

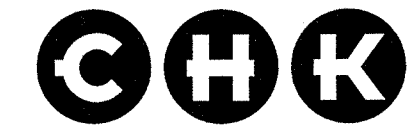
ELECTRICAL SPECIFICATION

PART 1 - GENERAL

- 1.1 GENERAL
A. Architect's General Conditions are a part of this Division. All work shall be done in strict accordance with all applicable Codes and Regulations of local and State Agencies and utility companies.
B. AIA Document A201-2007 "General Conditions of the Contract for Construction" is hereby made part of these Specifications.
1.2 SCOPE
A. Demolition:
1. The Contractor shall reference architectural and electrical plans and remove or relocate existing electrical materials as shown or which exist on walls and partitions being removed.
2. The Contractor shall remove all unused telephone and data cables complete from outlet to patch panel.
3. Existing electrical materials shall NOT be reused unless so indicated on the Drawings.
B. New Work:
1. Provide complete electrical lighting, power, fire alarm and special systems as indicated on the Contract Drawings.
2. Provide all electrical work necessary to power Owner-supplied equipment.
3. Refer to architectural specifications for security system requirements, if any.
4. Systems shall be complete in all respects, tested, approved and ready for operation.
5. Maintain existing receptacles on existing walls to remain, reconnect circuits that are interrupted.
6. Refer to audio/visual drawings for all power and conduit requirements.
C. Work by Others:
1. Other Trade Contractors and Owner's equipment vendors shall install all motors for equipment provided under their trade work contracts; motors shall be ready for wiring by the Electrical Contractor.
2. Other Trade Contractors and Owner's equipment vendors shall furnish and deliver to the Electrical Contractor wiring diagrams for all electrically operated equipment.
3. The General Contractor shall provide chases, openings, cutting, patching, painting and finish work.
4. The General Contractor shall install all access doors where required; doors needed for access to electrical systems shall be furnished by the Electrical Contractor.
5. The Owner's Electrical Contractor will provide the 480V/277 volt panel and step-down transformer (480V to 208/120V).
6. This Contractor to supply the 208/120 volt panel and feeder to the step-down transformer.
1.3 SHOP DRAWING SUBMITTALS
A. Submit shop drawings on equipment and materials, in sextuplet (6 copies), to the Architect for approval.
B. The following list of electrical items must be submitted by this Contractor for approval:
1. Panelboards
2. Circuit breakers
3. Wiring devices and plates
4. Lighting fixtures (submit samples as requested)
5. Fire alarm system components
6. "Poke-thru" floor devices
C. Submit for record an itemized list detailing electrical systems and components to be seismically restrained and associated seismic restraint system to be used.
1.4 RECORD DRAWINGS
A. Neatly and accurately record all changes to Contract Documents on record set of drawings furnished by the General Contractor.
1.5 DEFINITION
A. As used on Contract Drawings, the term "to provide" shall mean "to furnish, install and connect completely in the specified or approved manner the item or material described."
1.6 GUARANTEE
A. Materials, equipment and workmanship shall have standard warranty against defects in material and workmanship.
1.7 INSPECTION
A. Contract Drawings are diagrams and do NOT show every required fitting, etc.
1.8 INSURANCE
A. Furnish insurance certificates required by the Owner.
1.9 PERMITS, LAWS, ORDINANCES, CODES AND STANDARDS
A. Obtain and pay for permits, inspections, licenses and certificates required.
1.10 ARRANGEMENT OF WORK
A. Work shall be coordinated between trades to prevent interference.
1.11 WORKMANSHIP
A. Equipment and materials shall be new, of first quality, selected and arranged to fit properly into spaces indicated.
1.12 COORDINATION WITH OWNER
A. Work shall be scheduled with the Owner.
1.13 OPERATION OF SERVICES AND UTILITIES
A. Shutdown of existing services and utilities shall, without exception, be coordinated with the proper utility and with the Owner as to date, time of day, and duration before any service is interrupted.
1.14 PROTECTION
A. Close open ends of work with temporary covers or plugs during construction to prevent entry of foreign material.
1.15 CLEANING
A. Work site must be kept clean. Rubbish, debris and leftover or excess materials shall be removed daily.
1.16 LUBRICATION
A. No equipment shall be operated for temporary service or testing without proper lubrication.
1.17 PAINTING
A. Equipment and materials shall have standard manufacturer's finish except where otherwise noted.
1.18 WATERPROOFING
A. Provide necessary sleeves, caulking and flashing required to make openings waterproof.
1.19 FIREPROOFING
A. At closing of each working day, opening out between floors and through fire-rated partitions shall be provided with UL approved, Class A "Noncombustible", firestopping with ratings equal to that of adjacent construction.
1.20 BASES AND SUPPORTS
A. Provide necessary supports, pads, bases and piers for equipment.
1.21 ACCESS
A. Provide adequately sized access doors, for access to concealed equipment and components requiring servicing or inspection.
1.22 TESTS
A. Perform tests required by the Owner, legal authorities and agencies. Each piece of equipment, including motors and controls, shall be operated continuously for minimum one-hour test.

