

SECTION 26.24.16
PANELBOARDS

- PART 1 PRODUCTS
- 1.01 MANUFACTURERS
- A. EATON CORPORATION: WWW.EATON.COM.
- 1.02 PANELBOARDS - GENERAL REQUIREMENTS
- A. PROVIDE PRODUCTS LISTED, CLASSIFIED, AND LABELED AS SUITABLE FOR THE PURPOSE INTENDED.
- B. UNLESS OTHERWISE INDICATED, PROVIDE PRODUCTS SUITABLE FOR CONTINUOUS OPERATION UNDER THE FOLLOWING SERVICE CONDITIONS:
1. ALTITUDE: LESS THAN 6,600 FEET.
 2. AMBIENT TEMPERATURE:
 - a. PANELBOARDS CONTAINING CIRCUIT BREAKERS: BETWEEN 23 DEGREES F AND 104 DEGREES F.
 3. SHORT CIRCUIT CURRENT RATING:
 4. MAINS: CONFIGURE FOR TOP OR BOTTOM INCOMING FEED AS INDICATED OR AS REQUIRED FOR THE INSTALLATION.
 5. BRANCH OVERCURRENT PROTECTIVE DEVICES: REPLACEABLE WITHOUT DISTURBING ADJACENT DEVICES.
 6. BUSING: SIZED IN ACCORDANCE WITH UL 67 TEMPERATURE RISE REQUIREMENTS.
 7. PROVIDE SOLIDLY BONDED EQUIPMENT GROUND BUS IN EACH PANELBOARD, WITH A SUITABLE LUG FOR EACH FEEDER AND BRANCH CIRCUIT EQUIPMENT GROUNDING CONDUCTOR.
 8. CONDUCTOR TERMINATIONS: SUITABLE FOR USE WITH THE CONDUCTORS TO BE INSTALLED.
 9. ENCLOSURES: COMPLY WITH NEMA 250, AND LIST AND LABEL AS COMPLYING WITH UL 50 AND UL 50E.
 1. ENVIRONMENT TYPE PER NEMA 250: UNLESS OTHERWISE INDICATED, AS SPECIFIED FOR THE FOLLOWING INSTALLATION LOCATIONS:
 2. BOXES: GALVANIZED STEEL UNLESS OTHERWISE INDICATED.
 3. FRONTS:
 - a. PROVIDE WRING GUTTERS SIZED TO ACCOMMODATE THE CONDUCTORS TO BE INSTALLED.
 4. FRONTS FOR SURFACE-MOUNTED ENCLOSURES: SAME DIMENSIONS AS BOXES.
 5. LOCKABLE DOORS: ALL LOOKS KEVED ALIKE UNLESS OTHERWISE INDICATED.
 1. FUTURE PROVISIONS: PREPARE ALL UNUSED SPACES FOR FUTURE INSTALLATION OF DEVICES INCLUDING BUSING, CONNECTORS, MOUNTING HARDWARE AND ALL OTHER REQUIRED PROVISIONS.
- 1.03 LIGHTING AND APPLIANCE PANELBOARDS
- A. DESCRIPTION: PANELBOARDS COMPLYING WITH NEMA PB 1, LIGHTING AND APPLIANCE BRANCH CIRCUIT TYPE, CIRCUIT BREAKER TYPE, AND LISTED AND LABELED AS COMPLYING WITH UL 67; RATINGS, CONDUCTOR TERMINATIONS AND FEATURES AS INDICATED ON THE DRAWINGS.
- B. CONDUCTOR TERMINATIONS:
1. MAIN AND NEUTRAL LUG MATERIAL: ALUMINUM, SUITABLE FOR TERMINATING ALUMINUM OR COPPER CONDUCTORS.
 2. MAIN AND NEUTRAL LUG TYPE: MECHANICAL.
- C. BUSING:
1. PHASE BUS CONNECTIONS: ARRANGED FOR SEQUENTIAL PHASING OF OVERCURRENT PROTECTIVE DEVICES.
 2. PHASE AND NEUTRAL BUS MATERIAL: ALUMINUM.
 3. GROUND BUS MATERIAL: ALUMINUM.
 4. CIRCUIT BREAKERS: THERMAL MAGNETIC BOLT-ON TYPE UNLESS OTHERWISE INDICATED.
 5. ENCLOSURES:
 1. PROVIDE SURFACE-MOUNTED OR FLUSH-MOUNTED ENCLOSURES AS INDICATED.
 2. PROVIDE CLEAR PLASTIC CIRCUIT DIRECTORY HOLDER MOUNTED ON INSIDE OF DOOR.
- 1.04 OVERCURRENT PROTECTIVE DEVICES
- A. MOLDED CASE CIRCUIT BREAKERS:
1. DESCRIPTION: QUICK-MAKE, QUICK-BREAK, OVER CENTER TOGGLE, TRIP-FREE, TRIP-INDICATING CIRCUIT BREAKERS LISTED AND LABELED AS COMPLYING WITH UL 489, AND COMPLYING WITH FS W-C-375 WHERE APPLICABLE; RATINGS, CONFIGURATIONS, AND FEATURES AS INDICATED ON THE DRAWINGS.
2. INTERRUPTING CAPACITY:
 - a. PROVIDE CIRCUIT BREAKERS WITH INTERRUPTING CAPACITY AS REQUIRED TO PROVIDE THE SHORT CIRCUIT CURRENT RATING INDICATED, BUT NOT LESS THAN:
 - 1) 10,000 RMS SYMMETRICAL AMPERES AT 240 VAC OR 208 VAC.
 2. FULLY RATED SYSTEMS: PROVIDE CIRCUIT BREAKERS WITH INTERRUPTING CAPACITY NOT LESS THAN THE SHORT CIRCUIT CURRENT RATING INDICATED.
 3. THERMAL MAGNETIC CIRCUIT BREAKERS: FOR EACH POLE, FURNISH THERMAL INVERSE TIME TRIPPING ELEMENT FOR OVERLOAD PROTECTION AND MAGNETIC INSTANTANEOUS TRIPPING ELEMENT FOR SHORT CIRCUIT PROTECTION.
 4. MULTI-POLE CIRCUIT BREAKERS: FURNISH WITH COMMON TRIP FOR ALL POLES.

