

ELECTRICAL SPECIFICATION

INTRODUCTION

THE CONTRACTOR FOR INSTALLATION OF THE ELECTRICAL SYSTEM WILL BE ACCOMPLISHED IN THE FIELD AT THE DIVISION LEVEL. THESE SPECIFICATIONS ARE TO AID IN PREPARATION OF DIVISION LEVEL STORE PLANS AND CONTRACT DOCUMENTS. IN CASE OF A CONFLICT BETWEEN THIS SPECIFICATION AND THE CONTRACT DOCUMENTS PROVIDED BY THE DIVISION CONSTRUCTION MANAGER, THE DIVISION'S PLANS AND SPECIFICATIONS SHALL PREVAIL.

DEFINITIONS

THE FOLLOWING DEFINITIONS APPLY TO THIS PROJECT.

FURNISH - TO SUPPLY THE MATERIAL NECESSARY TO PERFORM THE TASK.

INSTALL - TO SUPPLY THE LABOR NECESSARY TO COMPLETE THE TASK.

PROVIDE - TO FURNISH AND INSTALL MATERIAL AND LABOR TO COMPLETE THE TASK.

1. SCOPE

- 1.1 E.C. TO PROVIDE ALL LABOR, MATERIALS AND EQUIPMENT (U.N.O.) REQUIRED TO EXECUTE WORK PER NEC AND ALL APPLICABLE ELECTRICAL CODES IN FORCE AT THE TIME OF PROJECT COMPLETION.
1.2 THIS WORK INCLUDES, BUT IS NOT LIMITED TO, ELECTRICAL SERVICE AND DISTRIBUTION SYSTEMS, PANELBOARDS, DISCONNECT SWITCHES, LIGHTING FIXTURES, POWER AND CONTROL WIRING WITH FINAL CONNECTIONS TO ALL EQUIPMENT REQUIRED FOR A COMPLETE SYSTEM.
1.3 E.C. TO VERIFY TYPE OF POWER SERVICE AVAILABLE (UNDERGROUND OR OVERHEAD) AND MAXIMUM SHORT CIRCUIT CURRENT PRIOR TO SUBMITTING A PROPOSAL.
1.4 E.C. TO VERIFY TYPE OF TELEPHONE SERVICE AVAILABLE (UNDERGROUND OR OVERHEAD) PRIOR TO SUBMITTING A PROPOSAL.
1.5 E.C. TO VERIFY METERING, IN ACCORDANCE WITH LOCAL ELECTRIC UTILITY COMPANY REQUIREMENTS, FOR GENERAL SERVICE SCHEDULE.
1.6 E.C. SHALL INSTALL 3-PHASE 4-WIRE 120/208V WYE SERVICE. IF FOR ANY REASON, THIS IS NOT AVAILABLE, THE E.C. SHALL NOTIFY 7-ELEVEN, IN WRITING PRIOR TO SUBMITTING OF PROPOSAL (U.N.O.).
1.7 E.C. TO PROVIDE PANELBOARD NAMEPLATES, PROVIDE LAMINATED PLASTIC NAMEPLATES WITH 3/4 INCH MINIMUM CONTRASTING-COLOR ENGRAVED LETTERS IDENTIFYING EACH PANELBOARD.

