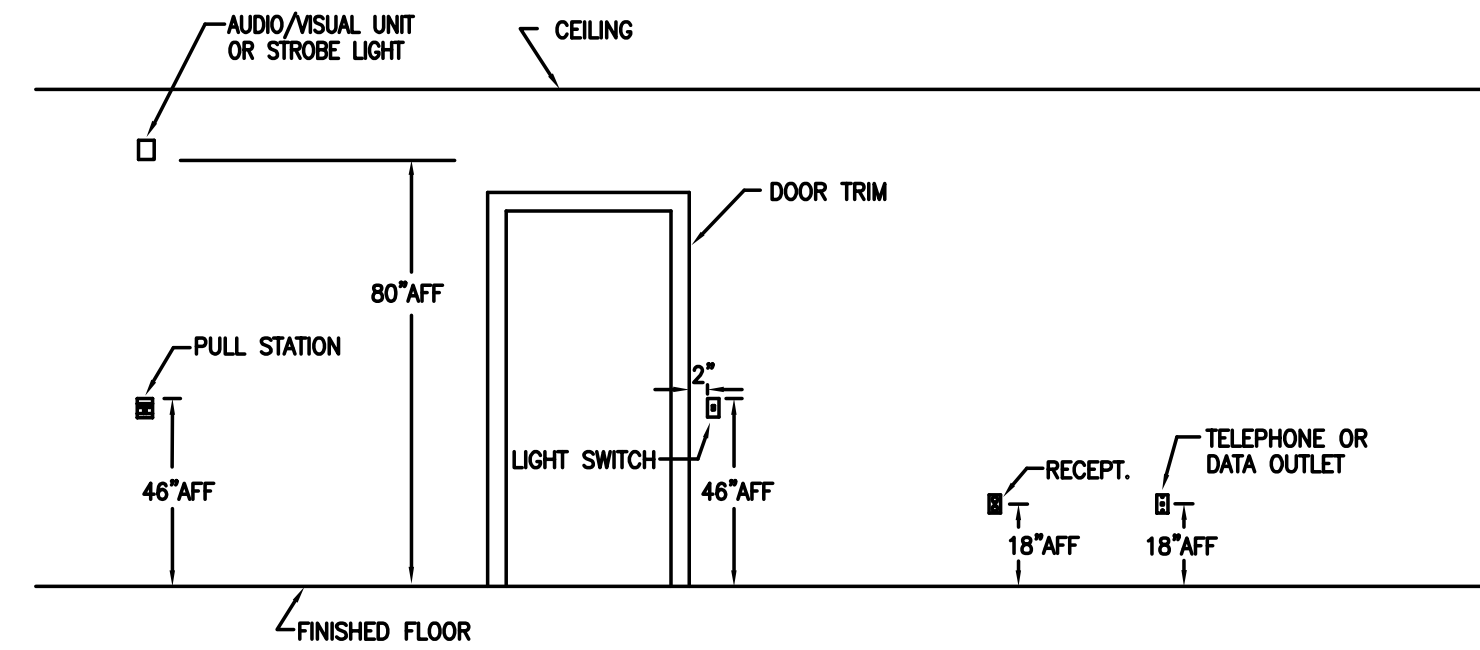


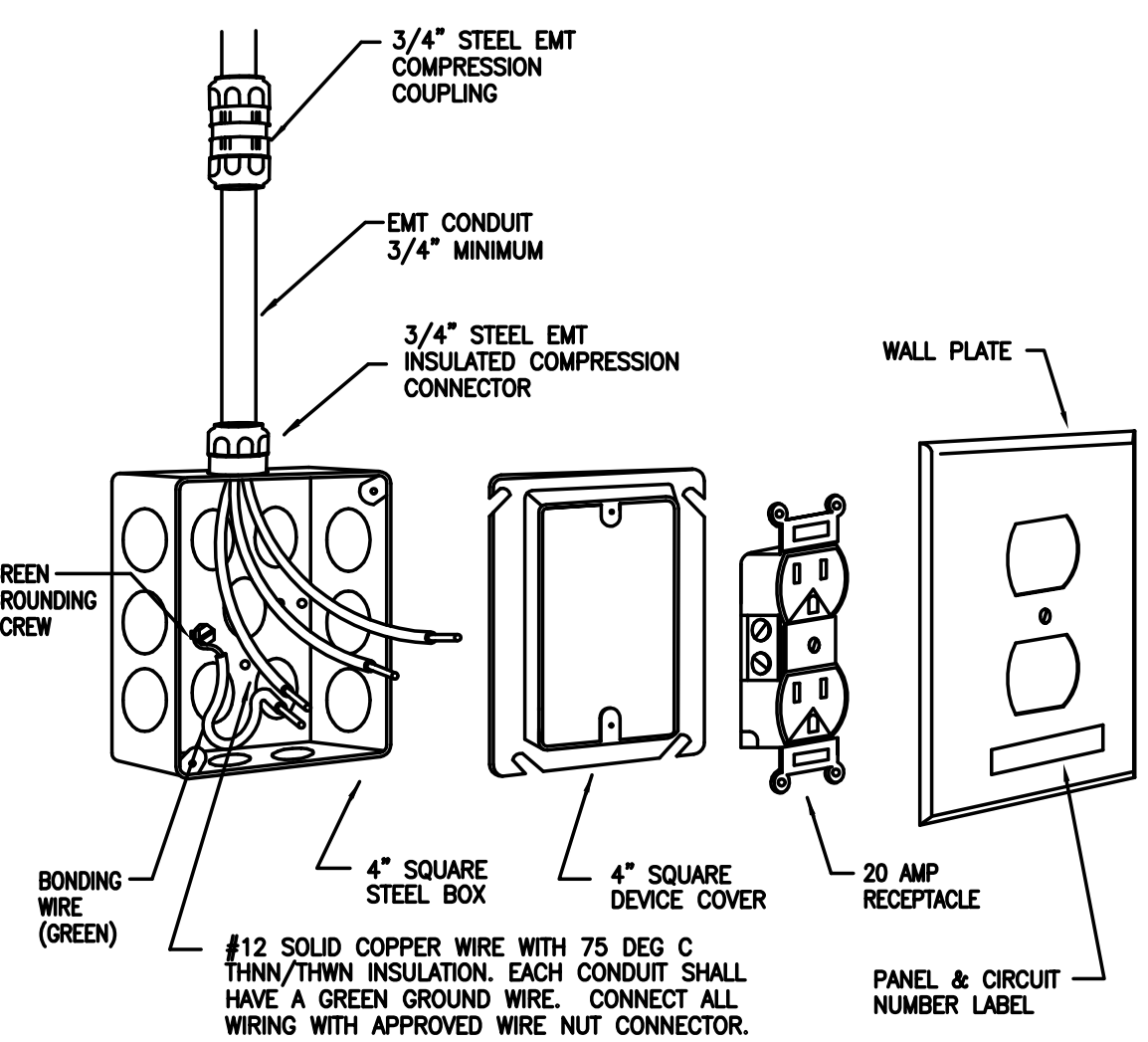
1 TYPICAL CEILING GRID DETAIL

E3 SCALE: NONE



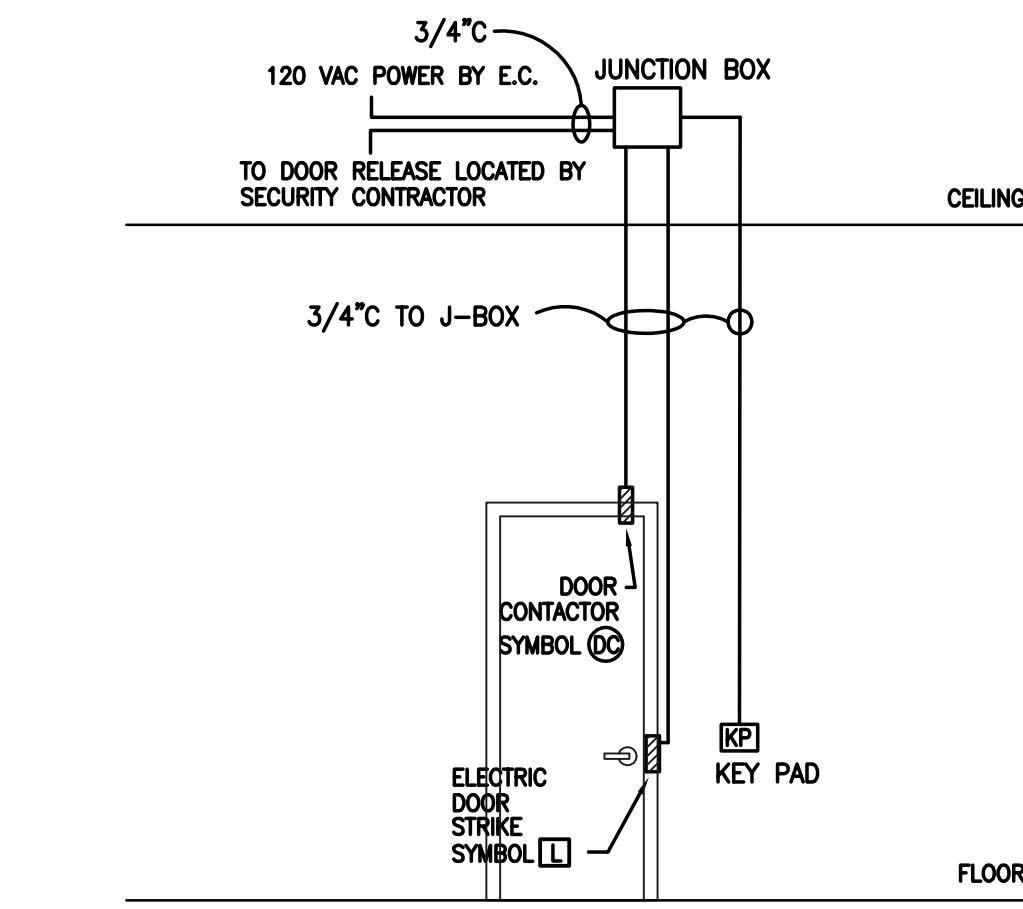