- PART 2 EXECUTION
- 2.01 INSTALLATION
- A. PERFORM WORK IN ACCORDANCE WITH NECA 1 (GENERAL WORKMANSHIP).
- B. INSTALL PRODUCTS IN ACCORDANCE WITH MANUFACTURER'S INSTRUCTIONS.
- C. INSTALL PANELBOARDS IN ACCORDANCE WITH NECA 407 AND NEMA PB 1.1.
- D. ARRANGE EQUIPMENT TO PROVIDE MINIMUM CLEARANCES IN ACCORDANCE WITH MANUFACTURER'S INSTRUCTIONS AND NFPA 70.
- E. INSTALL PANELBOARDS PLUMB.
- F. INSTALL FLUSH-MOUNTED PANELBOARDS SO THAT TRIMS FIT COMPLETELY FLUSH TO WALL WITH NO GAPS AND ROUGH OPENING COMPLETELY COVERED.
- G. MOUNT PANELBOARDS SUCH THAT THE HIGHEST POSITION OF ANY OPERATING HANDLE FOR CIRCUIT BREAKERS OR SWITCHES DOES NOT EXCEED 79 INCHES ABOVE THE FLOOR OR WORKING PLATFORM.
- H. INSTALL ALL FIELD-INSTALLED BRANCH DEVICES, COMPONENTS, AND ACCESSORIES.
- I. PROVIDE FILLER PLATES TO COVER UNUSED SPACES IN PANELBOARDS.
- NATIONAL ACCOUNT
- A. CVS/PHARMACY HAS ENTERED INTO A NATIONAL ACCOUNT AGREEMENT WITH THE MANUFACTURERS LISTED BELOW FOR FURNISHING THE ELECTRICAL SWITCHGEAR SPECIFIED IN THIS SECTION. COMPLETE INSTALLATION SHALL BE BY THE CONTRACTOR. THE GENERAL CONTRACTOR IS RESPONSIBLE FOR CONTACTING THE MANUFACTURER FOR PRICING QUOTATIONS, PLACING ORDERS, AND FURTHER INFORMATION, CALL THE APPROPRIATE MANUFACTURER FOR THE AREA THE STORE IS LOCATED IN.
1. WEDENBACH - BROWN CO., INC. AT (781) 769-9868, CVS@WBLIGHT.COM OR CVSSUPPORT@WBLIGHT.COM.
 - a. AREAS: AL, AR, AZ, CA, CO, DE, FL, GA, HI, IA, IL, IN, KS, KY, LA, MD, MI, MN, MO, MS, MT, NC, ND, NE, NM, NV, OH, OK, OR, PR, SC, SD, TN, TX, UT, VA, WA, WI, WV, WY.
 2. NESCO, INC. AT (781) 828-9494.
 - a. AREAS: CT, MA, ME, NH, NJ, NY, PA, RI, VT.