2. INSTALLATION

- 2.1 THE INSTALLATION SHALL COMPLY WITH ALL LAWS IN EFFECT AT THE TIME OF CONSTRUCTION APPLYING TO ELECTRICAL INSTALLATION AND WITH THE REGULATIONS OF THE NEC, WHERE SUCH REGULATIONS DO NOT CONFLICT WITH THE LAWS IN EFFECT, AND WITH THE PUBLIC UTILITY COMPANY FURNISHING THE SERVICE.
2.1.1 THE E.C. SHALL UPGRADE THESE SPECIFICATIONS AS REQUIRED TO MEET COMPLIANCE WITH ALL APPLICABLE CODES IN EFFECT, HOWEVER, WHERE THESE SPECIFICATIONS MAKE STIPULATIONS OVER AND ABOVE THE MINIMUM REQUIREMENTS OF APPLICABLE CODES, THE CONTRACTOR SHALL NOT DOWNGRADE THESE SPECIFICATIONS TO MINIMUM CODE REQUIREMENTS WITHOUT PRIOR WRITTEN APPROVAL FROM 7-ELEVEN.
2.2 E.C. SHALL PROVIDE ALL REQUIRED ELECTRICAL CONDUIT AND WIRING FOR ALL MOTORS, MOTOR STARTERS AND ELECTRICAL CONTROLS, U.N.O. E.C. SHALL MAKE ALL LINE VOLTAGE ELECTRICAL CONNECTIONS AS REQUIRED FOR HVAC SYSTEMS.
2.3 E.C. SHALL INSTALL THE CONNECTIONS TO ALL RECEPTACLES, SALES COUNTERS, GONDOLAS AND FINAL CONNECTIONS TO ALL FIXTURES AFTER FIXTURES ARE IN PLACE.
2.4 E.C. SHALL VERIFY EXACT LOCATION OF ALL SIGNS WITH 7-ELEVEN REPRESENTATIVE. PROVIDE ALL CONDUITS AND WIRES WITH STUB-UPS AS DIRECTED BY THE 7-ELEVEN CORPORATION AND INSTALL FINAL CONNECTIONS AS REQUIRED.

3. MATERIALS

- 3.1 LIGHT FIXTURES: PER SCHEDULE ON ELECTRICAL PLAN.
3.2 RACEWAYS: CONDUIT SHALL BE EITHER RIGID STEEL OR ELECTRICAL METALLIC TUBING (EMT). FOR IN SLAB AND UNDERGROUND INSTALLATIONS, PVC OR RIGID STEEL SHALL BE USED. REFER TO FUELING SHEETS FOR APPLICABLE FUELING SYSTEM CONDUIT. INSTALL PER NEC.
FITTINGS AND BUSHINGS ALL REQUIRED BENDS, FITTINGS, JUNCTION BOXES, ETC., WHETHER OR NOT THEY ARE SHOWN ON THE DRAWINGS, SHALL BE INSTALLED TO SATISFY ALL APPLICABLE ELECTRICAL CODES AND STANDARDS OF GOOD PRACTICE. ALL CONDUCTORS ENTERING/LEAVING A CONDUIT OR RACEWAY SHALL BE AFFORDED PROTECTION BY AN ADEQUATE BUSHING OR OTHER APPROVED MEANS.
3.4 JUNCTION BOXES: SHALL BE STANDARD, STAMPED GALVANIZED STEEL BOXES; "J"-BOXES AND OUTLET BOXES USED AS A PULL BOX SHALL BE PROVIDED WITH A SUITABLE COVER OF SAME MATERIAL AS BOX.
3.5 WIRING DEVICES:
INSTALL ON EACH AND EVERY OUTLET BOX, A WIRING DEVICE AND/OR COVERPLATE, ALL AS INDICATED BY SYMBOL ON THE DRAWINGS.
3.5.1 WALL SWITCHES:

3.5.1 SINGLE POLE SWITCHES:

SINGLE POLE WALL SWITCHES SHALL BE SIMILAR AND EQUIVALENT TO "LEVITON" #C5120-2W 20A, 120-277VAC TOGGLE SWITCH (WHITE) WITH COVERPLATE FOR SINGLE GANG OR (WHITE) COVERPLATE FOR DOUBLE GANG.

3.5.2 3-WAY SWITCHES:

3-WAY SWITCHES SHALL BE SIMILAR AND EQUIVALENT TO "BRYANT" #45031-20A, 120-277VAC 3-WAY SWITCH (WHITE HANDLE) AND (WHITE) COVERPLATE FOR SINGLE GANG OR (WHITE) COVERPLATE FOR DOUBLE GANG.

