

SECTION 16010 - GENERAL CONDITIONS

The electrical subcontractor is bound by the general and supplementary conditions, and Division 1.

Document Priorities-

In the case of discrepancies, the construction documents take precedence as follows:

1. Change orders
2. Addendum
3. Specifications
4. Large scale drawings
5. Small scale drawings
6. Submittal and equipment reviews
7. Substitution requests

Specifications take precedence over substitution requests and submittal reviews. Where discrepancies/duplications occur, the more stringent requirements shall be provided.

Products under this contract shall meet minimum specification requirements in detail without exception unless specifically noted and approved as provided in these specifications. Equipment submitted for review must clearly state on cover sheet any differences from specified product. Equipment substitution or submittal review does not relieve contractor from meeting all requirements of specified item.

SHORT CIRCUIT, COMPONENT PROTECTION, FLASH HAZARD ANALYSIS, AND SELECTIVE COORDINATION STUDY

PART 1 GENERAL

1.1 SUMMARY

- A. Provide a short-circuit, component protection, flash hazard analysis, and selective coordination study for the emergency electrical distribution system from all power sources (normal and emergency) down to the branch circuit overcurrent protective device and equipment per NEC 700.27.

1.2 PURPOSE

- A. The study shall calculate the available short-circuit current at each point in the emergency electrical distribution system. The overcurrent protective devices shall have an interrupting rating equal to or greater than the available short-circuit current at the point of application.

- B. The study shall examine proper protection of emergency electrical system components and utilization equipment such that the equipment has a sufficient short-circuit current rating. If a specific type of overcurrent protective device is required for proper protection of equipment, it shall be noted in the report and reflected in the design of the system.

- C. The study shall analyze a flash hazard analysis for electrical distribution equipment where required per codes and standards. The analysis shall determine the flash protection boundary, incident energy, and required level of personal protective equipment (PPE) for workers at the electrical distribution equipment. The flash protection boundary and incident energy shall be determined based upon a working distance of 18 inches. The electrical distribution equipment shall be field marked with this information in accordance with codes and standards.

- D. The emergency overcurrent protective devices shall be analyzed for selective coordination. This analysis shall identify any potential selective coordination problems up to the available short-circuit current. Any areas where the overcurrent protective devices are not selectively coordinated shall be explicitly noted and recommendations shall be made to achieve selective coordination if desired.

1.3 REFERENCES

- A. The study shall be completed in accordance with the latest edition of IEEE Standard 242 - Recommended Practice for Protection and Coordination of Industrial and Commercial Power Systems.
- B. The flash hazard analysis shall be completed in accordance with latest editions of NFPA 70E - Standard for Electrical Safety Requirements for Employee Workplaces and IEEE Standard 1584 - Guide for Performing Air-Flash Hazard Calculations.

1.4 QUALIFICATIONS

- A. The company and individual(s) performing the study shall have a minimum 5 years documented experience in power system analysis and completed projects of similar size and scope. The individual(s) performing the study shall be a registered Professional Engineer in the state of the project location.
- B. The company performing study shall have the capability and experience to provide assistance during system start up.

1.5 SCHEDULING

- A. The selection of the company and individual performing the study shall be submitted and approved by the design engineer prior to the start of the study.
- B. The study shall be completed and submitted prior to the equipment submittals. The study will be reviewed during the equipment submittal and review process. Any changes to the study or equipment will be noted in the returned submittals.
- C. Final approval of both the study and equipment submittals shall be given prior to the release of equipment for manufacturing.

1.6 SUBMITTALS

- A. The results of the study shall be summarized in report form. Submit 10 copies for review and approval by the design engineer.
- B. The results of the study shall include the following:

1. Descriptions, purpose, basis, and scope of study.
2. Fault current calculations including definition of terms and guide for interpretation of computer printout.
3. Tabulations of protective device and equipment ratings versus calculated short-circuit duties, and commentary regarding same.
4. Flash hazard analysis report for electrical distribution equipment.
5. Time versus current curves or fuse selectivity ratio analysis, with tabulations of overcurrent protective device settings, and selective coordination analysis and commentary regarding same.

- C. If power company review and approval is required, the results of the study shall be submitted to the power company for review and approval. Approved copies from the power company shall be forwarded to the design engineer.