SECTION 26.27.26
WRING DEVICES

- PART 1 PRODUCTS
- 1.01 WRING DEVICE APPLICATIONS
- A. PROVIDE WRING DEVICES SUITABLE FOR INTENDED USE AND WITH RATINGS ADEQUATE FOR LOAD SERVED.
- B. FOR SINGLE RECEPTACLES INSTALLED ON AN INDIVIDUAL BRANCH CIRCUIT, PROVIDE RECEPTACLE WITH AMPERE RATING NOT LESS THAN THAT OF THE BRANCH CIRCUIT.
- C. PROVIDE WEATHER RESISTANT GFCI RECEPTACLES WITH SPECIFIED WEATHERPROOF COVERS FOR RECEPTACLES INSTALLED OUTDOORS OR IN DAMP OR WET LOCATIONS.
- D. PROVIDE GFCI PROTECTION FOR RECEPTACLES INSTALLED WITHIN 6 FEET OF SINKS.
- E. PROVIDE GFCI PROTECTION FOR RECEPTACLES SERVING ELECTRIC DRINKING FOUNTAINS.
- F. UNLESS NOTED OTHERWISE, DO NOT USE COMBINATION SWITCH/RECEPTACLE DEVICES.
- 1.02 WRING DEVICE FINISHES
- A. PROVIDE WRING DEVICE FINISHES AS DESCRIBED BELOW UNLESS OTHERWISE INDICATED.
- B. WRING DEVICES, UNLESS OTHERWISE INDICATED: WHITE WITH WHITE NYLON WALL PLATE.
- C. WRING DEVICES INSTALLED IN UNFINISHED SPACES: GRAY WITH GALVANIZED STEEL WALL PLATE.
- D. WRING DEVICES INSTALLED IN WET OR DAMP LOCATIONS: WHITE WITH SPECIFIED WEATHERPROOF COVER.
- 1.03 WALL SWITCHES
- A. WALL SWITCHES - GENERAL REQUIREMENTS: AC ONLY, QUIET OPERATING, GENERAL-USE SNAP SWITCHES WITH SILVER ALLOY CONTACTS, COMPLYING WITH NEMA WD 1 AND NEMA WD 6, AND LISTED AS COMPLYING WITH UL 20 AND WHERE APPLICABLE, FS W-S-696; TYPES AS INDICATED ON THE DRAWINGS.
- B. STANDARD WALL SWITCHES: INDUSTRIAL SPECIFICATION GRADE, 20 A, 120/277 V WITH STANDARD TOGGLE TYPE SWITCH ACTUATOR AND MAINTAINED CONTACTS; SINGLE POLE SINGLE THROW, DOUBLE POLE SINGLE THROW, THREE WAY, OR FOUR WAY AS INDICATED ON THE DRAWINGS.
1. WRING PROVISIONS: TERMINAL SCREWS FOR SIDE WRING AND SCREW ACTUATED BINDING CLAMP FOR BACK WRING WITH SEPARATE GROUND TERMINAL SCREW.
2. NEMA CONFIGURATIONS: COMPLYING WITH UL 943, CLASS A.
3. WEATHER RESISTANT GFCI RECEPTACLES: INDUSTRIAL SPECIFICATION GRADE, DUPLEX, 20A, 125V, NEMA 5-20R, RECTANGULAR DECORATOR STYLE.
4. WEATHER RESISTANT GFCI RECEPTACLES: INDUSTRIAL SPECIFICATION GRADE, DUPLEX, 20A, 125V, NEMA 5-20R, RECTANGULAR DECORATOR STYLE, LISTED AND LABELED AS WEATHER RESISTANT TYPE COMPLYING WITH UL 498 SUPPLEMENT SE SUITABLE FOR INSTALLATION IN DAMP OR WET LOCATIONS.
- 1.04 RECEPTACLES
- A. RECEPTACLES - GENERAL REQUIREMENTS: SELF-GROUNDING, COMPLYING WITH NEMA WD 1 AND NEMA WD 6, AND LISTED AS COMPLYING WITH UL 498, AND WHERE APPLICABLE, FS W-C-596; TYPES AS INDICATED ON THE DRAWINGS.
1. WRING PROVISIONS: TERMINAL SCREWS FOR SIDE WRING OR SCREW ACTUATED BINDING CLAMP FOR BACK WRING WITH SEPARATE GROUND TERMINAL SCREW.
2. NEMA CONFIGURATIONS: COMPLYING WITH UL 943, CLASS A.
3. WEATHER RESISTANT GFCI RECEPTACLES: INDUSTRIAL SPECIFICATION GRADE, DUPLEX, 20A, 125V, NEMA 5-20R, RECTANGULAR DECORATOR STYLE.
4. WEATHER RESISTANT GFCI RECEPTACLES: INDUSTRIAL SPECIFICATION GRADE, DUPLEX, 20A, 125V, NEMA 5-20R, RECTANGULAR DECORATOR STYLE, LISTED AND LABELED AS WEATHER RESISTANT TYPE COMPLYING WITH UL 498 SUPPLEMENT SE SUITABLE FOR INSTALLATION IN DAMP OR WET LOCATIONS.
- 1.05 WALL PLATES
- A. WALL PLATES: COMPLY WITH UL 514D.
1. CONFIGURATION: ONE PIECE COVER AS REQUIRED FOR QUANTITY AND TYPES OF CORRESPONDING WRING DEVICES.
2. SIZE: STANDARD.
3. SCREWS: METAL WITH SLOTTED HEADS FINISHED TO MATCH WALL PLATE FINISH.
- B. NYLON WALL PLATES: SMOOTH FINISH, HIGH-IMPACT THERMOPLASTIC.

