

GENERAL ELECTRICAL NOTES:

GENERAL REQUIREMENTS:

- 1. CONTRACTOR SHALL BE RESPONSIBLE FOR ALL FEES, PERMITS, AND LICENSES FOR THE COMPLETE INSTALLATION OF THE WORK OUTLINED IN THESE CONTRACT DOCUMENTS.
2. THE CONTRACT DOCUMENTS ARE DIAGRAMMATIC IN NATURE AND NOT EVERY DETAIL OR EXACT LOCATION OF EQUIPMENT AND/OR CONDUIT IS SHOWN. VERIFY ALL CONDITIONS AND DIMENSIONS PRIOR TO ORDERING ANY MATERIAL OR PERFORMING ANY WORK. NOTIFY THE COR OF ANY CONDITIONS OR DIMENSIONS WHICH WOULD AFFECT PERFORMANCE OF WORK IN ACCORDANCE WITH THE CONTRACT DRAWINGS AND/OR SPECIFICATIONS.
3. THE ELECTRICAL COR SHALL SUBMIT SHOP DRAWINGS WITH CATALOG SHEETS TO THE COR PRIOR TO ORDERING ANY ELECTRICAL EQUIPMENT. SHOP DRAWINGS AND CATALOG SHEETS SHALL BE SUBMITTED AS A COMPREHENSIVE COMPLETE SET AND PARTIAL EQUIPMENT SUBMITTALS WILL NOT BE ACCEPTED. ELECTRICAL SUBMITTALS SHALL INCLUDE:
4.1 LIGHTING FIXTURES AND CONTROLS
4.2 PANELBOARDS AND SAFETY SWITCHES
4.3 WIRING
4.4 CONDUIT AND FITTINGS
4.5 WIRING DEVICES
5. CONTRACTOR IS TO COORDINATE WORK IN REGARDS TO PROJECT TIMELINE, WORK HOURS, AS WELL AS ANY BONDING OR INSURANCE REQUIREMENTS.
6. HANDLE, STORE AND PROTECT EQUIPMENT AND MATERIALS IN ACCORDANCE WITH THE MANUFACTURER'S RECOMMENDATIONS. REPLACE DAMAGED OR DEFECTIVE ITEMS WITH NEW ITEMS.

COORDINATION:

- 1. ELECTRICAL CONTRACTOR SHALL COORDINATE LOCATIONS AND ELECTRICAL REQUIREMENTS OF MECHANICAL/PLUMBING EQUIPMENT WITH THE MECHANICAL/PLUMBING CONTRACTORS PRIOR TO ORDERING ANY MATERIAL OR PERFORMING ANY WORK ASSOCIATED WITH SUCH EQUIPMENT.
2. ELECTRICAL CONTRACTOR SHALL COORDINATE LOCATION OF LIGHT FIXTURES WITH MECHANICAL CONTRACTOR, PLUMBING CONTRACTOR, AND FIRE PROTECTION CONTRACTOR PRIOR TO INSTALLATION TO AVOID CONFLICT WITH DUCTWORK, PIPING, AND SPRINKLER SYSTEM COMPONENTS.
3. EXACT DEVICE LOCATIONS (RECEPTACLES, DATA/TELEPHONE OUTLETS, LIGHT FIXTURES, ETC.) SHALL BE COORDINATED WITH ARCHITECTURAL PLANS.

MATERIALS:

- 1. OUTLET BOXES
1.1. GENERAL USE BOXES: GALVANIZED, PRESSED STEEL UNITS OF PROPER DEPTH AND GAUGE REQUIRED BY THE OUTLET LOCATION. EQUIP WITH PLASTER RING OR COVER AS NECESSARY.
1.2. SPECIAL BOXES: GALVANIZED SHEET METAL OR CAST CONSTRUCTION AND SIZED IN ACCORDANCE WITH NFPA 70. FOR SPECIAL SYSTEM, USE BOXES AS RECOMMENDED BY THE EQUIPMENT MANUFACTURER.
2. CONDUIT
2.1 RIGID METALLIC CONDUIT (RMC): HOT DIPPED GALVANIZED STEEL CONFORMING TO (FS) WW-C581E AND UL 6.
2.2 ELECTRICAL METALLIC TUBING (EMT): GALVANIZED STEEL CONFORMING TO ASA C80.3, (FS) WW-C563 AND ULF 797.
2.3 FLEXIBLE METAL CONDUIT (FMC): SPIRAL WOUND, SQUARE LOCKED, HOT DIPPED GALVANIZED STEEL CONFORMING TO UL 1.
2.4 METAL-CLAD CABLE (MC): INTERLOCKING METAL TAPE SHEATH, CONFORMING TO UL 1569.
2.5 NON-METALLIC SHEATHED CABLE (NM): CONFORMING TO UL 719.
3. CONDUIT FITTINGS
3.1 RMC: HOT DIPPED GALVANIZED OR CADMIUM PLATED. FITTINGS USED WITH COATED RMC SHALL HAVE A SIMILAR COATING.
3.2 EMT: COMPRESSION OR SET SCREW TYPE, MADE OF CADMIUM PLATED STEEL OR HOT DIPPED GALVANIZED MALLEABLE IRON.
3.3 FMC: TWO SCREW DOUBLE CLAMP MALLEABLE IRON, HOT DIPPED GALVANIZED OR CADMIUM PLATED.

4. WIRING

- 4.1 ALL WIRING SHALL BE COPPER UNLESS NOTED OTHERWISE.
4.2 INSULATION: HEAT AND MOISTURE RESISTANT WITH A TEMPERATURE RATING OF AT LEAST 75 DEGREES THERMAL HIGH HEAT NYLON (THHN), THERMAL HIGH WATER RESISTANT NYLON (THWN) AND A 600 VOLT RATING UNLESS OTHERWISE INDICATED.
4.3 USE STRANDED CONDUCTOR ON ALL WIRING #8 AWG AND LARGER. ALL OTHER WIRING MAY BE SOLID.
5. USE ANCHORS AND FASTENERS OF A TYPE DESIGNED AND INTENDED FOR USE IN THE BASE MATERIAL TO WHICH THE MATERIAL OR SUPPORT IS TO BE ATTACHED, AND CAPABLE OF SUPPORTING THE INTENDED LOAD AND WITHSTANDING ANY ASSOCIATED STRESSES AND VIBRATIONS. DO NOT USE WOODEN PLUGS FOR FASTENING.
6. ALL MATERIALS USED FOR CONSTRUCTION SHALL BE INSTALLED IN A NEAT AND WORK-LIKE MANNER.
7. ALL WIRING DEVICES SHALL BE SPECIFICATION GRADE AND MATCH BASE BUILDING STANDARD DEVICE STYLE, COLOR, AND MOUNTING HEIGHT UNLESS REQUIRED TO BE IN COMPLIANCE WITH ADA.
8. ELECTRICAL CONTRACTOR SHALL PROVIDE ALL COMPONENTS NECESSARY TO INSTALL LIGHT FIXTURES PER MANUFACTURER'S RECOMMENDATIONS. THIS INCLUDES, BUT IS NOT LIMITED TO, MOUNTING HARDWARE, SLOPED-CEILING ADAPTORS, GYP BOARD TRIM KITS, ETC.
9. FOR ALL TELEPHONE/DATA OUTLETS, PROVIDE AN OUTLET BOX WITH 3/4" CONDUIT AND A PULL STRING TO THE ACCESSIBLE CEILING SPACE.
10. ALL MATERIALS AND EQUIPMENT FURNISHED AND INSTALLED BY THE ELECTRICAL CONTRACTOR SHALL BE NEW, UL LISTED OR LABELED, AND CONFORM TO NEMA AND/ANSI STANDARDS WHERE APPLICABLE.