- 1.23 SYSTEMS OPERATION AND MAINTENANCE
A. Upon completion of the work and at a time designated by the Engineer, the Contractor shall furnish instruction manuals including data, warranties, etc., and shall instruct the Owner or his representative as to the arrangement, location and operation of all equipment and systems furnished and installed under the Electrical Contract.
PART 2 - PRODUCTS
2.1 WIRE CABLE AND RACEWAYS
A. Electrical Metallic Tubing (EMT) shall be used for feeders run above ground in dry areas.
B. Minimum sizes shall be as follows:
1. Conduit and EMT: 3/4" unless otherwise noted.
2. Flexible Metal Conduit: 1/2"
C. Type MC metal-clad cable may be used for branch wiring to light fixtures, receptacles and switches.
D. Flexible Metallic Conduit (FMC) or liquid-tight flexible metallic conduit (LFMC) shall be used for connections to vibrating equipment and furniture partitions.
E. Conductors shall be new copper with 600 Volt code grade insulation conforming to NEC requirements.
F. Common neutrals shall not be used for receptacle circuits, unless otherwise noted on plans.
G. All conduits and wiring shall be run concealed inside walls where possible.
H. All splices for #10 or smaller shall be made with "Scotchlok" spring connectors or equal.
2.2 GROUNDING AND BONDING
A. Equipment Grounds
1. Grounding shall be installed and tested in accordance with NFPA 70 (NEC) and to satisfaction of local electrical inspector and Architect.
2. Provide green THHN insulated copper equipment grounding conductor between the ground bus of the source distribution panel or switchboard and each load being served.
3. Maintain electrical continuity of raceways.
B. Ground Fault Protection
1. If excessive ground current flows, main breakers and/or circuit breakers with ground fault sensing shall trip to protect against arcing ground faults.
2. Provide ground fault circuit interrupter protection for receptacles located within six feet of sink or faucet and as required and indicated.
C. Materials
1. Above-grade and exposed connections shall be Bumpy or acceptable equivalent.
2. Wire shall be stranded bare copper or insulated copper, as indicated on Contract Drawings.
3. Bus shall be copper bar, as indicated on Contract Drawings.
4. Bushings and Pressure Lugs shall be by TAB, O.Z./Gedney or acceptable equivalent.
5. Pipe clamps shall be by O.Z./Gedney or acceptable equivalent.
2.3 PANELBOARDS
A. Panelboards shall be by Square D, General Electric, Cutler-Hammer or equal.
B. Panelboard shall have main bus and branches as scheduled.
C. Panelboards shall conform to standards of NEMA PB-1.
D. Panelboards shall have copper bussing.
E. Each cabinet shall have hinged locking metal door and card holder for directory.
F. Cover trims for panelboards shall be hinged to box with full height semi-concealed piano hinges and be fastened to box lip with screws.
G. Provide oversize gutters for gutter taps where wiring runs through to floor above.
2.4 SAFETY SWITCHES
A. Safety switches shall be fused, 600 VAC, heavy-duty type in NEMA enclosures suitable for the environment in which they shall be installed.
2.5 FUSES
A. Fuses for circuit protection shall be UL listed, non-renewable, low peak, dual-element, time delay fuses.
2.6 OUTLET AND JUNCTION BOXES
A. Switch and receptacle outlet boxes in partitions where wiring is concealed shall be standard 4 inches square, 1-1/2 inches deep, hot-dipped, galvanized steel.
B. Boxes shall be securely fastened to the building structure.
C. Junction boxes shall be sized in accordance with Code requirements.
D. Junction and outlet boxes where exposed to the weather and wet locations shall be threaded hub type and provided with watertight screw-on covers and gaskets.
2.7 SWITCHES, RECEPTACLES AND PLATES
A. Switches and receptacles shall be as manufactured by Hubbell, Arrow-Hart, Leviton or Pass and Seymour and equivalent to the following specification grades, with color matching Building Standard:
1. Single-pole switches shall be Hubbell #1221.
2. 3-way switches shall be Hubbell #1223.
3. Momentary contact switches shall be single-pole, double-throw equivalent to Hubbell #1557.
4. Duplex grounding type receptacles shall be 20 Ampere Hubbell #5362.
5. Isolated ground type receptacles shall be 20 Ampere Hubbell #G5362.
6. Ground fault type receptacles shall be Hubbell #GF-5362 feed-through receptacles.
B. Wall mounted occupancy sensor switches shall be Watt-Stopper WS-250 or equal by Sensor Switch, Hubbell or Philips, passive infrared technology line voltage wallbox type rated to control up to 600 Watts at 277 VAC.
C. Ceiling mounted occupancy sensors to be mounted in corners of rooms.
D. Ceiling mounted occupancy sensors in open areas to be mounted in center of area.
E. Provide Watt-Stopper Power Pack BZ-150 or equal by Sensor Switch, Hubbell or Philips to control lights and HVAC as noted.
F. Provide wall plates equal to building standard on all switches and receptacles.
G. Where there are multiple devices in one location, devices shall be ganged under one cover plate.
H. Receptacles shall be mounted 18 inches above finished floor with U ground up unless otherwise indicated.
I. Wall switches shall be mounted 48 inches above finished floor, on strike side of door, unless otherwise indicated.