- PART 2 EXECUTION
- 2.01 INSTALLATION
- A. PERFORM WORK IN ACCORDANCE WITH NECA 1 (GENERAL WORKMANSHIP) AND, WHERE APPLICABLE, NECA 130, INCLUDING MOUNTING HEIGHTS SPECIFIED IN THOSE STANDARDS UNLESS OTHERWISE INDICATED.
- B. COORDINATE LOCATIONS OF OUTLET BOXES PROVIDED UNDER SECTION 26.05.33.16 AS REQUIRED FOR INSTALLATION OF WRING DEVICES PROVIDED UNDER THIS SECTION.
1. MOUNTING HEIGHTS: UNLESS OTHERWISE INDICATED, AS FOLLOWS:
 - a. WALL SWITCHES: 48 INCHES ABOVE FINISHED FLOOR.
 - b. RECEPTACLES: 18 INCHES ABOVE FINISHED FLOOR OR 6 INCHES ABOVE COUNTER.
- C. INSTALL WRING DEVICES IN ACCORDANCE WITH MANUFACTURER'S INSTRUCTIONS.
- D. INSTALL PERMANENT BARRIER BETWEEN GANGED WRING DEVICES WHEN VOLTAGE BETWEEN ADJACENT DEVICES EXCEEDS 300 V.
- E. WHERE REQUIRED, CONNECT WRING DEVICES USING PIGTAILS NOT LESS THAN 6 INCHES LONG. DO NOT CONNECT MORE THAN ONE CONDUCTOR TO WRING DEVICE TERMINALS.
- F. CONNECT WRING DEVICES BY WRAPPING CONDUCTOR CLOCKWISE 3/4 TURN AROUND SCREW TERMINAL AND TIGHTENING TO PROPER TORQUE SPECIFIED BY THE MANUFACTURER. WHERE PRESENT, DO NOT USE PUSH-IN PRESSURE TERMINALS THAT DO NOT RELY ON SCREW-ACTUATED BINDING.
- G. UNLESS OTHERWISE INDICATED, CONNECT WRING DEVICE GROUNDING TERMINAL TO BRANCH CIRCUIT EQUIPMENT GROUNDING CONDUCTOR AND TO OUTLET BOX WITH BONDING JUMPER.
- H. INSTALL WRING DEVICES PLUMB AND LEVEL WITH MOUNTING YOKE HELD RIGIDLY IN PLACE.
- I. INSTALL WALL SWITCHES WITH OFF POSITION DOWN.
- J. INSTALL VERTICALLY MOUNTED RECEPTACLES WITH GROUNDING POLE ON TOP AND HORIZONTALLY MOUNTED RECEPTACLES WITH GROUNDING POLE ON LEFT.
- K. INSTALL WALL PLATES TO FIT COMPLETELY FLUSH TO WALL WITH NO GAPS AND ROUGH OPENING COMPLETELY COVERED WITHOUT STRAIN ON WALL PLATE. REPAIR OR REINSTALL IMPROPERLY INSTALLED OUTLET BOXES OR IMPROPERLY SIZED ROUGH OPENINGS. DO NOT USE OVERSIZED WALL PLATES IN LIEU OF MEETING THIS REQUIREMENT.
- L. INSTALL BLANK WALL PLATES ON JUNCTION BOXES AND ON OUTLET BOXES WITH NO DEVICES INSTALLED OR DESIGNATED FOR FUTURE USE.