3.5.1.3 SINGLE THROW, DOUBLE POLE EVAPORATOR SWITCH

SINGLE THROW, DOUBLE POLE SWITCHES SHALL BE SIMILAR AND EQUIVALENT TO "BRYANT" #30322D 120-600VAC NEMA 3R ENCLOSED AC MANUAL MOTOR CONTROLLER/DISCONNECT.

3.5.2 NOT USED

3.5.3 CONVENIENCE OUTLET (20A):

20A CONVENIENCE OUTLETS SHALL BE SIMILAR AND EQUIVALENT TO "LEVITON" #CR20-W 2 POLE, 3 WIRE, 20 A 125V, DUPLEX GROUNDING RECEPTACLE WITH (WHITE) COVERPLATE SIMILAR AND EQUIVALENT TO "LEVITON" #89003 FOR SINGLE DUPLEX OR "LEVITON" #89016 FOR DOUBLE DUPLEX (QUAD).

3.5.4 OUTLET, ISOLATED GROUND (20A):

ISOLATED GROUND OUTLETS SHALL BE SIMILAR AND EQUIVALENT TO "LEVITON" #5362-IG 2 POLE, 3 WIRE, 20A, 125V, SINGLE, ISOLATED GROUND RECEPTACLE (ORANGE) WITH (WHITE) COVERPLATE.

3.5.5 GFCI CONVENIENCE OUTLETS (INDOOR & OUTDOOR):

OUTDOOR GFCI OUTLETS SHALL BE WEATHER RESISTANT (WR) LABELED, EQUIVALENT TO THE "LEVITON" #WR899-W, 20A OUTLET WITH OUTDOOR COVERPLATE #4500B AND BACK PLATE #93101. INDOOR GFCI OUTLETS SHALL BE EQUIVALENT TO "LEVITON" #7599-W, 20A WITH (WHITE) COVERPLATE.

3.5.6 NOT USED

3.5.7 SAFETY SWITCHES:

SAFETY SWITCHES SHALL BE UL APPROVED GENERAL DUTY SAFETY SWITCHES WITH LOCK OFF HANDLES SIMILAR AND EQUIVALENT TO THOSE MANUFACTURED BY "SQUARE-D". SWITCHES WILL BE FUSIBLE OR NON-FUSIBLE AS INDICATED ON PLANS/LOCAL CODES AND WILL BE NEMA TYPE 1 FOR INDOOR (DRY) INSTALLATION OR A NEMA TYPE 3R ENCLOSURE FOR OUTDOOR INSTALLATION. FUSED SWITCHES SHALL HAVE REJECTION STYLE FUSE HOLDERS TO MATCH LPN-RK CLASS RK1 FUSES.

3.5.8 NOT USED

3.5.9 PHOTO CELL (OUTDOOR):

ELECTRONIC LIGHT SENSOR SHALL BE THE TORK EPC-1, ENCLOSED IN A LEXAN HOUSING WITH A 1/2" CONDUIT MOUNTING AND 180 DEGREE SWIVEL. INSTALL IN A WEATHER TIGHT JUNCTION BOX ON THE ROOF PER MANUFACTURER'S RECOMMENDATIONS. SET SENSOR TO 100 FOOT-CANDLE LEVEL.

3.5.9.1 LIGHTING CONTROLLER (OUTDOOR LIGHTING CONTROL):

THE LIGHTING CONTROLLER SHALL BE THE TORK LC-200, NEMA 1 ENCLOSURE. THE LC-200 IS USED IN CONJUNCTION WITH THE TORK EPC-1 PHOTOCELL. EACH CONTROLLER HAS A 2 TO 100 FOOT-CANDLE LIGHT ADJUSTMENT.