1.7 SUBMITTALS - CLOSEOUT

- A. Submit ten copies of the final approved study to the electrical design engineer.

PART 2 PRODUCTS

2.1 REQUIREMENTS

- A. The short circuit and flash hazard analysis study shall be completed with the aid of a computer software program where possible.
- B. The available short-circuit current, corresponding required interrupting or short-circuit current ratings of components, and flash hazard analysis data, shall be calculated based on the 3-phase bolted short-circuit current and phase to ground/neutral short-circuit current at each of the following (if applicable):

1. Utility Service Point
2. Medium voltage switchgear
3. Medium voltage motor controllers.
4. Medium/Low Voltage Unit Substations.
5. Low-voltage switchgear or switchboards.
6. Distribution panelboards.
7. Branch circuit panelboards.
8. Motor control centers.
9. Busway and Busdrips.
10. Other significant equipment or utilization equipment.

- C. The study shall include the following:

1. Calculation methods and assumptions.
2. One-line diagram (with available short-circuit current and flash hazard data identified).
3. Calculations shall identify:
  - a. Available short-circuit currents from all power sources (kVA)
  - b. Motor fault contribution
  - c. Component impedance data
  - d. X to R ratio
  - e. Symmetrical and asymmetrical fault current characteristics
  - f. Flash hazard analysis data.

- 4. Tabulation of all calculation quantities and results

- 5. Detailed description of each protective device identifying its type, function, manufacturer, interrupting rating, ampere rating, selected settings, and time-current characteristics.

- 6. System component characteristic curves or short-circuit current ratings identified and/or plotted up to the maximum symmetrical fault current to which the component is exposed. Include the following where applicable:
  - a. Medium voltage equipment characteristics
  - b. Low voltage equipment characteristics
  - c. ICEA conductor damage characteristics
  - d. Transformer characteristics
  - e. Motor and motor circuit equipment characteristics
  - f. Generator and transfer switch (manual or automatic) characteristics
  - g. Other system equipment characteristics.

- 7. Time-current curves prepared graphically on full size, log-log forms with title, one-line diagram, and specific system components analyzed.

- 8. Conclusions regarding interrupting rating for overcurrent protective devices, flash hazard analysis, protection of components, selective coordination, and recommendations and requirements on the same.

PART 3 EXECUTION

3.1 INSTALLATION/START-UP

- A. The contractor shall install equipment and protective devices in accordance with the approved short-circuit and selective coordination study.
- B. The contractor shall field mark equipment with flash hazard analysis data as required in accordance with codes and standards.
- C. The company performing the study shall provide assistance to the installing contractor during start up of electrical system and equipment as needed.

ELECTRICAL MOUNTING HEIGHTS

ITEM	HEIGHT A.F.F. TO CENTER LINE:
7. THERMOSTATS	48"
DOOR HOLDERS	75" TO CENTER
EMERGENCY CALL	40"
SPEAKERS & PULL STATIONS	42"
WALL LIGHTS IN CORRIDORS	80" TO CENTER LINE
EXTERIOR WALL LIGHTS	96" TO CENTER LINE (N.O.D.)
OUTLETS (COMMON AREAS)	24"
OUTLETS (SUITE AREAS)	18"
LIGHT SWITCH	44" TO BOTTOM
COUNTER OUTLETS	44" TO BOTTOM
STAIR LIGHTS	2" TO BOTTOM, ABOVE TREAD
ELECTRICAL PANEL	80" TO TOP OF PANEL
BATHROOM WALL VANITY LIGHT	60" TO CENTER (SEE NOTE #1)

- NOTES:
1. CENTER OVER CABINET BASE PROVIDE BACKING IF REQUIRED.
  2. INFORMATION SHOWN FOR REFERENCE. CONFORM TO ARCH, ADA, AND CODE REQUIREMENTS.

SECTION 16100 - Wiring Systems

Interior Raceway System: Power conductors shall be in EMT or MC cable throughout common areas of the facility, as detailed in NEC Article 518, including corridors, assembly areas, meeting areas and common gathering areas. Provide EMT in unfinished spaces where raceway is not concealed such as in mechanical and electrical rooms as required by the NEC and local codes. All raceway in finished areas shall be concealed. Where conductors are exposed above a suspended ceiling, provide in a listed metal raceway. NMSC may be used in residential suites meeting the requirements of NEC 334.10 and as permitted by local codes. Fire alarm conductors shall be installed in accordance with NEC Article 760. Provide RMC for interior concrete encased raceway or where EMT is subject to damage.