4 TYPICAL SWITCH & RECEPTACLE & FIRE ALARM SIGNAL MOUNTING DETAIL

E3 SCALE: NONE



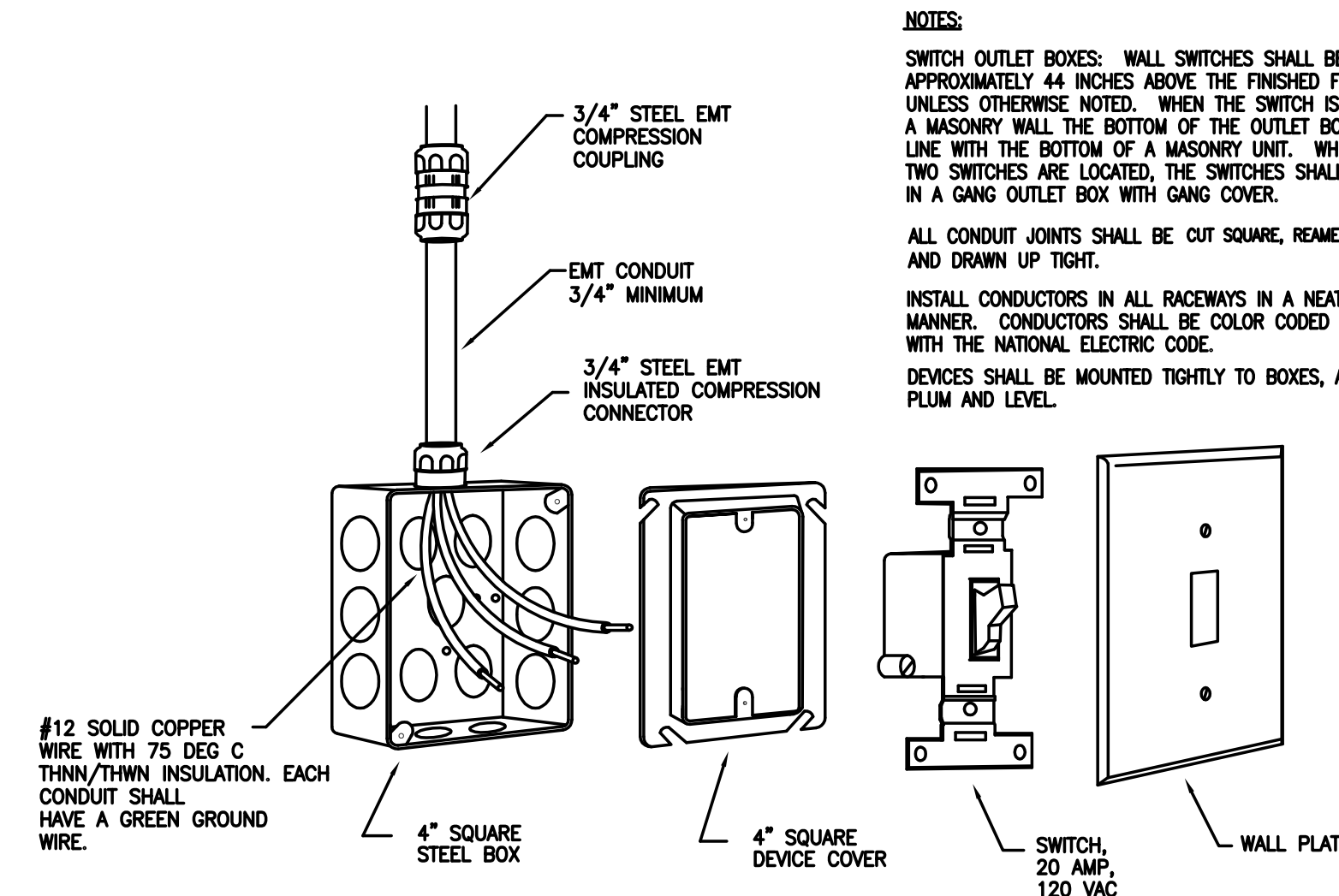
2 TYPICAL RECEPTACLE DETAIL