SECTION 26.28.16
ENCLOSED SWITCHES

- PART 1 PRODUCTS
- 1.01 ENCLOSED SAFETY SWITCHES
- A. DESCRIPTION: QUICK-MAKE, QUICK-BREAK ENCLOSED SAFETY SWITCHES LISTED AND LABELED AS COMPLYING WITH UL 98; GENERAL DUTY; RATINGS, CONFIGURATIONS, AND FEATURES AS INDICATED ON THE DRAWINGS.
- B. PROVIDE PRODUCTS LISTED, CLASSIFIED, AND LABELED AS SUITABLE FOR THE PURPOSE INTENDED.
- C. UNLESS OTHERWISE INDICATED, PROVIDE PRODUCTS SUITABLE FOR CONTINUOUS OPERATION UNDER THE FOLLOWING SERVICE CONDITIONS:
 1. ALTITUDE: LESS THAN 6,600 FEET.
 2. AMBIENT TEMPERATURE: BETWEEN -22 DEGREES F AND 104 DEGREES F.
 3. SHORT CIRCUIT CURRENT RATING:
 4. MAINS: CONFIGURE FOR TOP OR BOTTOM INCOMING FEED AS INDICATED OR AS REQUIRED FOR THE INSTALLATION.
 5. BRANCH OVERCURRENT PROTECTIVE DEVICES: REPLACEABLE WITHOUT DISTURBING ADJACENT DEVICES.
 6. BUSING: SIZED IN ACCORDANCE WITH UL 67 TEMPERATURE RISE REQUIREMENTS.
 7. PROVIDE SOLIDLY BONDED EQUIPMENT GROUND BUS IN EACH ENCLOSED SAFETY SWITCH, WITH A SUITABLE LUG FOR TERMINATING EACH EQUIPMENT GROUNDING CONDUCTOR.
 8. CONDUCTOR TERMINATIONS: SUITABLE FOR USE WITH THE CONDUCTORS TO BE INSTALLED.
 9. ENCLOSURES: COMPLY WITH NEMA 250, AND LIST AND LABEL AS COMPLYING WITH UL 50 AND UL 50E.
 1. ENVIRONMENT TYPE PER NEMA 250: UNLESS OTHERWISE INDICATED, AS SPECIFIED FOR THE FOLLOWING INSTALLATION LOCATIONS:
 2. BOXES: GALVANIZED STEEL UNLESS OTHERWISE INDICATED.
 3. FRONTS:
 - a. PROVIDE WRING GUTTERS SIZED TO ACCOMMODATE THE CONDUCTORS TO BE INSTALLED.
 4. FRONTS FOR SURFACE-MOUNTED ENCLOSURES: SAME DIMENSIONS AS BOXES.
 5. LOCKABLE DOORS: ALL LOOKS KEVED ALIKE UNLESS OTHERWISE INDICATED.
 1. FUTURE PROVISIONS: PREPARE ALL UNUSED SPACES FOR FUTURE INSTALLATION OF DEVICES INCLUDING BUSING, CONNECTORS, MOUNTING HARDWARE AND ALL OTHER REQUIRED PROVISIONS.

1.02 WRING DEVICES

A. DESCRIPTION: QUICK-MAKE, QUICK-BREAK ENCLOSED SAFETY SWITCHES LISTED AND LABELED AS COMPLYING WITH UL 98; GENERAL DUTY; RATINGS, CONFIGURATIONS, AND FEATURES AS INDICATED ON THE DRAWINGS.

B. PROVIDE PRODUCTS LISTED, CLASSIFIED, AND LABELED AS SUITABLE FOR THE PURPOSE INTENDED.

C. UNLESS OTHERWISE INDICATED, PROVIDE PRODUCTS SUITABLE FOR CONTINUOUS OPERATION UNDER THE FOLLOWING SERVICE CONDITIONS:

 1. ALTITUDE: LESS THAN 6,600 FEET.
 2. AMBIENT TEMPERATURE: BETWEEN -22 DEGREES F AND 104 DEGREES F.
 3. SHORT CIRCUIT CURRENT RATING:
 4. MAINS: CONFIGURE FOR TOP OR BOTTOM INCOMING FEED AS INDICATED OR AS REQUIRED FOR THE INSTALLATION.
 5. BRANCH OVERCURRENT PROTECTIVE DEVICES: REPLACEABLE WITHOUT DISTURBING ADJACENT DEVICES.
 6. BUSING: SIZED IN ACCORDANCE WITH UL 67 TEMPERATURE RISE REQUIREMENTS.
 7. PROVIDE SOLIDLY BONDED EQUIPMENT GROUND BUS IN EACH ENCLOSED SAFETY SWITCH, WITH A SUITABLE LUG FOR TERMINATING EACH EQUIPMENT GROUNDING CONDUCTOR.
 8. CONDUCTOR TERMINATIONS: SUITABLE FOR USE WITH THE CONDUCTORS TO BE INSTALLED.
 9. ENCLOSURES: COMPLY WITH NEMA 250, AND LIST AND LABEL AS COMPLYING WITH UL 50 AND UL 50E.
 1. ENVIRONMENT TYPE PER NEMA 250: UNLESS OTHERWISE INDICATED, AS SPECIFIED FOR THE FOLLOWING INSTALLATION LOCATIONS:
 2. BOXES: GALVANIZED STEEL UNLESS OTHERWISE INDICATED.
 3. FRONTS:
 - a. PROVIDE WRING GUTTERS SIZED TO ACCOMMODATE THE CONDUCTORS TO BE INSTALLED.
 4. FRONTS FOR SURFACE-MOUNTED ENCLOSURES: SAME DIMENSIONS AS BOXES.
 5. LOCKABLE DOORS: ALL LOOKS KEVED ALIKE UNLESS OTHERWISE INDICATED.
 1. FUTURE PROVISIONS: PREPARE ALL UNUSED SPACES FOR FUTURE INSTALLATION OF DEVICES INCLUDING BUSING, CONNECTORS, MOUNTING HARDWARE AND ALL OTHER REQUIRED PROVISIONS.