Aluminum conductors may be used in services and feeders 60A and larger. All branch circuit conductors shall be copper conductor. Sizes indicated on drawings are based upon copper applications.

Provide conductors with type THHN insulation in dry locations only. Provide conductors with type THWN, THW and XHHW in dry damp or wet locations.

Conductors smaller than #12 AWG for branch circuits not permitted.

Conductors shall not be less than 12AWG. All other circuits shall be sized as noted or as required by equipment served.

Liquid tight flexible metallic conduit shall be used in short (2 foot nominal) lengths for all equipment which: Vibrates. May need to be moved for servicing, or is exposed to weather.

Outside the building and below grade, wiring may be in schedule-40 PVC conduit with grounding conductor if applicable by local codes.

Install exterior circuits underground. Direct buried branch circuit wiring outside the building and below grade may be in type UF moisture resistant cable, not less than 10AWG conductors or as noted. Comply with electrical code as required and noted on cover.

Clean and clear-out raceway prior to installation of any conductor/pull string. Provide pull string in empty raceways. Provide listed pulling lubricant/compound for installing conductors in raceway systems.

Electrical work is to include the electrical service. Complete to the point of connection with the serving utility. Any changes or work required by the serving utility, are part of this work and shall be fully included in the bid price.

Work is also to include main distribution panel, feeder system and branch circuit panels. Complete branch circuit wiring, Light fixtures, wall switches, receptacles and similar items, exterior lighting and wiring, and wiring and connection to mechanical equipment, all fire alarm, intercom/emergency call system, phone system, unit phone wires, and kitchen equipment as required. Coordinate services with all trades. Coordinate locations of wiring conduit and other runs with other trades in confined areas such as in the corridor ceilings.

Work is to comply to the governing electrical codes as required and noted on the cover sheet, and shall comply with all applicable local codes, rules, and ordinances. All regulations, requirements and charges of the local utility company shall be complied with and paid. Materials used are to be listed by locally accepted listing agencies. Provide work per industry standards of acceptance and industry practice.

Work is to comply to the governing electrical codes as required and noted on the cover sheet, and shall comply with all applicable local codes, rules, and ordinances. All regulations, requirements and charges of the local utility company shall be complied with and paid. Materials used are to be listed by locally accepted listing agencies. Provide work per industry standards of acceptance and industry practice.

Work is to comply to the governing electrical codes as required and noted on the cover sheet, and shall comply with all applicable local codes, rules, and ordinances. All regulations, requirements and charges of the local utility company shall be complied with and paid. Materials used are to be listed by locally accepted listing agencies. Provide work per industry standards of acceptance and industry practice.

Work is to comply to the governing electrical codes as required and noted on the cover sheet, and shall comply with all applicable local codes, rules, and ordinances. All regulations, requirements and charges of the local utility company shall be complied with and paid. Materials used are to be listed by locally accepted listing agencies. Provide work per industry standards of acceptance and industry practice.

Work is to comply to the governing electrical codes as required and noted on the cover sheet, and shall comply with all applicable local codes, rules, and ordinances. All regulations, requirements and charges of the local utility company shall be complied with and paid. Materials used are to be listed by locally accepted listing agencies. Provide work per industry standards of acceptance and industry practice.

Work is to comply to the governing electrical codes as required and noted on the cover sheet, and shall comply with all applicable local codes, rules, and ordinances. All regulations, requirements and charges of the local utility company shall be complied with and paid. Materials used are to be listed by locally accepted listing agencies. Provide work per industry standards of acceptance and industry practice.

Work is to comply to the governing electrical codes as required and noted on the cover sheet, and shall comply with all applicable local codes, rules, and ordinances. All regulations, requirements and charges of the local utility company shall be complied with and paid. Materials used are to be listed by locally accepted listing agencies. Provide work per industry standards of acceptance and industry practice.

Work is to comply to the governing electrical codes as required and noted on the cover sheet, and shall comply with all applicable local codes, rules, and ordinances. All regulations, requirements and charges of the local utility company shall be complied with and paid. Materials used are to be listed by locally accepted listing agencies. Provide work per industry standards of acceptance and industry practice.