E3 SCALE: NONE



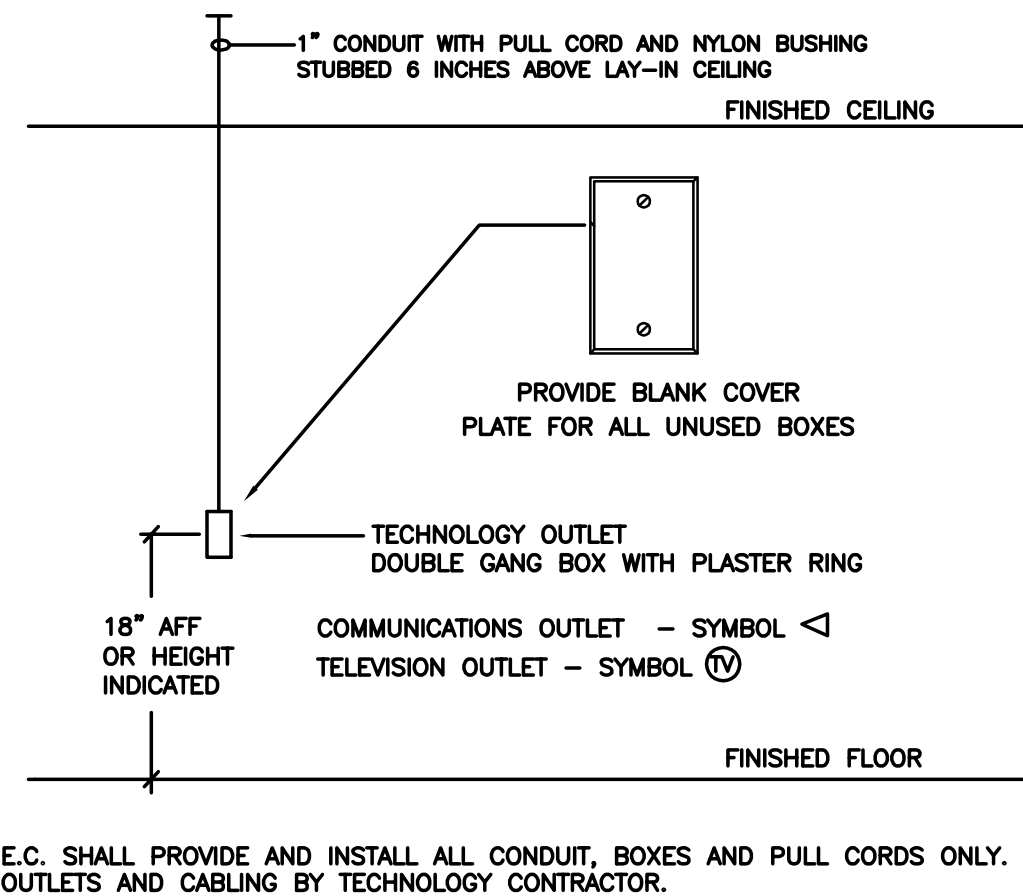
5 FUTURE DOOR ACCESS RACEWAY

E3 SCALE: NONE



3 TYPICAL SWITCH DETAIL

E3 SCALE: NONE



6 TECHNOLOGY OUTLET LOCATION

E3 SCALE: NONE

BRANCH CIRCUIT CONDUCTORS

FOR CIRCUITS WITH BRANCH CIRCUIT PROTECTION RATED 20 AMPERES OR LESS, CONDUCTORS SHALL BE SIZED AS FOLLOWS:

VOLTS	DISTANCE	HOME RUN	REMAINDER OF CIRCUIT
120/208	0 - 60'-0"	#12	#12
	60'-0" - 100'-0"	#10	#12
	100'-0" - 150'-0"	#8	#10

7 VOLTAGE DROP TABLE

E3 SCALE: NONE

CODES

- A. WORK AND MATERIALS SHALL CONFORM TO THE LATEST RULES OF THE NATIONAL BOARD OF FIRE UNDERWRITERS' CODE, REGULATIONS OF THE STATE FIRE MARSHAL, AND WITH APPLICABLE LOCAL CODES AND WITH ALL PREVAILING RULES AND REGULATIONS PERTAINING TO ADEQUATE PROTECTION AND/OR GUARDING OF ALL MOVING PARTS, OR OTHERWISE HAZARDOUS CONDITIONS. NOTHING IN THESE SPECIFICATIONS SHALL BE CONSTRUED TO PERMIT WORK NOT CONFORMING TO THE MOST STRINGENT OF APPLICABLE CODES.
- B. THE NATIONAL ELECTRIC CODE, THE LOCAL ELECTRIC CODE, AND THE ELECTRICAL REQUIREMENTS AS ESTABLISHED BY THE STATE AND LOCAL FIRE MARSHAL, AND RULES AND REGULATIONS OF THE POWER COMPANY SERVING THE PROJECT, ARE HEREBY MADE PART OF THE DRAWINGS OR SPECIFICATIONS TO MAKE THE WORK COMPLY WITH THESE REQUIREMENTS. THE ELECTRICAL CONTRACTOR SHALL SO NOTIFY THE ARCHITECT.
- C. ENCLOSURES - SWITCHES SHALL BE FURNISHED IN NEMA 1 GENERAL PURPOSE ENCLOSURES WITH KNOCKOUTS UNLESS OTHERWISE NOTED OR REQUIRED. SWITCHES LOCATED ON THE EXTERIOR OF THE BUILDING OR IN "WET" LOCATIONS SHALL HAVE NEMA 3R ENCLOSURES (WP).
- D. INSTALLATION - THE SAFETY SWITCHES SHALL BE SECURELY MOUNTED IN ACCORDANCE WITH THE NEC. THE CONTRACTOR SHALL PROVIDE ALL MOUNTING MATERIALS. INSTALL FUSES IN THE FSS. THE FUSES SHALL BE DUAL ELEMENT ON MOTOR CIRCUITS.
- E. MANUFACTURER - SQUARE D, GENERAL ELECTRIC, CUTLER-HAMMER, WESTINGHOUSE, OR ITE.
- F. PANEL BOARDS - CIRCUIT BREAKER