1.03 WRING DEVICES

A. DESCRIPTION: QUICK-MAKE, QUICK-BREAK ENCLOSED SAFETY SWITCHES LISTED AND LABELED AS COMPLYING WITH UL 98; GENERAL DUTY; RATINGS, CONFIGURATIONS, AND FEATURES AS INDICATED ON THE DRAWINGS.

B. PROVIDE PRODUCTS LISTED, CLASSIFIED, AND LABELED AS SUITABLE FOR THE PURPOSE INTENDED.

C. UNLESS OTHERWISE INDICATED, PROVIDE PRODUCTS SUITABLE FOR CONTINUOUS OPERATION UNDER THE FOLLOWING SERVICE CONDITIONS:

 1. ALTITUDE: LESS THAN 6,600 FEET.
 2. AMBIENT TEMPERATURE: BETWEEN -22 DEGREES F AND 104 DEGREES F.
 3. SHORT CIRCUIT CURRENT RATING:
 4. MAINS: CONFIGURE FOR TOP OR BOTTOM INCOMING FEED AS INDICATED OR AS REQUIRED FOR THE INSTALLATION.
 5. BRANCH OVERCURRENT PROTECTIVE DEVICES: REPLACEABLE WITHOUT DISTURBING ADJACENT DEVICES.
 6. BUSING: SIZED IN ACCORDANCE WITH UL 67 TEMPERATURE RISE REQUIREMENTS.
 7. PROVIDE SOLIDLY BONDED EQUIPMENT GROUND BUS IN EACH ENCLOSED SAFETY SWITCH, WITH A SUITABLE LUG FOR TERMINATING EACH EQUIPMENT GROUNDING CONDUCTOR.
 8. CONDUCTOR TERMINATIONS: SUITABLE FOR USE WITH THE CONDUCTORS TO BE INSTALLED.
 9. ENCLOSURES: COMPLY WITH NEMA 250, AND LIST AND LABEL AS COMPLYING WITH UL 50 AND UL 50E.
 1. ENVIRONMENT TYPE PER NEMA 250: UNLESS OTHERWISE INDICATED, AS SPECIFIED FOR THE FOLLOWING INSTALLATION LOCATIONS:
 2. BOXES: GALVANIZED STEEL UNLESS OTHERWISE INDICATED.
 3. FRONTS:
 - a. PROVIDE WRING GUTTERS SIZED TO ACCOMMODATE THE CONDUCTORS TO BE INSTALLED.
 4. FRONTS FOR SURFACE-MOUNTED ENCLOSURES: SAME DIMENSIONS AS BOXES.
 5. LOCKABLE DOORS: ALL LOOKS KEVED ALIKE UNLESS OTHERWISE INDICATED.
 1. FUTURE PROVISIONS: PREPARE ALL UNUSED SPACES FOR FUTURE INSTALLATION OF DEVICES INCLUDING BUSING, CONNECTORS, MOUNTING HARDWARE AND ALL OTHER REQUIRED PROVISIONS.

- PART 2 EXECUTION
- 2.01 INSTALLATION
- A. INSTALL PRODUCTS IN ACCORDANCE WITH MANUFACTURER'S INSTRUCTIONS.
- B. PERFORM WORK IN ACCORDANCE WITH NECA 1 (GENERAL WORKMANSHIP).
- C. ARRANGE EQUIPMENT TO PROVIDE MINIMUM CLEARANCES IN ACCORDANCE WITH MANUFACTURER'S INSTRUCTIONS AND NFPA 70.
- D. INSTALL ENCLOSED SWITCHES PLUMB.
- E. EXCEPT WHERE INDICATED TO BE MOUNTED ADJACENT TO THE EQUIPMENT THEY SUPPLY, MOUNT ENCLOSED SWITCHES SUCH THAT THE HIGHEST POSITION OF THE OPERATING HANDLE DOES NOT EXCEED 79 INCHES ABOVE THE FLOOR OR WORKING PLATFORM.