- 11. FURNISH AND INSTALL PULL BOXES, JUNCTION BOXES, AND DEVICE BOXES OF SUITABLE GAUGE AND SIZE AS NECESSARY TO PROVIDE A FULLY FUNCTIONAL AND CODE COMPLIANT SYSTEM.

EXECUTION:

- 1. MAINTAIN THE INTEGRITY OF ALL EXISTING CIRCUITS IN SERVICE THAT MAY BE AFFECTED BY THIS WORK. IDENTIFY ALL SOURCES OF POWER AND DE-ENERGIZE REQUIRED CIRCUITS BEFORE BEGINNING WORK.
2. PERFORM ALL CUTTING AND DRILLING TO PROVIDE PENETRATIONS THROUGH WALLS AND FLOORS FOR ELECTRICAL INSTALLATION WORK.
3. WHERE CONDUITS PASS THROUGH FIRE RATED OR SMOKE RATED ASSEMBLIES, CONTRACTOR SHALL FOLLOW UL GUIDELINES FOR SEALING/STOPPING PENETRATIONS TO MAINTAIN FIRE AND/OR SMOKE RATING OF WALL ASSEMBLY.
4. ALL DEVICES AND JUNCTION BOXES SHALL BE ACCESSIBLE. PROVIDE ACCESS PANELS AS REQUIRED TO ENSURE ACCESS TO DEVICES. COORDINATE ACCESS PANEL LOCATIONS AND TYPES WITH COR AND GENERAL CONTRACTOR PRIOR TO ORDERING AND INSTALLATION.
5. DISCONNECT SWITCHES SHALL BE MOUNTED ON INDIVIDUAL STRUCTURAL SUPPORTS, OR OTHERWISE DIRECTLY ON EQUIPMENT, PROVIDED NO MODIFICATION TO EQUIPMENT IS NECESSARY. ALL STRUCTURAL SUPPORTS FOR ELECTRICAL EQUIPMENT SHALL BE PROVIDED AND INSTALLED BY ELECTRICAL CONTRACTOR.
6. ALL ELECTRICAL DEVICE CONNECTIONS SHALL BE TIGHTENED TO THE TORQUE VALUES RECOMMENDED BY THE DEVICE MANUFACTURER. IF THESE VALUES ARE NOT LISTED, TIGHTEN TO POUND INCH OR POUND FOOT VALUES RECOMMENDED BY UL STANDARD 466A-B.

7. GROUNDING

- 7.1 ALL ELECTRICAL EQUIPMENT, WIRING, CONDUITS, AND BUILDING ELEMENTS SHALL BE GROUNDED PER THE REQUIREMENTS OF NFPA 70.
7.2 THE BUILDING GROUNDING ELECTRODE SYSTEM SHALL BE INSTALLED TO MAINTAIN A RESISTANCE TO EARTH OF 25 OHMS OR LESS. IF A SINGLE GROUNDING ELECTRODE CAN NOT MEET THIS REQUIREMENT, THE CONTRACTOR IS REQUIRED TO INSTALL SUPPLEMENTAL ELECTRODES PER SECTION 250.53 OF NFPA 70.
7.3 PROVIDE AN EQUIPMENT CONDUCTOR FOR ALL RACEWAYS SIZED TO COORDINATE WITH THE REQUIREMENTS OF NFPA 70. CONDUITS ARE NOT PERMITTED TO BE USED AS LIEU OF GROUNDING WIRES.
7.4 BOND ALL BRANCH CIRCUIT DEVICES TO THE BUILDING GROUND SYSTEM BY MEANS OF THE GROUNDING CONDUCTOR INSTALLED IN EACH RACEWAY.