SECTION 2 - ELECTRICAL DISTRIBUTION SYSTEM

1. FEEDERS AND BRANCH CIRCUITS
 - A. GENERAL - THE ELECTRICAL CONTRACTOR SHALL PROVIDE AND INSTALL A COMPLETE ELECTRICAL DISTRIBUTION SYSTEM AS SHOWN ON THE DRAWINGS OR AS REQUIRED FOR A COMPLETE SYSTEM. ALL MATERIALS AND WORKMANSHIP SHALL CONFORM WITH SECTION 169 OF THE SPECIFICATIONS, NATIONAL ELECTRICAL CODE AND THE LOCAL ELECTRIC CODE. NONMETALLIC-SHEATHED CABLE IS PERMISSIBLE WHERE ACCEPTABLE BY THE NEC.
 - B. CONDUIT MATERIALS
 1. RIGID CONDUIT (HEAVY WALL): RIGID CONDUIT SHALL BE GALVANIZED RIGID STEEL CONDUIT WITH A MINIMUM SIZE OF 3/4 INCH UNLESS OTHERWISE STATED. RIGID STEEL CONDUIT SHALL BE INSTALLED FOR THE FOLLOWING SERVICES AND LOCATIONS UNLESS OTHERWISE NOTED ON DRAWINGS: SERVICE ENTRANCE, UNDERGROUND IN CONTACT WITH EARTH, IN CONCRETE SLAB, PANEL FEEDERS, EXTERIOR OF BUILDING WALLS, MOTOR FEEDERS OVER 10 HP, ELECTRICAL EQUIPMENT FEEDERS OVER 10 KW, "WET" LOCATIONS, AND AS REQUIRED BY THE NATIONAL ELECTRIC CODE AND LOCAL CODES.
 2. ELECTRICAL METALLIC TUBING (EMT): ELECTRICAL METALLIC TUBING SHALL BE GALVANIZED STEEL WITH A MINIMUM SIZE OF 3/4 INCH. ELECTRICAL METALLIC TUBING SHALL BE USED IN ALL LOCATIONS NOT OTHERWISE SPECIFIED FOR RIGID OR FLEXIBLE CONDUIT AND WHERE NOT IN VIOLATION OF THE NATIONAL ELECTRIC CODE.
 3. FLEXIBLE METAL CONDUIT: FLEXIBLE METAL CONDUIT SHALL BE GALVANIZED STEEL FLEXIBLE METAL CONDUIT LOCATED IN WET LOCATIONS SHALL BE THE LIQUID-TIGHT TYPE. FLEXIBLE METAL CONDUIT MAY BE USED IN PLACE OF EMT WHERE COMPLETELY ACCESSIBLE, SUCH AS ABOVE REMOVABLE ACUSTICAL TILE CEILINGS AND FOR EXPOSED WORK IN UNFINISHED SPACES. A SHORT PIECE OF FLEXIBLE METAL CONDUIT SHALL BE USED FOR THE CONNECTION TO ALL MOTORS AND VIBRATING EQUIPMENT. CONNECTION BETWEEN RECESSED LIGHT FIXTURES AND JUNCTION BOX, AND AS OTHERWISE NOTED, PROVIDED THE USE MEETS THE REQUIREMENTS OF THE NATIONAL ELECTRIC CODE AND LOCAL CODES. THE FLEXIBLE METAL CONDUIT SHALL BE THE TYPE APPROVED FOR CONTINUOUS RUNNING.
 - C. CONDUCTOR MATERIAL
 1. THE CONDUCTOR MATERIAL SHALL BE AS FOLLOWS, UNLESS OTHERWISE NOTED:
 - A. FEEDERS: SHALL BE TYPE THHN OR THWN RATED AT 75 DEGREES CENTIGRADE.
 - B. BRANCH CIRCUITS: SHALL BE TYPE THHN OR THWN RATED AT 75 DEGREES CENTIGRADE, EXCEPT BRANCH CIRCUITS WITH CONDUCTOR SIZES OF NO. 10 AND SMALLER IN DRY LOCATIONS MAY BE TYPE THHN OR THWN.
 - C. SPECIAL LOCATIONS: CONDUCTORS IN SPECIAL LOCATIONS SUCH AS RACE HOODS, LIGHTING FIXTURES, ETC., SHALL BE AS REQUIRED BY THE NATIONAL ELECTRICAL CODE, LOCAL CODE OR AS OTHERWISE STATED.
 2. NO CONDUCTOR SHALL BE SMALLER THAN NO. 12 WIRE, EXCEPT FOR THE CONTROL WIRING AND AS STATED IN OTHER SECTIONS OF THE SPECIFICATIONS OR ON THE DRAWINGS. WIRING TO SWITCHES SHALL NOT BE CONSIDERED AS CONTROL WIRING.
 3. CONDUCTORS INDICATED ON THE DRAWINGS ARE BASED ON COPPER.
