

## SECTION 16010 GENERAL ELECTRICAL REQUIREMENTS

### PART 1 - GENERAL

#### 1.01 SCOPE

- A. The requirements of the General Conditions and modifications thereto written for this project and Division 1 apply to work performed under Division 16.
- B. The requirements of this Section of the Specifications apply to and form a part of the individual mechanical sections of the Specifications.
- C. Related Work In Other Sections:
  - 1. Division 1 - GENERAL REQUIREMENTS
  - 2. Division 3 - CONCRETE
  - 3. Division 8 - DOORS AND WINDOWS
  - 4. Section 09900 - PAINTING
  - 5. Division 15 - MECHANICAL
- D. Provide labor, materials, tools, equipment and services necessary for and incidental to the furnishing and installation of electrical work, and related systems for the building as indicated on the Drawings, specified or required to make a finished installation ready for continuous and satisfactory service. The work shall include, but not be limited to the following:
  - 1. Complete wiring system, including branch circuits and panelboards for lighting, power, receptacles and other special connections
  - 2. Internal and external lighting fixtures, switches, receptacles, pull boxes, outlets, conduit, wiring, lamps and tubes
  - 3. Conduits with Pull Wires for Incoming Telephone Service
  - 4. Telephone Raceway System
  - 5. Grounding System
  - 6. Raceway System for Electronic Point of Sales (EPOS)
  - 7. Raceway System for Information System (IS)
  - 8. Equipment connections for heating, ventilating and cooling system
  - 9. Equipment connections for bakery, meat prep, food court, and kitchen equipment and other miscellaneous equipment specified under other Sections of the Specifications
- E. Become familiar with the Architectural, Structural and Mechanical Specifications and Drawings as well as the Electrical Specifications and Drawings. Arrange the Work accordingly.

#### 1.02 NATIONAL ACCOUNTS AGREEMENTS

- A. Owner has a National Accounts Agreement with GE Supply Company in Worcester, Massachusetts and the local office of Holophane Company, Inc. in Westwood, Massachusetts to supply the Type A and Type W fixtures. This is a sole source supplier. Contact Bernard (Bernie) R. Lizotte (508) 754-2134 or (800) 757-2787 or by e-mail at: [Bernard.lizotte@supply.ge.com](mailto:Bernard.lizotte@supply.ge.com).

- B. Unless otherwise indicated, the balance of the power distribution equipment throughout the facility shall be manufactured by General Electric Company.

### 1.03 DEFINITIONS

- A. Following are definitions of terms and expressions used in the Electrical Sections in addition to definitions found in the Contract Conditions:
  - 1. "Owner" means the BJ's Wholesale Club, Inc.
  - 2. "Concealed" means items referred to are hidden from normal sight. This includes items in partly excavated or crawlspaces and in service tunnels used solely for repairs and maintenance.
  - 3. "Exposed" means items are not "concealed".
  - 4. "Wiring" includes wire, fittings, conduit, boxes and other accessories that comprise a system.
  - 5. "Or equal" or "equivalent by" or "acceptable alternates" means a product, material or system with the same general attributes as item specified and meeting the requirements of the Contract Documents, etc. These items must be submitted to the Architect for review.
  - 6. "Provide" means to furnish and install complete.

### 1.04 REGULATORY REQUIREMENTS

- A. Work shall conform to the requirements of the codes, laws and ordinances of the State of New Jersey, and other authorities having jurisdiction.
- B. Perform work required to assure that the requirements of the practices, codes, laws and ordinances set forth will be complied with, whether or not such work is specifically shown on the Drawings or called for in the Specifications.
- C. Work in this Division shall conform to the requirements of the editions of the following codes, regulations and standards in effect on the date of these Specifications:
  - 1. Codes, Rules and Regulations of the State of New York.
  - 2. National Electric Code (NEC)
  - 3. National Fire Protection Assoc. - Life Safety (NFPA 101)
  - 4. National Electrical Manufacturing Association (NEMA)
  - 5. O.S.H.A. ( and/or M.O.S.A. )
  - 6. Underwriter's Laboratories (UL)
  - 7. Institute of Electrical and Electronic Engineers (IEEE)
  - 8. American National Standards Institute (ANSI)
  - 9. Insulated Power Cable Engineers Association (IPCEA)
  - 10. Association of Edison Illuminating Companies (AEIC)
  - 11. International Electrical Testing Association (NETA)
  - 12. National Institute for Certification in Engineering Technologies (NICET)
  - 13. Other applicable codes

The requirements of the authorities having jurisdiction shall take precedence over the Drawings and Specifications. Changes required by the authorities shall be made after review

by the Architect.