- 8. CABLES INSTALLED OUTSIDE OF RACEWAYS SHALL BE SUPPORTED INDEPENDENTLY AND NOT FROM OTHER SYSTEMS. SECURING CABLES TO OR FROM WATERLINES, ELECTRICAL RACEWAYS, OR ANY OTHER MECHANICAL SYSTEM IS NOT ACCEPTABLE. CABLES SHALL BE SUPPORTED FROM BAR JOISTS, CABLE TRAYS, UNIFORM TRAPEZE HANGERS, OR OTHER HANGERS INSTALLED AND APPROVED FOR THIS PURPOSE. MAXIMUM SPACING SHALL BE 10' ON CENTER WITH A MAXIMUM 8" SAG. CABLES SHALL MAINTAIN A MINIMUM 6" CLEARANCE FROM ELECTRICAL EQUIPMENT.

9. IDENTIFICATION

- 9.1 PROVIDE 1/8" SELF-STICK LABELS WITH BLOCK LETTERING PROTECTED WITH CLEAR TAPE TO IDENTIFY PANEL AND CIRCUIT NUMBER AT RECEPTACLES, SWITCHES, CONTROL CABINETS, ETC. ADDITIONALLY, PROVIDE 1-1/2" HIGH ENGRAVED LAMINATED NAMEPLATES TO IDENTIFY CABINETS, PANELBOARDS, MOTOR STARTERS, ETC.
9.2 IDENTIFY ALL MAJOR JUNCTION BOXES USING BLACK LETTERS TO IDENTIFY THE PANEL AND CIRCUIT NUMBER OR SYSTEM WIRING.
9.3 CONTRACTOR SHALL PROVIDE IDENTIFICATION FOR WIRING SYSTEMS AND EQUIPMENT.
9.4 POWER WIRING SHALL HAVE CONDUCTORS COLOR BANDED IN EACH JUNCTION AND PULL BOX.
9.5 CONTROL CIRCUIT WIRING SHALL BE IDENTIFIED WITH WIRE NUMBERS AT EACH TERMINATION.
9.6 ON PANELBOARD NAMEPLATES, LIST THE PANEL DESIGNATION, AMPERAGE, VOLTAGE, AND PHASE.
9.7 PROVIDE TYPEWRITTEN PANELBOARD CIRCUIT DIRECTORY IN PANELBOARD DOOR IDENTIFYING ALL ACTIVE CIRCUITS AND SPARES. ACTIVE CIRCUITS SHALL DESIGNATE EQUIPMENT SERVED, DIRECTORY SHALL REFLECT ACTUAL CIRCUITRY, AND SHALL NOT BE A REPRODUCTION OF DESIGN DRAWING PANEL SCHEDULES IF DEVIATIONS WERE MADE DURING CONSTRUCTION.

10. WIRING

- 10.1 ALL WIRING SHALL BE INSTALLED IN APPROVED CONDUITS OR RACEWAYS UNLESS NOTED OTHERWISE.
10.2 ALL BRANCH CIRCUITS SHALL HAVE DEDICATED NEUTRAL CONDUCTORS UNLESS NOTED OTHERWISE.
10.3 WIRES SHALL BE A MINIMUM #12 AWG IN SIZE.
10.4 COLOR CODE WIRING AS FOLLOWS:
10.4.1 120/240V, 1 PHASE: NEUTRAL - WHITE, PHASE A - BLACK, PHASE B - RED, GROUND - GREEN
10.4.2 120/208V, 3 PHASE: NEUTRAL - WHITE, PHASE A - BLACK, PHASE B - RED, PHASE C - BLUE, GROUND - GREEN
10.4.3 277/480V, 3 PHASE: NEUTRAL - GREY, PHASE A - BROWN, PHASE B - ORANGE, PHASE C - YELLOW, GROUND - GREEN