 4. ALL CONDUCTORS WITH THE SIZE OF NO. 8 OR LARGER SHALL BE STRANDED.
 5. ALL LIGHTING AND RECEPTACLE BRANCH CIRCUITS IN EXCESS OF 100 LINEAR FEET SHALL BE INCREASED ONE SIZE TO PREVENT EXCESSIVE VOLTAGE DROP.
 - D. SAFETY SWITCHES (FSS) (NFSS)
 - A. GENERAL: FURNISH AND INSTALL SAFETY SWITCHES AS INDICATED ON THE DRAWINGS OR AS REQUIRED. ALL SAFETY SWITCHES SHALL BE NEMA HEAVY DUTY TYPE AND UNDERWRITERS' LABORATORIES LISTED. THE SWITCHES SHALL BE FUSED SAFETY SWITCHES (FSS) OR NONFUSED SAFETY SWITCHES (NFSS) AS SHOWN ON THE DRAWINGS OR REQUIRED.
 - B. SWITCHES: SWITCHES SHALL HAVE A QUICK-MAKE AND QUICK-BREAK OPERATING HANDLE AND MECHANISM WHICH SHALL BE AN INTEGRAL PART OF THE BOX. PADLOCKING PROVISIONS SHALL BE PROVIDED FOR PADLOCKING IN THE "OFF" POSITION WITH AT LEAST THREE PADLOCKING SWITCHES SHALL BE AT LEAST HORSEPOWER RATED FOR 250 VOLTS AC OR DC AS REQUIRED. LUGS SHALL BE UL LISTED FOR COPPER AND ALUMINUM CABLE.
2. PANEL BOARD BUS ASSEMBLY: BUS BAR CONNECTIONS TO THE BRANCH CIRCUIT BREAKERS SHALL BE THE "PHASE SEQUENCE" TYPE. SINGLE-PHASE 3-WIRE PANEL BOARD BUSING SHALL BE SUCH THAT TWO ADJACENT SINGLE-POLE BREAKERS ARE CONNECTED TO OPPOSITE POLARITIES IN SUCH A MANNER THAT 2-POLE BREAKERS CAN BE INSTALLED IN ANY LOCATION. THREE-PHASE 4-WIRE BREAKERS ARE INDIVIDUALLY CONNECTED TO EACH OF THE THREE IDENTIFIED PHASES IN SUCH A MANNER THAT 2- OR 3-POLE BREAKERS CAN BE INSTALLED AT ANY LOCATION. ALL CURRENT CARRYING PARTS OF THE BUS ASSEMBLY SHALL BE PLATED. MAINS RATINGS SHALL BE AS SHOWN IN THE PANEL BOARD SCHEDULE ON THE PLANS. PROVIDE SOLID NEUTRAL ASSEMBLY (S/N) WHEN REQUIRED.
3. CIRCUIT BREAKERS: PROVIDE MOLDED CASE CIRCUIT BREAKERS OF FRAME, TRIP RATING AND INTERRUPTING CAPACITY AS SHOWN ON THE SCHEDULE. ALSO, PROVIDE THE NUMBER OF SPACES FOR FUTURE CIRCUIT BREAKERS AS SHOWN IN THE SCHEDULE. THE CIRCUIT BREAKERS SHALL BE QUICK-MAKE, QUICK-BREAK, THERMAL-MAGNETIC, TRIP INDICATING AND HAVE COMMON TRIP ON ALL MULTIPOLE BREAKERS WITH INTERNAL TIE MECHANISM.
4. PANEL BOARD BUS ASSEMBLY: BUS BAR CONNECTIONS TO THE BRANCH CIRCUIT BREAKERS SHALL BE THE "PHASE SEQUENCE" TYPE. SINGLE-PHASE 3-WIRE PANEL BOARD BUSING SHALL BE SUCH THAT TWO ADJACENT SINGLE-POLE BREAKERS ARE CONNECTED TO OPPOSITE POLARITIES IN SUCH A MANNER THAT 2-POLE BREAKERS CAN BE INSTALLED IN ANY LOCATION. THREE-PHASE 4-WIRE BREAKERS ARE INDIVIDUALLY CONNECTED TO EACH OF THE THREE IDENTIFIED PHASES IN SUCH A MANNER THAT 2- OR 3-POLE BREAKERS CAN BE INSTALLED AT ANY LOCATION. ALL CURRENT CARRYING PARTS OF THE BUS ASSEMBLY SHALL BE PLATED. MAINS RATINGS SHALL BE AS SHOWN IN THE PANEL BOARD SCHEDULE ON THE PLANS. PROVIDE SOLID NEUTRAL ASSEMBLY (S/N) WHEN REQUIRED.