Work is to comply to the governing electrical codes as required and noted on the cover sheet, and shall comply with all applicable local codes, rules, and ordinances. All regulations, requirements and charges of the local utility company shall be complied with and paid. Materials used are to be listed by locally accepted listing agencies. Provide work per industry standards of acceptance and industry practice.

Work is to comply to the governing electrical codes as required and noted on the cover sheet, and shall comply with all applicable local codes, rules, and ordinances. All regulations, requirements and charges of the local utility company shall be complied with and paid. Materials used are to be listed by locally accepted listing agencies. Provide work per industry standards of acceptance and industry practice.

Work is to comply to the governing electrical codes as required and noted on the cover sheet, and shall comply with all applicable local codes, rules, and ordinances. All regulations, requirements and charges of the local utility company shall be complied with and paid. Materials used are to be listed by locally accepted listing agencies. Provide work per industry standards of acceptance and industry practice.

Work is to comply to the governing electrical codes as required and noted on the cover sheet, and shall comply with all applicable local codes, rules, and ordinances. All regulations, requirements and charges of the local utility company shall be complied with and paid. Materials used are to be listed by locally accepted listing agencies. Provide work per industry standards of acceptance and industry practice.

Work is to comply to the governing electrical codes as required and noted on the cover sheet, and shall comply with all applicable local codes, rules, and ordinances. All regulations, requirements and charges of the local utility company shall be complied with and paid. Materials used are to be listed by locally accepted listing agencies. Provide work per industry standards of acceptance and industry practice.

Work is to comply to the governing electrical codes as required and noted on the cover sheet, and shall comply with all applicable local codes, rules, and ordinances. All regulations, requirements and charges of the local utility company shall be complied with and paid. Materials used are to be listed by locally accepted listing agencies. Provide work per industry standards of acceptance and industry practice.

Work is to comply to the governing electrical codes as required and noted on the cover sheet, and shall comply with all applicable local codes, rules, and ordinances. All regulations, requirements and charges of the local utility company shall be complied with and paid. Materials used are to be listed by locally accepted listing agencies. Provide work per industry standards of acceptance and industry practice.

Work is to comply to the governing electrical codes as required and noted on the cover sheet, and shall comply with all applicable local codes, rules, and ordinances. All regulations, requirements and charges of the local utility company shall be complied with and paid. Materials used are to be listed by locally accepted listing agencies. Provide work per industry standards of acceptance and industry practice.

Work is to comply to the governing electrical codes as required and noted on the cover sheet, and shall comply with all applicable local codes, rules, and ordinances. All regulations, requirements and charges of the local utility company shall be complied with and paid. Materials used are to be listed by locally accepted listing agencies. Provide work per industry standards of acceptance and industry practice.

Work is to comply to the governing electrical codes as required and noted on the cover sheet, and shall comply with all applicable local codes, rules, and ordinances. All regulations, requirements and charges of the local utility company shall be complied with and paid. Materials used are to be listed by locally accepted listing agencies. Provide work per industry standards of acceptance and industry practice.

Work is to comply to the governing electrical codes as required and noted on the cover sheet, and shall comply with all applicable local codes, rules, and ordinances. All regulations, requirements and charges of the local utility company shall be complied with and paid. Materials used are to be listed by locally accepted listing agencies. Provide work per industry standards of acceptance and industry practice.

Work is to comply to the governing electrical codes as required and noted on the cover sheet, and shall comply with all applicable local codes, rules, and ordinances. All regulations, requirements and charges of the local utility company shall be complied with and paid. Materials used are to be listed by locally accepted listing agencies. Provide work per industry standards of acceptance and industry practice.

Work is to comply to the governing electrical codes as required and noted on the cover sheet, and shall comply with all applicable local codes, rules, and ordinances. All regulations, requirements and charges of the local utility company shall be complied with and paid. Materials used are to be listed by locally accepted listing agencies. Provide work per industry standards of acceptance and industry practice.

Work is to comply to the governing electrical codes as required and noted on the cover sheet, and shall comply with all applicable local codes, rules, and ordinances. All regulations, requirements and charges of the local utility company shall be complied with and paid. Materials used are to be listed by locally accepted listing agencies. Provide work per industry standards of acceptance and industry practice.

