OPERATING LOAD |  |  |  |  |  |  |  |  |  |
| FEEDER VOLTAGE |  |  |  |  |  |  |  |  |  |
| OPERATING LOAD |  |  |  |  |  |  |  |  |  |
| FEEDER CURRENT |  |  |  |  |  |  |  |  |  |
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| DESIGNATION |  |  |  |  |  |  |  |  |  |
| LOCATION |  |  |  |  |  |  |  |  |  |
| MEASURED |  | PHASE |  |  | PHASE |  |  | PHASE |  |
| CONDITIONS | **A** | **B** | **C** | **A** | **B** | **C** | **A** | **B** | **C** |
| NO LOAD FEEDER |  |  |  |  |  |  |  |  |  |
| VOLTAGE |  |  |  |  |  |  |  |  |  |
| OPERATING LOAD |  |  |  |  |  |  |  |  |  |
| FEEDER VOLTAGE |  |  |  |  |  |  |  |  |  |
| OPERATING LOAD |  |  |  |  |  |  |  |  |  |
| FEEDER CURRENT |  |  |  |  |  |  |  |  |  |