11. CONDUIT

- 11.1 ALL CONDUITS SHALL BE INSTALLED IN A CONCEALED LOCATION WHERE POSSIBLE, WITH THE EXCEPTION OF DEDICATED MECHANICAL AND ELECTRICAL SPACES. IN THOSE AREAS OUTSIDE OF THE EXCEPTION WHERE IT IS NOT POSSIBLE TO INSTALL CONDUITS IN A CONCEALED MANNER, ELECTRICAL CONTRACTOR SHALL INSTALL EXPOSED CONDUITS PARALLEL AND AT RIGHT ANGLES TO THE NEARBY SURFACES AND STRUCTURAL MEMBERS. IN THESE AREAS, GROUP RACEWAYS IN MINIMUM GROUPS OF THREE RACEWAYS ON A COMMON SUPPORT SYSTEM.
11.2 PROVIDE PULL ROPE IN ALL EMPTY CONDUITS.
11.3 EXTERIOR LOCATIONS: USE RMC CONDUIT.
11.4 INTERIOR LOCATIONS, WHERE SUBJECT TO DAMAGE BELOW 8' AFF: USE RMC OR EMT CONDUIT.
11.5 INTERIOR LOCATIONS, WHERE NOT SUBJECT TO DAMAGE ABOVE 8' AFF, OR IN CONCEALED LOCATIONS: USE RMC OR EMT CONDUIT.
11.6 TYPE MC CABLE FOR LIGHTING CIRCUITS IS PERMITTED IN CONCEALED LOCATION UP TO A MAXIMUM RUN OF 60' FEET AT THE END POINT TO CONNECT LIGHT FIXTURES TO SUPPLYING BRANCH CIRCUIT.
11.7 TYPE NM CABLE IS NOT PERMITTED TO BE USED WITHOUT CONDUIT IN ANY LOCATION EXCEPT BY WRITTEN APPROVAL BY THE COR.
11.8 FMC IS PERMITTED TO BE USED IN RACEWAYS FOR EQUIPMENT SUBJECT TO VIBRATION (MOTOR, HVAC EQUIP, ETC.). RUNOUT LENGTHS FOR FMC MUST BE 60' FEET OR LESS.
11.9 CONDUIT REQUIREMENTS IN THIS SECTION ARE PROVIDED FOR GENERAL PRINCIPLES AND INSTALLATION GUIDANCE. CONTRACTOR IS RESPONSIBLE FOR FOLLOWING ALL APPLICABLE REQUIREMENTS.

12. LIGHTING

- 12.1 ELECTRICAL CONTRACTOR SHALL COORDINATE LOCATION OF LIGHT FIXTURES WITH MECHANICAL CONTRACTOR, PLUMBING CONTRACTOR, AND FIRE PROTECTION CONTRACTOR PRIOR TO INSTALLATION TO AVOID CONFLICT WITH DUCTWORK, PIPING, AND SPRINKLER SYSTEM COMPONENTS.
12.2 MANUFACTURERS: SUBJECT TO COMPLIANCE WITH REQUIREMENTS, MANUFACTURERS OFFERING PRODUCTS WHICH MAY BE INCORPORATED IN THE WORK INCLUDE BUT ARE NOT LIMITED TO THOSE LISTED IN THE FIXTURE SCHEDULE. LIGHT FIXTURES SHALL BE SUPPORTED FROM BUILDING STRUCTURE INDEPENDENT OF THE GRID SYSTEM (2 POINTS MINIMUM).
12.3 ALL LIGHT FIXTURE LAMPS USED IN THIS PROJECT SHALL BE BY ONE MANUFACTURER. ALL LAMPS OF A PARTICULAR TYPE SHALL BE FROM ONE PRODUCTION RUN, ANSI C78.
13. LIGHTING CONTROLS
13.1 WHERE MORE THAN ONE SWITCH OR DIMMER OCCURS AT A LOCATION, GANG THE SWITCHES TOGETHER WITH A COMMON JUNCTION BOX AND FACEPLATE.
13.2 WHERE OCCUPANCY SENSORS ARE USED IN OPEN CONFIGURATIONS, CONTRACTOR SHALL MASK LAST SENSOR AT EACH END TO PREVENT PASS-BY ACTIVATION OF LIGHTS.
13.3 TIMEOUT ON OCCUPANCY SENSORS SHALL BE SET TO 10 MINUTES UNLESS OTHERWISE NOTED.
14. RECEPTACLES
14.1 ALL RECEPTACLES LOCATED WITHIN 6'-0" OF A SINK OR LAVATORY SHALL BE GFCI RATED.
15. ELECTRICAL CONTRACTOR SHALL BE RESPONSIBLE FOR PROPERLY BALANCING ALL BRANCH CIRCUITS AMONG THE PHASES OF THE SYSTEM ACCORDING TO TABLE 70.
16. PRIOR TO ENERGIZING OF ALL NEW FEEDERS, CHECK ALL WIRE AND CABLE FOR CONTINUITY FOR CIRCUITRY AND FOR SHORT CIRCUITS. CORRECT ANY DEFICIENCIES PRIOR TO ENERGIZING.
17. RECORD DRAWINGS
17.1 MAINTAIN A SET OF DRAWINGS ON SITE. THESE DRAWINGS SHALL BE UPDATED WITH ALL FORMAL FIELD CHANGES AND OTHER PORTIONS OF THE WORK THAT VARY SIGNIFICANTLY FROM THE CONTRACT DOCUMENTS. INDICATE ACTUAL ROUTING OF ALL MAIN SERVICE, TRANFORMER, AND PANELBOARD FEEDERS.
17.2 DELIVER RECORD DRAWINGS TO OWNER PRIOR TO CLOSEOUT OF CONSTRUCTION.