Work is to comply to the governing electrical codes as required and noted on the cover sheet, and shall comply with all applicable local codes, rules, and ordinances. All regulations, requirements and charges of the local utility company shall be complied with and paid. Materials used are to be listed by locally accepted listing agencies. Provide work per industry standards of acceptance and industry practice.

Work is to comply to the governing electrical codes as required and noted on the cover sheet, and shall comply with all applicable local codes, rules, and ordinances. All regulations, requirements and charges of the local utility company shall be complied with and paid. Materials used are to be listed by locally accepted listing agencies. Provide work per industry standards of acceptance and industry practice.

Work is to comply to the governing electrical codes as required and noted on the cover sheet, and shall comply with all applicable local codes, rules, and ordinances. All regulations, requirements and charges of the local utility company shall be complied with and paid. Materials used are to be listed by locally accepted listing agencies. Provide work per industry standards of acceptance and industry practice.

Work is to comply to the governing electrical codes as required and noted on the cover sheet, and shall comply with all applicable local codes, rules, and ordinances. All regulations, requirements and charges of the local utility company shall be complied with and paid. Materials used are to be listed by locally accepted listing agencies. Provide work per industry standards of acceptance and industry practice.

Work is to comply to the governing electrical codes as required and noted on the cover sheet, and shall comply with all applicable local codes, rules, and ordinances. All regulations, requirements and charges of the local utility company shall be complied with and paid. Materials used are to be listed by locally accepted listing agencies. Provide work per industry standards of acceptance and industry practice.

Work is to comply to the governing electrical codes as required and noted on the cover sheet, and shall comply with all applicable local codes, rules, and ordinances. All regulations, requirements and charges of the local utility company shall be complied with and paid. Materials used are to be listed by locally accepted listing agencies. Provide work per industry standards of acceptance and industry practice.

Work is to comply to the governing electrical codes as required and noted on the cover sheet, and shall comply with all applicable local codes, rules, and ordinances. All regulations, requirements and charges of the local utility company shall be complied with and paid. Materials used are to be listed by locally accepted listing agencies. Provide work per industry standards of acceptance and industry practice.

Work is to comply to the governing electrical codes as required and noted on the cover sheet, and shall comply with all applicable local codes, rules, and ordinances. All regulations, requirements and charges of the local utility company shall be complied with and paid. Materials used are to be listed by locally accepted listing agencies. Provide work per industry standards of acceptance and industry practice.

Work is to comply to the governing electrical codes as required and noted on the cover sheet, and shall comply with all applicable local codes, rules, and ordinances. All regulations, requirements and charges of the local utility company shall be complied with and paid. Materials used are to be listed by locally accepted listing agencies. Provide work per industry standards of acceptance and industry practice.

Work is to comply to the governing electrical codes as required and noted on the cover sheet, and shall comply with all applicable local codes, rules, and ordinances. All regulations, requirements and charges of the local utility company shall be complied with and paid. Materials used are to be listed by locally accepted listing agencies. Provide work per industry standards of acceptance and industry practice.

Work is to comply to the governing electrical codes as required and noted on the cover sheet, and shall comply with all applicable local codes, rules, and ordinances. All regulations, requirements and charges of the local utility company shall be complied with and paid. Materials used are to be listed by locally accepted listing agencies. Provide work per industry standards of acceptance and industry practice.

Work is to comply to the governing electrical codes as required and noted on the cover sheet, and shall comply with all applicable local codes, rules, and ordinances. All regulations, requirements and charges of the local utility company shall be complied with and paid. Materials used are to be listed by locally accepted listing agencies. Provide work per industry standards of acceptance and industry practice.

Work is to comply to the governing electrical codes as required and noted on the cover sheet, and shall comply with all applicable local codes, rules, and ordinances. All regulations, requirements and charges of the local utility company shall be complied with and paid. Materials used are to be listed by locally accepted listing agencies. Provide work per industry standards of acceptance and industry practice.

Work is to comply to the governing electrical codes as required and noted on the cover sheet, and shall comply with all applicable local codes, rules, and ordinances. All regulations, requirements and charges of the local utility company shall be complied with and paid. Materials used are to be listed by locally accepted listing agencies. Provide work per industry standards of acceptance and industry practice.