3.5.10 CONTACTOR (OUTDOOR LIGHTING CONTROL):

THE LIGHTING CONTACTORS FOR USE WITH OUTDOOR PHOTO CELLS SHALL BE SIMILAR AND EQUIVALENT TO "SQUARE-D" ELECTRICALLY HELPER LIGHTING CONTACTOR CLASS 8903 TYPE LG-80 FORM F WITH 120V CONTACTS. NORMALLY OPEN CONTACTS RATED AT 30 AMPS CONTINUOUS DUTY. TYPE 1 HOUSING WITH FUSED CONTROL CIRCUIT. REF LIGHTING CONTACTOR MANUAL.

3.5.11 PHOTO CELL BYPASS SWITCH

THE PHOTOCELL BYPASS SWITCH SHALL BE A "SQUARE-D" #4801-L SINGLE POLE LOCK TYPE 15A 125V CIRCUIT SWITCH WITH KEY #6006 AND (WHITE) COVERPLATE (WHITE).

NO SUBSTITUTIONS SHALL BE PERMITTED UNLESS THE E.C. CAN PROVE TO THE 7-ELEVEN CORPORATION REPRESENTATIVE THAT THE PROPOSED SUBSTITUTE WILL OPERATE WITH "BRYANT" KEY #6006. THE SWITCH SHALL BE TURNED OVER TO THE 7-ELEVEN CORPORATION REPRESENTATIVE ACCEPTANCE (NOT LEFT IN SWITCH, CASH REGISTER, ETC.).

3.5.12 HEAT TRACE: FREEZER PIPE FREEZE PROTECTION (WHEN REQUIRED):

HEATING CABLE: FURNISH RAYCHEM 5XL1-CR WITH RAYCLIC-PC ELECTRICAL CONNECTION. XL TRACE BY TYCO THERMAL CONTROLS, LLC. FOR EXTRA INFORMATION CONCERNING HEAT TRACE SYSTEM CONTACT DAN PETERSEN WITH INDUSTRIAL HEATER (901-382-4761).

CIRCUIT BREAKER: PROVIDE SQUARE 'D' Q0120EPD OR EQUIVALENT GFCI CIRCUIT BREAKER WITH 30mA TRIP.

NOTE: MECHANICAL CONTRACTOR TO INSTALL SELF REGULATING HEATING CABLE PER MANUFACTURER'S REQUIREMENTS ON CONDENSATE DRAIN LINES INSIDE FREEZER BOXES THAT ARE TO OPERATE AT OR BELOW 32 DEGREES F.

3.6 SERVICE DISTRIBUTION EQUIPMENT:

PANEL AND DISTRIBUTION PANEL SHALL BE SQUARE 'D'. ALL SWITCH GEAR TO BE FURNISHED FROM GRAYBAR, U.N.O. FOR PRICING AND PLACING ORDERS. CONTACT 7-ELEVEN FOR THE APPROPRIATE SALES DEPARTMENT.

3.6.1 MAIN POWER SWITCHES

THE MAIN PANEL POWER SWITCHES/CIRCUIT BREAKERS SHALL BE SQUARE 'D' TYPE I LINE, RATED AT 65,000 A.I.C. (MIN.) SWITCHES OR CIRCUIT BREAKERS SHALL BE LISTED AS INDICATED ON PLANS.

NOTE: PANEL RATINGS REQUIRED FOR HIGHER AIC REQUIREMENTS SHALL BE PRESENTED TO THE DISTRIBUTOR FOR MODIFICATIONS TO THE GEAR SUBMITTAL.

3.6.2 PANELBOARDS:

SQUARE 'D' PANELBOARDS USED IN SERIES WITH I-LINE CIRCUIT BREAKERS AND FITTED WITH SQUARE 'D' BRANCH CIRCUIT BREAKERS ARE AS INDICATED ON PLANS. USE AN APPROPRIATE SQUARE 'D' CIRCUIT BREAKER WITH EACH PANEL. CIRCUIT BREAKERS SHALL BE TYPE Q0XXX-"OO"-FRAME

3.6.2.1 PANEL 'F', IF REQUIRED, SHALL BE FED BY A SQUARE 'D' NO. 8903SG2V02 CONTACTOR AND SHALL BE WIRED FOR EMERGENCY SHUT DOWN.