SECTION 26.51.00
INTERIOR LIGHTING

- PART 1 PRODUCTS
- 1.01 LUMINAIRES
- A. PROVIDE PRODUCTS THAT COMPLY WITH REQUIREMENTS OF NFPA 70.
- B. PROVIDE PRODUCTS THAT ARE LISTED AND LABELED AS COMPLYING WITH UL 1598, WHERE APPLICABLE.
- C. PROVIDE PRODUCTS LISTED, CLASSIFIED, AND LABELED AS SUITABLE FOR THE PURPOSE INTENDED.
- D. UNLESS OTHERWISE INDICATED, PROVIDE COMPLETE LUMINAIRES INCLUDING LAMP(S) AND ALL SOCKETS, BALLASTS, REFLECTORS, LENSES, HOUSINGS AND OTHER COMPONENTS REQUIRED TO POSITION, ENERGIZE AND PROTECT THE LAMP AND DISTRIBUTE THE LIGHT.
- E. UNLESS SPECIFICALLY INDICATED TO BE EXCLUDED, PROVIDE ALL REQUIRED CONDUIT, BOXES, WIRING, CONNECTORS, HARDWARE, SUPPORTS, TRIMS, ACCESSORIES, ETC. AS NECESSARY FOR A COMPLETE OPERATING SYSTEM.
- F. PROVIDE PRODUCTS SUITABLE TO WITHSTAND NORMAL HANDLING, INSTALLATION, AND SERVICE WITHOUT ANY DAMAGE, DISTORTION, CORROSION, FADING, DISCOLORING, ETC.
- G. RECESSED LUMINAIRES:
 1. CEILING COMPATIBILITY: COMPLY WITH NEMA LE 4.
- H. LED LUMINAIRES:
 1. COMPONENTS: UL 8750 RECOGNIZED OR LISTED AS APPLICABLE.
 2. INSTALLATION: IN ACCORDANCE WITH IES LM-79 AND IES LM-80.
 3. LED ESTIMATED USEFUL LIFE: MINIMUM OF 50,000 HOURS AT 70 PERCENT LUMEN MAINTENANCE, CALCULATED BASED ON IES LM-80 TEST DATA.
- A. DESCRIPTION: EMERGENCY LIGHTING UNITS COMPLYING WITH NFPA 101 AND ALL APPLICABLE STATE AND LOCAL CODES, AND LISTED AND LABELED AS COMPLYING WITH UL 924.
- B. OPERATION: UPON INTERRUPTION OF NORMAL POWER SOURCE OR BROWNOUT CONDITION EXCEEDING 20 PERCENT VOLTAGE DROP FROM NOMINAL, SOLID-STATE CONTROL AUTOMATICALLY SWITCHES CONNECTED LAMPS TO INTEGRAL BATTERY POWER FOR MINIMUM OF 90 MINUTES OF RATED EMERGENCY ILLUMINATION, AND AUTOMATICALLY RECHARGES BATTERY UPON RESTORATION OF NORMAL POWER SOURCE.
- C. BATTERY:
 1. SIZE BATTERY TO SUPPLY ALL CONNECTED LAMPS, INCLUDING EMERGENCY REMOTE HEADS WHERE INDICATED.
 2. DIAGNOSTICS: PROVIDE POWER STATUS INDICATOR LIGHT AND ACCESSIBLE INTEGRAL TEST SWITCH TO MANUALLY ACTIVATE EMERGENCY OPERATION.
 3. PROVIDE LOW-VOLTAGE DISCONNECT TO PREVENT BATTERY DAMAGE FROM DEEP DISCHARGE.
- 1.03 EXIT SIGNS
- A. DESCRIPTION: INTERNALLY ILLUMINATED EXIT SIGNS WITH LEADS UNLESS OTHERWISE INDICATED, COMPLYING WITH NFPA 101 AND ALL APPLICABLE STATE AND LOCAL CODES, AND LISTED AND LABELED AS COMPLYING WITH UL 924.
1. NUMBER OF FACES: SINGLE OR DOUBLE AS INDICATED AS REQUIRED FOR THE INSTALLED LOCATION.
2. DIRECTIONAL ARROWS: AS INDICATED OR AS REQUIRED FOR THE INSTALLED LOCATION.
- B. SELF-POWERED EXIT SIGNS:
 1. OPERATION: UPON INTERRUPTION OF NORMAL POWER SOURCE OR BROWNOUT CONDITION EXCEEDING 20 PERCENT VOLTAGE DROP FROM NOMINAL, SOLID-STATE CONTROL AUTOMATICALLY SWITCHES CONNECTED LAMPS TO INTEGRAL BATTERY POWER FOR MINIMUM OF 90 MINUTES OF RATED EMERGENCY ILLUMINATION, AND AUTOMATICALLY RECHARGES BATTERY UPON RESTORATION OF NORMAL POWER SOURCE.
 2. DIAGNOSTICS: PROVIDE POWER STATUS INDICATOR LIGHT AND ACCESSIBLE INTEGRAL TEST SWITCH TO MANUALLY ACTIVATE EMERGENCY OPERATION.
 3. PROVIDE LOW-VOLTAGE DISCONNECT TO PREVENT BATTERY DAMAGE FROM DEEP DISCHARGE.
- 1.04 BALLASTS AND DRIVERS
- A. BALLASTS/DRIVERS - GENERAL REQUIREMENTS:
 1. PROVIDE BALLASTS CONTAINING NO POLYCHLORINATED BIPHENYLS (PCBS).
 2. MINIMUM EFFICIENCY/EFFICACY: PROVIDE BALLASTS COMPLYING WITH ALL CURRENT APPLICABLE FEDERAL AND STATE BALLAST EFFICIENCY/EFFICACY STANDARDS.
 3. ELECTRONIC BALLASTS/DRIVERS: INRUSH CURRENTS NOT EXCEEDING PEAK CURRENTS LISTED IN NEMA 410.
- B. DIMMABLE LED DRIVERS:
 1. DIMMING RANGE: CONTINUOUS DIMMING FROM 100 PERCENT TO FIVE PERCENT RELATIVE LIGHT OUTPUT UNLESS DIMMING CAPABILITY TO LOWER LEVEL IS INDICATED, WITHOUT FLICKER.
 2. CONTROL COMPATIBILITY: FULLY COMPATIBLE WITH THE DIMMING CONTROLS TO BE INSTALLED.
- 1.05 ACCESSORIES
- A. STEMS FOR SUSPENDED LUMINAIRES: STEEL TUBING, MINIMUM 1/2" SIZE, FACTORY FINISHED TO MATCH LUMINAIRE OR FIELD-PAINTED AS DIRECTED.