Work is to comply to the governing electrical codes as required and noted on the cover sheet, and shall comply with all applicable local codes, rules, and ordinances. All regulations, requirements and charges of the local utility company shall be complied with and paid. Materials used are to be listed by locally accepted listing agencies. Provide work per industry standards of acceptance and industry practice.

Work is to comply to the governing electrical codes as required and noted on the cover sheet, and shall comply with all applicable local codes, rules, and ordinances. All regulations, requirements and charges of the local utility company shall be complied with and paid. Materials used are to be listed by locally accepted listing agencies. Provide work per industry standards of acceptance and industry practice.

Work is to comply to the governing electrical codes as required and noted on the cover sheet, and shall comply with all applicable local codes, rules, and ordinances. All regulations, requirements and charges of the local utility company shall be complied with and paid. Materials used are to be listed by locally accepted listing agencies. Provide work per industry standards of acceptance and industry practice.

Work is to comply to the governing electrical codes as required and noted on the cover sheet, and shall comply with all applicable local codes, rules, and ordinances. All regulations, requirements and charges of the local utility company shall be complied with and paid. Materials used are to be listed by locally accepted listing agencies. Provide work per industry standards of acceptance and industry practice.

Work is to comply to the governing electrical codes as required and noted on the cover sheet, and shall comply with all applicable local codes, rules, and ordinances. All regulations, requirements and charges of the local utility company shall be complied with and paid. Materials used are to be listed by locally accepted listing agencies. Provide work per industry standards of acceptance and industry practice.

Work is to comply to the governing electrical codes as required and noted on the cover sheet, and shall comply with all applicable local codes, rules, and ordinances. All regulations, requirements and charges of the local utility company shall be complied with and paid. Materials used are to be listed by locally accepted listing agencies. Provide work per industry standards of acceptance and industry practice.

Work is to comply to the governing electrical codes as required and noted on the cover sheet, and shall comply with all applicable local codes, rules, and ordinances. All regulations, requirements and charges of the local utility company shall be complied with and paid. Materials used are to be listed by locally accepted listing agencies. Provide work per industry standards of acceptance and industry practice.

Work is to comply to the governing electrical codes as required and noted on the cover sheet, and shall comply with all applicable local codes, rules, and ordinances. All regulations, requirements and charges of the local utility company shall be complied with and paid. Materials used are to be listed by locally accepted listing agencies. Provide work per industry standards of acceptance and industry practice.

Work is to comply to the governing electrical codes as required and noted on the cover sheet, and shall comply with all applicable local codes, rules, and ordinances. All regulations, requirements and charges of the local utility company shall be complied with and paid. Materials used are to be listed by locally accepted listing agencies. Provide work per industry standards of acceptance and industry practice.

Work is to comply to the governing electrical codes as required and noted on the cover sheet, and shall comply with all applicable local codes, rules, and ordinances. All regulations, requirements and charges of the local utility company shall be complied with and paid. Materials used are to be listed by locally accepted listing agencies. Provide work per industry standards of acceptance and industry practice.

Work is to comply to the governing electrical codes as required and noted on the cover sheet, and shall comply with all applicable local codes, rules, and ordinances. All regulations, requirements and charges of the local utility company shall be complied with and paid. Materials used are to be listed by locally accepted listing agencies. Provide work per industry standards of acceptance and industry practice.

Work is to comply to the governing electrical codes as required and noted on the cover sheet, and shall comply with all applicable local codes, rules, and ordinances. All regulations, requirements and charges of the local utility company shall be complied with and paid. Materials used are to be listed by locally accepted listing agencies. Provide work per industry standards of acceptance and industry practice.

Work is to comply to the governing electrical codes as required and noted on the cover sheet, and shall comply with all applicable local codes, rules, and ordinances. All regulations, requirements and charges of the local utility company shall be complied with and paid. Materials used are to be listed by locally accepted listing agencies. Provide work per industry standards of acceptance and industry practice.

Work is to comply to the governing electrical codes as required and noted on the cover sheet, and shall comply with all applicable local codes, rules, and ordinances. All regulations, requirements and charges of the local utility company shall be complied with and paid. Materials used are to be listed by locally accepted listing agencies. Provide work per industry standards of acceptance and industry practice.