3.6.2.2 UPON COMPLETION OF WORK, E.C. SHALL PROVIDE A TYPED DIRECTORY IN EACH PANELBOARD. INCLUDE SYSTEM VOLTAGE, PHASING, CIRCUIT NUMBERING AND DESCRIPTIONS.

3.6.3 WIREWAY:

THE WIREWAY SHALL BE SIMILAR AND EQUIVALENT TO "SQUARE D COMPANY" WIREWAY WITH APPROPRIATE FITTING FOR THE PARTICULAR INSTALLATION. E.C. SHALL SIZE TO INSTALLATION IN ACCORDANCE WITH NEC, GOOD PRACTICE AND CODES IN EFFECT AT TIME OF INSTALLATION.

3.7 OVERCURRENT/SHORT CIRCUIT PROTECTIVE DEVICES:

3.7.1 PANELBOARD BRANCH/FEEDER CIRCUIT BREAKERS:

ALL DOWNSTREAM BREAKERS MUST BE SQUARE 'D' TO MAINTAIN SERIES LISTING. IF FUSIBLE DISCONNECTS ARE USED, SQUARE 'D' PANEL BOARDS AND CIRCUIT BREAKERS SHALL BE USED.

3.7.2 GROUND FAULT CIRCUIT INTERRUPTER (GFCI) BREAKERS:

GROUND FAULT CIRCUIT INTERRUPTER (GFCI) TYPE CIRCUIT BREAKERS SHALL BE SIMILAR TO THE PANELBOARD CIRCUIT BREAKERS BUT WITH GROUND FAULT PROTECTION WITH MATCHING A.I.C. RATING. GFCI BREAKERS SHALL BE UL APPROVED AS CLASS A DEVICES IN ACCORDANCE WITH UL STANDARD #943.

3.7.3 FUSES, MAIN SWITCHBOARD:

MAIN SWITCHBOARD FUSES, IF REQUIRED, SHALL BE CLASS J CURRENT LIMITING FUSES AS INDICATED ON PLANS.

3.7.4 FUSES, EQUIPMENT:

EQUIPMENT FUSES, IF REQUIRED, SHALL BE OF THE DUAL ELEMENT, TIME DELAY VARIETY AS INDICATED ON PLANS. FUSES FOR HVAC/REFRIGERATION SHALL BE SIMILAR AND EQUIVALENT TO COOPER BUSSMANN FUSE TYPE LPN-RK-SF, CLASS RK1 FOR THE APPROPRIATE AMPERAGE.

3.8 SPD SHALL BE PROVIDED BY GRAYBAR

3.9 CONDUCTORS:

ALL CONDUCTORS SHALL BE COPPER, TYPE THHN, UNO, MINIMUM CONDUCTOR SIZE SHALL BE #12 AWG. CONDUCTORS #10 AWG AND LARGER SHALL BE STRANDED. INSULATION TYPE SHALL CONFORM WITH N.E.C. OR MANUFACTURER REQUIREMENTS. LIGHT FIXTURES SOMETIME REQUIRE 90 DEGREE WIRE. FOR THE PARTICULAR APPLICATION, USE TYPE THWN IN WET LOCATIONS.

3.9.1 NM CABLE (ROMEX) SHALL NOT BE USED.

3.9.2 ALUMINUM CONDUCTORS SHALL NOT BE USED U.N.O.

3.9.3 METAL-CLAD CABLE (MC) SHALL BE PERMITTED FOR USE AS BRANCH CIRCUITS IN WALL, CEILING OR CABINTRY.

4. TESTING AND INSPECTION

4.1 TESTING:

4.1.1 THE E.C. SHALL TEST, PRIOR TO ENERGIZING FOR THE FIRST TIME, ALL PIECES OF ELECTRICAL EQUIPMENT TO ASSURE THEY HAVE THE PROPER PHASE TO PHASE AND PHASE TO GROUND INSULATION AND ARE FREE OF SHORTS. AFTER ENERGIZING, EACH LUMINAIRE SHALL BE LIT AND TESTED.