#### 1.05 REVIEW OF MATERIALS/SHOP DRAWINGS/SUBMITTALS

- A. Prior to actual equipment being submitted, submit a preliminary "List of Materials". The list shall state the proposed materials and equipment being used, the manufacturer's name and, if possible, the grade, trade name (s) and catalog numbers.
- B. After satisfactory review, submit the formal submittal. The submittal shall be bound in booklet form. It shall include "Index" sheet listing manufacturers and complete catalog numbers. The submittal shall include manufacturer's product and data sheet, one per each item listed on "Index". Data shall consist of construction details, operating characteristics, performance information, and specifications, necessary for complete evaluation of compliance with Contract Documents.
- C. Shop drawings shall be provided for the following equipment:
  - Lighting Fixtures
  - Panelboards/Transformers/Safety Switches/Contactors
  - Devices/Coverplates

#### 1.06 DRAWINGS

- A. The Drawings showing the layout of the electrical systems indicate the approximate location of outlets, apparatus and equipment. The runs of feeders and branch circuits as shown on the drawing are schematic only and are not intended to show the exact routing and location of conduits. The final determination of routing, location and termination shall be governed by structural conditions, obstructions and connection locations on equipment. Detailed drawings showing major deviations due to any cause shall be submitted to the Architect for acceptance and changes shall be made.
- B. Take responsibility for the proper fitting of materials and equipment in locations as indicated, without substantial alteration. Inasmuch as the Drawings are generally diagrammatic and because of the small scale of the drawings, it is not possible to indicate offsets, fittings and accessories that may be required. Carefully investigate the structural and finish conditions affecting the work and arrange such work accordingly, furnishing such fittings and accessories as may be required to meet such conditions.
- C. The Architect and the Owner reserves the right of a reasonable amount of shifting of outlet locations at no additional cost to the Owner until the time of roughing-in the work.

#### 1.07 WORKMANSHIP

- A. Work shall be constructed and furnished in every part in a first class, substantial and workmanlike manner, according to the intent and meaning of the drawings and specifications.

## PART 2 - PRODUCTS

### 2.01 ROOF SUPPORTS AND CURBS

- A. Equipment supports shall be constructed of 18 gauge galvanized steel with base plate, raised cant, wood nailer strip and galvanized steel counter flashing. Equipment supports shall be Pate Company ES-5a or Thy Curb TEMS-1.
- B. Where conduits penetrate the roof to feed equipment specified under Division 15, route the conduits through pipe curbs provided under Division 15 or inside the roof curb provided under Division 15.

### 2.02 HANGERS AND CONDUIT SUPPORTS

- A. Provide conduit hangers and supports to maintain required alignment for equipment and conduits.
- B. Conduits may not be supported from other conduits. Trapeze hangers may be used for parallel runs of conduit.
- C. Provide supports for equipment and materials under these Specifications. Supports shall be structural steel shapes (angles, channels) of Kindorf and Unistrut. Minimum rod size shall be 3/8 inch.
- D. For steel bar joist construction, hanger rods shall be supported from the top chord of the joists or from panel points of the lower chord of the joists. Where piping runs parallel to joists or where hangers are required at other than joist locations, provide steel angles welded to joists to support hangers so that weight is supported from the top chord of the joists.
- E. Expansion bolts or wood plugs will not be permitted in slag block walls. Equipment hung on such walls shall be supported by through bolts or approved anchor bolts set into masonry as the wall is laid up.

### 2.03 OPENINGS, CHASES AND SLEEVES

- A. Determine the location and size of chases and openings necessary for the proper installation of the work and provide them during the erection of the work in which such chases and openings occur.
- B. Provide sleeves through walls and floors for conduit. Sleeves through walls shall be flush with the walls.
- C. In case cutting of existing or new building construction is necessary, including cutting of structural members, such cutting shall be done in accordance with Section 01045 - Cutting and Patching, and repaired to match original condition of the work.
- D. Where non-combustible conduits pass through sleeves or openings in fire rated wall, floor-ceiling and ceiling-roof assemblies, seal openings with a Underwriters Laboratories classified firestop method. Firestop method shall be a one part, intumescent (expands with heat), latex

elastomer capable of expanding a minimum of three times. Firestop materials shall be UL listed when tested in accordance with ASTM E814 for a two hour fire (F) and temperature (T) rating.