- 18. ALL MATERIALS AND LABOR SHALL BE UNCONDITIONALLY WARRANTED FOR A PERIOD OF ONE (1) YEAR FROM DATE OF SUBSTANTIAL COMPLETION. SPECIFIC MANUFACTURER EQUIPMENT WARRANTIES IN EXCESS OF ONE (1) YEAR SHALL TAKE PRECEDENCE OVER MANUFACTURER WARRANTIES. ALL WARRANTIES, WHENEVER AVAILABLE AND POSSIBLE, SHALL BE MAINTAINED AND PASSED FROM CONTRACTOR AND SHALL NOT BE MODIFIED OR REBUILT.

Order Plans @ WWW

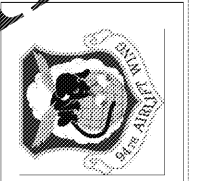
ELECTRICAL ABBREVIATIONS

Table with 4 columns: A, C, DS, GND, MFR, OC, RMC. Includes abbreviations for electrical components like AMPS, CONDUIT, DISCONNECT SWITCH, GROUND, MANUFACTURER, OVERCURRENT, RIGID METAL CONDUIT, etc.

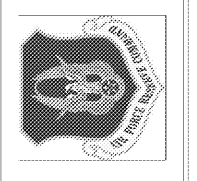
ELECTRICAL SYMBOL LEGEND

Table mapping electrical symbols to descriptions. Symbols include single pole switch, 3-way switch, 4-way switch, dimmer switch, occupancy sensor, receptacle, junction box, safety switch, etc.

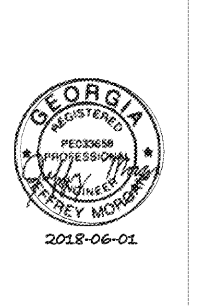
CONSTRUCTION table with columns: REV., DATE, BY, DESCRIPTION. Shows revision history for conceptual design, submittals, and construction.



CIVIL ENGINEERING
94th AIRLIFT WING
DOBBINS AIR RESERVE BASE, GEORGIA



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Project information table including: PROJECT: REPAIR FACILITY & ADDITION, BUILDING 747, LOCATION: DOBBINS AIR RESERVE BASE, GEORGIA, DRAWING: ELECTRICAL GENERAL NOTES, PROJECT CONTACT: ROBERT ERNEST J. MORGAN, PROJECT No: 2017-238, PROJ. OFFICER: J. MORGAN, DESIGNED: R. LESTER, CHECKED: J. MORGAN, DATE: 2017-02-23, DRAWING: 41 OF 46.

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