4.1.2 THE VARIOUS CIRCUITS SERVED FROM THE PANELBOARDS VARY IN LOAD. THE E.C. SHALL CAREFULLY BALANCE THE LOAD ON EACH LEG OF THE SERVICE. WHEN ALL LOADS IS TURNED ON AND THE SYSTEM IS OPERATING AT 100%, THE INITIAL VOLTAGE SHALL NOT EXCEED

NOTE: WITH 3 PHASE DELTA, PHASES A AND C SHALL BE BALANCED WITHIN 10% OF PHASE B (HIGH LEG) SHALL BE BALANCED AS CLOSELY AS POSSIBLE.

4.2 INSPECTION:

E.C. SHALL PERFORM AT THE COMPLETION OF THE PROJECT OR EACH INSPECTOR'S PART OF THE PROJECT, A INTERMEDIATE OR FINAL INSPECTION CERTIFICATE FROM THE LOCAL INSPECTING AUTHORITY.

4.3 PERFORMANCE REQUIRED:

4.3.1 ALL EQUIPMENT AND FIXTURES SHALL BE PROPERLY CONNECTED WITH ADEQUATE POWER AND CHECKED THOROUGHLY FOR PROPER OPERATION.

4.3.2 EXPOSED EQUIPMENT SHALL BE INSTALLED AS PER DRAWINGS AND IS SUBJECT TO INSPECTION FOR WORKMAN-LIKE APPEARANCE.

5. INDUSTRY STANDARDS

5.1 THE FOLLOWING IS A LIST OF ABBREVIATIONS USED IN THE ELECTRICAL NOTES AND SPECIFICATIONS.

- NEC.....NATIONAL ELECTRIC CODE, REF. COVERSHEET FOR APPLICABLE VERSION
NEMA.....NATIONAL ELECTRICAL MANUFACTURERS ASSOCIATION
UL.....UNDERWRITERS LABORATORIES, INC.
HVAC.....HEATING, VENTILATING AND AIR CONDITIONING
IEEE.....INSTITUTE OF ELECTRICAL AND ELECTRONICS ENGINEERS
GFCI.....GROUND FAULT CIRCUIT INTERRUPTER
AIC.....AMPERES INTERRUPTING CAPACITY
UNO.....UNLESS NOTED OTHERWISE
EC.....ELECTRICAL CONTRACTOR
GC.....GENERAL CONTRACTOR

6. UTILITY ACCOUNT OPEN PROCESS

6.1 GENERAL CONTRACTOR (GC) WORKS WITH THE UTILITY COMPANIES TO SET UP ALL REQUIRED METERS AND ACCOUNTS (ELECTRIC, NATURAL GAS, WATER) UNDER THE GC COMPANY NAME.

6.2 FOR CORPORATE AND NON BCP FRANCHISEE, GC OBTAINS OPEN FACILITY REQUEST FORM FROM DEVELOPMENT PROJECT MANAGER (DPM), BLANK FORM IS LOCATED AT 7-ELEVEN HUB / OPERATIONS / DEVELOPMENT PROGRAM MANAGEMENT QUICK LINKS

6.3 AT LEAST FIFTEEN (15) DAYS PRIOR TO THE STORE OPEN DATE, GC MAILS COMPLETED OPEN FACILITIES REQUEST FORM TO ECOVA AT 7-ELEVENOPCL@ECOVA.COM WITH A COPY TO THE DPM

6.4 BCP FRANCHISEES SET UP THEIR OWN UTILITIES AND THIS SET UP DOES NOT GO THROUGH 7-ELEVEN, INC

rev 6/2016

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REVISIONS

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ELECTRICAL SPECIFICATIONS

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