- E. If combustible conduit materials are used, a UL listed firestop method shall be provided where the combustible materials penetrate fire rated wall, floor-ceiling and ceiling-roof assemblies. Firestop method shall be classified by UL as a through-penetration firestop device when tested in accordance with ASTM E814 for a two hour fire (F) and temperature (T) rating. Plastic conduit materials, including, but not limited to PVC, CPVC and ABS, are combustible. Firestop method shall be similar to 3M system employing a metal collar with an intumescent (expands with heat) wrap strip material (3M FS-195). Installation shall be in compliance with manufacturer's installation instructions.

#### 2.04 VIBRATION ISOLATION

- A. Provide vibration isolators manufactured by a firm specializing in this type of work for equipment and piping that is capable of transmitting noise and vibration to the building structure.
- B. Isolators shall be designed to suit vibration frequency to be absorbed. Provide isolator units of area and distribution to obtain proper resiliency under machinery load and impact. Where unequal distribution of weight occurs, design isolators for uniform deflection under imposed load.

#### 2.05 ACCESS PANELS

- A. In general, junction boxes, pull boxes, disconnects, motor starters, duct detectors, flow switches and equipment shall be accessible through the removable panels in the ceiling. Where ceilings are not removable and in walls where access is required for service, access panels shall be provided. Access panels shall be per Section 08305 - Access Panels.
- B. Group junction boxes, pull boxes, disconnects, motor starters, duct detectors, flow switches and equipment together to keep the required number of access panels to a minimum.

#### 2.06 IDENTIFICATION

- A. Equipment shall be identified with engraved plastic laminate or anodized aluminum nameplates with pressure sensitive backing. Plates shall also be provided with drilled holes and fastened to equipment with moly-rivets. Letters shall be at least 3/8 inch high and larger in proportion to the size of the piece of equipment. Identification shall be the same as noted on schedules on the Drawings. Labels shall be provided for the following equipment. Equipment in finished areas shall have plates mounted on inside of door; otherwise plates shall be mounted on front of equipment.
  - 1. Motor starting and control switches
  - 2. Disconnects
  - 3. Starters
  - 4. Cabinets
  - 5. Panelboards

6. Transformers
  7. Pushbuttons
  8. Selector Switches
  9. Remote Controls
- B. Junction boxes and pull boxes, except those located at the fixture or equipment to which system is connected, shall be identified with permanent marker in large legible lettering to indicate system and circuiting on which installed.
- C. Panels shall be provided with a typed directory listing circuits and associated breaker numbers.

## PART 3 - EXECUTION

### 3.01 PRODUCTS TO BE USED

- A. Items are specified by designations such as trade name, manufacturer's name, catalog number as well as capacities and quality of the products and materials to be used on this project.
- B. Only products indicated on the Construction Documents by name and model number have been coordinated with the trades. When selecting the "alternate" or "acceptable equal" manufacturers, they shall be coordinated throughout with the other trades.

### 3.02 GROUNDING

- A. Grounds and connections shall be provided in accordance with the latest provisions of the National Electrical Code, and as indicated on the Drawings and specified, herein.
- B.
- C. The system neutral ground and the equipment ground system shall be connected to the common ground bus at the main disconnecting device. Service ground shall be extended to the main cold water pipe and the ground field as indicated on the Drawings. Also provide a continuous ground conductor around the walls of the transformer vault tied into the ground field.
- D. The required equipment grounding conductors and straps shall be sized in compliance with N.E.C. Table 250-122. Equipment grounding conductors shall be provided with green insulation equivalent to the insulation on the associated phase conductors. The related feeder and the branch circuit grounding conductors shall be connected to the grounding bus with approved pressure connectors. Bond the hot water system to the ground system in accordance with the National Electrical Code.
- E. The low voltage distribution system shall be provided with a separate green insulated equipment grounding conductor for each 480 and 208 volt three phase feeder, each three phase branch circuit and each single phase branch circuit. The required grounding conductor shall be installed in the common raceway with the related phase and/or neutral conductors. When the raceway for branch circuits is EMT or metal surface raceway, a ground wire shall be installed in the raceway. When the branch circuit raceway is rigid threaded conduit, the

raceway shall serve as the grounding path. Flexible metallic conduit equipment connections utilized in conjunction with the above shall be provided with suitable green insulated grounding conductors connected to approved grounding terminals at ends of the flexible conduit.