5. WIRING TERMINALS: TERMINALS FOR FEEDER CONDUCTORS TO THE PANEL BOARD MAINS AND NEUTRAL SHALL BE SUITABLE FOR THE TYPE OF CONDUIT SPECIFIED. TERMINALS FOR BRANCH CIRCUIT WIRING, BOTH BREAKER AND NEUTRAL, SHALL BE SUITABLE FOR THE TYPE OF CONDUIT SPECIFIED.
6. CABINETS AND FRONTS: THE PANEL BOARD BUS ASSEMBLY SHALL BE ENCLOSED IN A STEEL CABINET. THE SIZE OF THE WIRING GUTTERS AND GAUGE OF STEEL SHALL BE IN ACCORDANCE WITH NEMA STANDARDS. THE BOX SHALL BE FABRICATED FROM GALVANIZED STEEL OR EQUIVALENT RUST RESISTANT STEEL. FRONTS SHALL INCLUDE DODOR AND HAVE FLUSH, BRUSHED STAINLESS STEEL, SPRING-LOADED DODOR PULLS. THE FLUSH LOCK SHALL NOT PROTRUDE BEYOND THE FRONT OF THE BOX. ALL PANEL BOARD LOCKS SHALL BE KEYPED A LIKE.
7. DIRECTORY: ON THE INSIDE OF THE DOOR OF EACH CABINET, PROVIDE A TYPEWRITTEN DIRECTORY WHICH WILL INDICATE THE LOCATION OF THE EQUIPMENT OR DEVICES SUPPLIED BY EACH CIRCUIT. THE DIRECTORY SHALL BE MOUNTED IN A METAL FRAME WITH A NONBREAKABLE TRANSPARENT COVER. THE PANEL BOARD DESIGNATION SHALL BE TYPED ON THE DIRECTORY CARD AND PANEL DESIGNATION STENCILED IN 1-1/2" HIGH LETTERS ON THE INSIDE OF THE DOOR.
8. PANEL BOARD INSTALLATION
 1. BEFORE INSTALLING PANEL BOARDS CHECK ALL OF THE ARCHITECTURAL DRAWINGS FOR POSSIBLE CONFLICT OF SPACE AND ADJUST THE LOCATION OF THE PANEL BOARD TO PREVENT SUCH CONFLICT WITH OTHER ITEMS.
 2. WHEN THE PANEL BOARD IS RECESSED INTO A WALL SERVING AN AREA WITH ACCESSIBLE CEILING SPACE ABOVE OR FLOOR BELOW, INSTALL AN EMPTY CONDUIT SYSTEM FOR FUTURE WIRING. THE MINIMUM ACCESS SHALL A 1-1/4" CONDUIT.
 3. THE PANEL BOARDS SHALL BE MOUNTED IN ACCORDANCE WITH ARTICLE 373 OF THE NEC. THE ELECTRICAL CONTRACTOR SHALL FURNISH ALL MATERIAL FOR MOUNTING THE PANEL BOARDS.
9. LIGHTING SYSTEM
 - A. FIXTURE TYPES AND MANUFACTURERS SHALL BE AS INDICATED ON THE DRAWINGS.
 - B. CATALOG NUMBERS SHOWN ON THE DRAWINGS ARE FOR GENERAL IDENTIFICATION ONLY. ALL RELATED PARTS SUCH AS PLASTER RINGS, JUNCTION BOXES, LUGS, SHIELDS, MOUNTING STEMS, CONDUITS, CONNECTORS, STRAPS, NIPPLES, ETC. REQUIRED TO FIT THEM PROPERLY TO THE CONSTRUCTION SHALL BE FURNISHED AND INSTALLED.
10. WIRING DEVICES
 - A. CONTRACTOR SHALL FURNISH AND INSTALL ALL LIGHTING SWITCHES, CONVENIENCE OUTLETS, SPECIAL PURPOSE RECEPTACLES, ETC. ALONG WITH APPROPRIATE OUTLET AND TRIM PLATES.
 - B. ALL WIRING DEVICES SHALL BE SPECIFICATION GRADE AND COMPLY WITH THE APPLICABLE REQUIREMENTS OF THE NEC, NEMA, IEEE, AND BE UL LISTED AND LABELED. TRIM PLATES SHALL BE OF GAGE STYLE, MATCHING THROUGH OUT THE PROJECT. UNLESS NOTED OTHERWISE, TRIM PLATES SHALL BE OF #302 STAINLESS STEEL.

ELECTRICAL SPECIFICATIONS

E3 SCALE: NONE

ELECTRICAL DETAILS

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ROWAN COUNTY AIRPORT TERMINAL EXPANSION

REGISTERED PROFESSIONAL ENGINEER
C-657
DAVID S. SMITH

MCB DRAWN BY DSJ CHECKED BY APRIL 2017 DATE CONTL. NO. SHEET NO. E3 OF 4