Work is to comply to the governing electrical codes as required and noted on the cover sheet, and shall comply with all applicable local codes, rules, and ordinances. All regulations, requirements and charges of the local utility company shall be complied with and paid. Materials used are to be listed by locally accepted listing agencies. Provide work per industry standards of acceptance and industry practice.

Work is to comply to the governing electrical codes as required and noted on the cover sheet, and shall comply with all applicable local codes, rules, and ordinances. All regulations, requirements and charges of the local utility company shall be complied with and paid. Materials used are to be listed by locally accepted listing agencies. Provide work per industry standards of acceptance and industry practice.

SECTION 16200 - Time Switches

Outdoor lights: 24-hour time, PCLi TimeKeeper Series. Mount in mechanical room.

Exterior lights: 7-day astrological time control. PCLi TimeKeeper Series. Provide photo sensor. Mount in mechanical room.

Include 12 keypad programming and LCD interface.

SECTION 16500 - Baseboard Heaters

Baseboard heaters shall be, size and voltage as shown. 250 watt per foot nominal densities, Q-MARK 2500 Series. Heater and thermostat shall be white in color. Control with wall mount line voltage thermostat, type TAI1AW. Heater and thermostat shall be white in color. Heaters shown and connected by Electrical, but sized during design by Mechanical Engineer.

Aluminum conductors may be used in services and feeders 60A and larger. All branch circuit conductors shall be copper conductor. Sizes indicated on drawings are based upon copper applications.

Provide conductors with type THHN insulation in dry locations only. Provide conductors with type THWN, THW and XHHW in dry damp or wet locations.

Conductors smaller than #12 AWG for branch circuits not permitted.

Conductors shall not be less than 12AWG. All other circuits shall be sized as noted or as required by equipment served.

Liquid tight flexible metallic conduit shall be used in short (2 foot nominal) lengths for all equipment which: Vibrates. May need to be moved for servicing, or is exposed to weather.

Outside the building and below grade, wiring may be in schedule-40 PVC conduit with grounding conductor if applicable by local codes.

Install exterior circuits underground. Direct buried branch circuit wiring outside the building and below grade may be in type UF moisture resistant cable, not less than 10AWG conductors or as noted. Comply with electrical code as required and noted on cover.

Clean and clear-out raceway prior to installation of any conductor/pull string. Provide pull string in empty raceways. Provide listed pulling lubricant/compound for installing conductors in raceway systems.

Electrical work is to include the electrical service. Complete to the point of connection with the serving utility. Any changes or work required by the serving utility, are part of this work and shall be fully included in the bid price.

Work is also to include main distribution panel, feeder system and branch circuit panels. Complete branch circuit wiring, Light fixtures, wall switches, receptacles and similar items, exterior lighting and wiring, and wiring and connection to mechanical equipment, all fire alarm, intercom/emergency call system, phone system, unit phone wires, and kitchen equipment as required. Coordinate services with all trades. Coordinate locations of wiring conduit and other runs with other trades in confined areas such as in the corridor ceilings.

Work is to comply to the governing electrical codes as required and noted on the cover sheet, and shall comply with all applicable local codes, rules, and ordinances. All regulations, requirements and charges of the local utility company shall be complied with and paid. Materials used are to be listed by locally accepted listing agencies. Provide work per industry standards of acceptance and industry practice.

Work is to comply to the governing electrical codes as required and noted on the cover sheet, and shall comply with all applicable local codes, rules, and ordinances. All regulations, requirements and charges of the local utility company shall be complied with and paid. Materials used are to be listed by locally accepted listing agencies. Provide work per industry standards of acceptance and industry practice.

Work is to comply to the governing electrical codes as required and noted on the cover sheet, and shall comply with all applicable local codes, rules, and ordinances. All regulations, requirements and charges of the local utility company shall be complied with and paid. Materials used are to be listed by locally accepted listing agencies. Provide work per industry standards of acceptance and industry practice.

Work is to comply to the governing electrical codes as required and noted on the cover sheet, and shall comply with all applicable local codes, rules, and ordinances. All regulations, requirements and charges of the local utility company shall be complied with and paid. Materials used are to be listed by locally accepted listing agencies. Provide work per industry standards of acceptance and industry practice.