- 2.8 POKE-THRU DEVICES - CONFERENCE ROOM
A. Provide Wiremold "poke-thru" floor device for power, data and AV requirements.
2.9 LIGHTING FIXTURES
A. The Contractor shall furnish and install all lighting equipment as shown on the Drawings and specified on Drawings complete with lamps ready for operation.
B. All existing lighting fixtures to remain in the construction area shall be re-lamped with new lamps to match building standard for type and color and clean all reflecting surfaces, diffusers and louvers.
C. Any new 2' x 2' or 2' x 4' parabolic fixtures shall match existing fixtures.
D. All lamps for new fluorescent fixtures shall be T-8 type, 3500 degree K color unless otherwise indicated.
E. Ballasts for fluorescent fixtures shall be electronic high power factor, CBM/ETL certified with an "A" sound rating.
F. Fluorescent ballasts shall be approved for local Utility Rebate Program and be in conformance with the latest Utility Ballast Eligibility List.
G. Ballasts operating at 120 V shall have less than 10 percent Total Harmonic Distortion (THD).
H. Ballast shall produce normal rated life for lamps specified.
I. Unless otherwise noted, fluorescent ballast for interior applications shall be electronic, high frequency, full light output type with a minimum 50 degree F starting temperature.
J. Ballasts for compact fluorescent lamps (PL, DTT, TT or BIAK), shall be Class P with "A" noise rating, high power factor.
K. Existing fixtures in the space shall be reused where noted on the Drawings.
L. Fixtures not noted as being reused will be turned over to the Building Owner, or disposed of per the Owner's direction during construction.
M. Installation of Lighting Fixtures:
1. Fixtures shall be securely attached to the building structure by mechanical means and by safety wire.
2. Install seismically rated clips to secure recessed grid-supported luminaires in place.
2.10 FIRE ALARM
A. Fire alarm components shall be compatible with existing building system.
1. Combination fire speaker/strobe units shall be multi-tap speaker, initially set appropriate tap to provide proper sound levels and synchronized visual unit with appropriate module adapter mounted on common mounting plate.
2. Contractor shall install cable in a class A configuration or "building standard".
B. All wiring to match building's existing fire alarm wire.
2.11 CIRCUIT BREAKERS
A. All new circuit breakers shall match existing in style, manufacturer and interrupting rating for panel in which they are being installed, unless noted otherwise.
PART 3 - EXECUTION
3.1 GENERAL
A. The Electrical Contractor shall ensure that no piping, ductwork, leak protection apparatus or other equipment foreign to the electrical trade passes through the space equal to the width and depth of the electrical distribution equipment and extending from the floor to the structural ceiling.
3.2 LOAD BALANCE
A. The Electrical Contractor shall balance the loads on the three phases in the electrical panelboard in which he does work insofar as physically possible, and report each panel loading to the Engineer.
3.3 GENERAL WIRING TESTS
A. At the time of final inspection and test, all wiring and connections throughout the renovation areas must be completed, devices and equipment properly operating, lighting fixtures installed, and power and lighting circuit and control wiring clearly identified with approved tags ready for acceptance.
B. Insulation resistance for low voltage cables and wiring shall be performed at 1000 Volt D.C. for one (1) minute.
3.4 GROUNDING SYSTEM TESTS
A. Ground Fault Circuit Interruption shall be tested after installation by random connection of plug-in tester to various protected receptacles, as directed by Architect.
3.5 OPERATIONAL TESTS
A. Each piece of electrical equipment, including lighting fixtures, motors and controls shall be operated continuously for minimum test period of one hour.
B. Demonstrate by operating equipment that circuits and devices are in good operating condition.
3.6 FIRE ALARM SYSTEM INSTALLATION AND TESTING
A. Fire alarm wiring shall be run in EMT or "building standard"; devices shall be securely affixed to building surfaces.
B. Junction boxes, pull boxes, outlet boxes and covers in the fire alarm trouble system shall be painted red.
C. Test every device and operation, including test by simulation of trouble, in presence of the Owner and the Architect.
D. The system as described shall be installed, tested and delivered to the Owner in fully operational and first-class condition.
3.7 LABELING
A. Label all new disconnects, starters, motors, furniture feeder boxes, in a manner acceptable to the Architect.
B. All manufacturer's nameplates shall be kept clean and free of paint.
C. Data/communications wiring done under this Contract shall be recorded on cable management drawings.
D. Provide printed, colored, adhesive labels for all electrical equipment, such as but not limited to panelboards, disconnect switches, etc.
END OF SECTION



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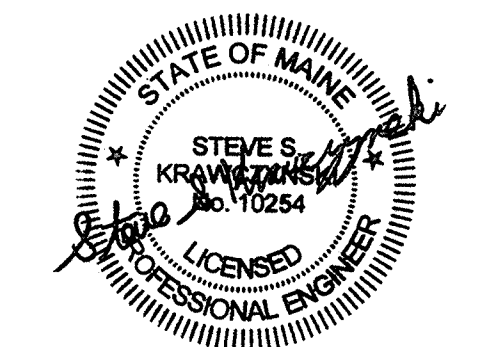
ARCHITECT/OWNER: INTERIOR DESIGN - FACILITIES PLANNING

Consultants



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ELECTRICAL SPECIFICATIONS

Table with 2 columns: Revisions, and Owner's Review Comments/ Issue for Bid 5/28/16. Includes a grid for tracking revisions.

Table with 2 columns: Date (8/23/16), Scale (NO SCALE), Project Number (16023), Drawn By (EAC).

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