3.03 MOUNTING HEIGHTS

- A. The mounting heights of the electrical outlets shall be as follows:
 

Switches	4'-0" to center of outlet box above floor.
Receptacles	1'-6" to center of outlet box above floor (unless otherwise noted).
Fire Alarm Stations	4'-0" to center of outlet box above floor.
Fire Alarm Signaling	per ADA, 80" (minimum) to 96" (maximum) above floor to visual device or 6" below ceiling to visual devices (whichever is lower), unless otherwise noted. Mount visual device below audible device.
Telephone Outlets	1'-6" to center of outlet box above floor (unless otherwise noted).
Exit Signs	1'-6" to center of sign above top of door. Exit lights in sales area shall be chain hung at 12'-0" above finished floor.
Panel boards for lighting, power, telephone and other auxiliary systems.	6' above floor to top of panel.
Disconnect switches, service switches and individually mounted starters and contactors.	5' above floor to centerline of operating handle.
  
- B. Coordinate the final location of outlets with respect to proximity of architectural casework, shelving, chalkboards, and tackboard and avoid conflicts in location prior to rough-in. Relocate outlets in conflict with the above items where they are indicated on the Contract Documents.

3.04 RECORD DRAWINGS

- A. Keep at the site two (2) sets of blue-lines and/or black and white prints for the express purpose of showing changes from the Contract Drawings made during construction. Mark up the prints with red pencil during construction and deliver the prints, before final inspection, to the Architect as a final set of "As-Built" Drawings.
- B. Take particular care to locate by dimensions from the building walls, floor or ceiling, the location and elevations of piping and other work in accessible locations inside and outside of the building. (See also General conditions.)
- C. The Architect and/or the Owner reserves the right to withhold final payment until Record Drawings are received by the Architect.

### 3.05 OPERATING AND MAINTENANCE MANUAL

- A. Furnish Operating and Maintenance (O & M) manual(s) containing a brief description of lighting fixtures, electrical distribution, fire alarm, sound system, etc., and its components. Manual shall be in black, three ring binders, An index shall be incorporated and systems shall be separated by tabs. In addition to the system descriptions, incorporate in the manual, definite and explicit instructions for starting stopping controlling. This description shall be submitted in draft form to the Architect for his review and comments before final draft form is bound into the manual. Quantities of manuals shall be determined by the Architect (Provide a minimum of three). In addition each manual shall contain the following:
  - 1. Manufacturer's printed operating and maintenance instructions, parts lists, illustrations and diagrams of equipment.
  - 2. Complete schedule of periodic servicing and lubrication requirements for equipment.
  - 3. Manufacturer's data report from U.L. certifying code compliance for equipment specified.
- B. Place these instructions in the Architect's hands at least thirty (30) days prior to date it is expected system will be turned over to the Owner. The manuals shall be submitted for approval by the Architect prior to the submission to the Owner.

### 3.06 PLACING IN SERVICE

- A. At the completion of the work a test shall be made in the presence of the Architect, or his representative, and with the Owner that the equipment, machinery and appliances are in operation and the electrical system is proven satisfactory for operation and free from defects.
- B. After the building is in operation by the Owner, provide continuously recorded voltmeter and ammeter readings for a period of one week at such feeder and service points as directed by the Architect and the Owner.
- C. Gather in one place and at one time loose equipment, keys, record drawings, etc., which shall be turned over to the Owner. Items shall be listed on a typed sheet of paper ready to be signed by an authorized representative of the Owner.
- D. Provide compliance and test reports in triplicate to the Architect. These shall include, but not be limited to:
  - 1. Certificate of approval from local authority having jurisdiction.
  - 2. Infrared thermometric survey by a NETA Certified Testing Agency verifying satisfactory mechanical connections of all equipment/devices associated with the facility's power distribution system, i.e. panelboards (mains, main breakers, branch breakers, etc.), transformers, disconnects, automatic transfer switches, etc.

### 3.07 FACILITY'S GRAND OPENING

- A. For the first two (2) days of the facility's Grand Opening, an Electrician shall be at the site, from 7:00am to the closing, prepared to help resolve any electrical problem that may arise.



END OF SECTION