- PART 2 EXECUTION
- 2.01 INSTALLATION
- A. COORDINATE LOCATIONS OF OUTLET BOXES PROVIDED UNDER SECTION 26.05.33.16 AS REQUIRED FOR INSTALLATION OF LUMINAIRES PROVIDED UNDER THIS SECTION.
- B. PERFORM WORK IN ACCORDANCE WITH NECA 1 (GENERAL WORKMANSHIP).
- C. INSTALL PRODUCTS IN ACCORDANCE WITH MANUFACTURER'S INSTRUCTIONS.
- D. INSTALL LUMINAIRES SECURELY, IN A NEAT AND WORKMANLIKE MANNER, AS SPECIFIED IN NECA 500 (COMMERCIAL LIGHTING) AND NECA 502 (INDUSTRIAL LIGHTING).
- E. INSTALL LUMINAIRES PLUMB AND SQUARE AND ALIGNED WITH BUILDING LINES AND WITH ADJACENT LUMINAIRES.
- F. INSTALL ACCESSORIES FURNISHED WITH EACH LUMINAIRE.
- G. BOND PRODUCTS AND METAL ACCESSORIES TO BRANCH CIRCUIT EQUIPMENT GROUNDING CONDUCTOR.
- H. EMERGENCY LIGHTING UNITS:
 1. UNLESS OTHERWISE INDICATED, CONNECT UNIT TO UNSWITCHED POWER FROM SAME CIRCUIT FEEDING NORMAL LIGHTING IN SAME ROOM OR AREA. BYPASS LOCAL SWITCHES, CONTACTORS, OR OTHER LIGHTING CONTROLS.
- I. EXIT SIGNS:
 1. UNLESS OTHERWISE INDICATED, CONNECT UNIT TO UNSWITCHED POWER FROM SAME CIRCUIT FEEDING NORMAL LIGHTING IN SAME ROOM OR AREA. BYPASS LOCAL SWITCHES, CONTACTORS, OR OTHER LIGHTING CONTROLS.
 2. INSTALL LAMPS IN EACH LUMINAIRE.

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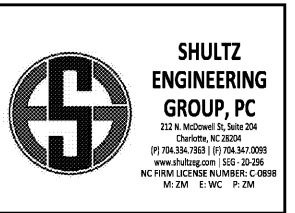
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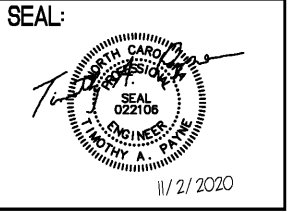
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DEVELOPER:



REVISIONS:

DRAWING BY: WC

CVS PROJECT MANAGER: RJ

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SHEET NUMBER: E1.1

COMMENTS: