

ELECTRICAL SPECIFICATIONS

PART 1: GENERAL

- A. PROVIDE ALL WORK AND MATERIALS FOR THE INSTALLATION OF COMPLETE WIRING SYSTEMS AS SPECIFIED HEREIN AND INDICATED ON THE DRAWINGS.
B. ALL ELECTRICAL PERMITS AND INSPECTION FEES SHALL BE OBTAINED AND PAID FOR BY THE ELECTRICAL CONTRACTOR.
C. ELECTRICAL CONTRACTOR SHALL GUARANTEE ALL WORK AND MATERIALS FOR ONE YEAR EFFECTIVE THE DAY THE PROJECT IS ACCEPTED BY THE OWNER.
D. WORK SHALL BE IN ACCORDANCE WITH THE NATIONAL ELECTRICAL CODE, OSHA, STATE BUILDING CODE AND ALL OTHER APPLICABLE LOCAL REQUIREMENTS. ALL WORK SHALL COMPLY WITH THE LATEST ADDITION OF NECA STANDARDS OF INSTALLATION.
E. ALL MATERIALS, DEVICES, AND APPLIANCES SHALL BE NEW, EXCEPT WHERE OTHERWISE NOTED, AND SHALL BE LISTED BY AN APPROVED TESTING AGENCY WHERE SUCH A LISTING IS AVAILABLE.
F. PROVIDE ALL CUTTING, PATCHING, CHANNELING AND CHASING FOR INSTALLATION OF WORK AND REPAIR ANY DAMAGE OF EXISTING OR NEW INSTALLATIONS AT THE CONTRACTORS EXPENSE.
G. SHOP DRAWINGS AND CATALOG DATA SHALL BE SUBMITTED FOR APPROVAL PRIOR TO BEGINNING WORK.
H. PROVIDE ENGRAVED PHENOLIC NAMEPLATES FOR PANELBOARDS, WIRING TROUGHS, AND FUSED SWITCHES, WHITE LETTERS ON BLACK FOR 120/208 VOLT SYSTEMS.
I. AN ELECTRICAL INSPECTION CERTIFICATE SHALL BE ISSUED BY THE LOCAL INSPECTION AUTHORITIES BEFORE APPROVAL FOR FINAL PAYMENT.
J. THE CONDUIT AND NEUTRAL SYSTEM SHALL BE GROUNDED AT THE MAIN SERVICE EQUIPMENT.
K. WIRING SHALL BE TESTED FOR CONTINUITY AND GROUNDS BEFORE BEING ENERGIZED.
L. IF, DURING THE COURSE OF WORK, THE ELECTRICAL CONTRACTOR DISCOVERS A PROBLEM WITH THE PERFORMANCE OF THE INSTALLATION RELATIVE TO THE PLANS AND SPECIFICATIONS OR NEC OR OTHER CODES, THE CONTRACTOR SHALL IMMEDIATELY BRING THE PROBLEM TO THE ATTENTION OF THE ARCHITECT OR ENGINEER FOR RESOLUTION PRIOR TO THE EXECUTION OF THE WORK.
M. THE ELECTRICAL CONTRACTOR SHALL CONNECT ALL EQUIPMENT REQUIRING ELECTRICAL CONNECTIONS, UNLESS OTHERWISE NOTED, EXCEPT FOR CONTROL WIRING FOR EQUIPMENT NOT PROVIDED BY THE ELECTRICAL CONTRACTOR.
N. COORDINATE LOCATION AND REQUIREMENTS FOR ELECTRICAL SERVICE WITH THE POWER COMPANY.
O. COORDINATE LOCATION AND REQUIREMENTS FOR TELEPHONE SERVICE WITH THE TELEPHONE COMPANY AND AS INDICATED ON THE DRAWINGS.
P. THE ELECTRICAL CONTRACTOR SHALL BE RESPONSIBLE FOR OBTAINING AND PROVIDING TEMPORARY POWER.

PART 2: RACEWAY

- A. CONDUIT SHALL BE ZINC-COATED EMT INDORS. EMT FITTINGS SHALL BE STEEL SCREW. MINIMUM SIZE SHALL BE 1/2". UNLESS OTHERWISE NOTED. USE SCHEDULE 40 PVC OUTDOORS ABOVE 8'-0" OR BELOW GRADE.
B. SUPPORT ALL CONDUITS WITH STRAPS AND CLAMPS. RUN ALL CONDUIT PARALLEL OR PERPENDICULAR TO BUILDING WALLS.
C. JUNCTION AND PULL BOXES SHALL BE CODE GAUGE GALVANIZED SHEET METAL.
D. LIQUID-TIGHT FLEXIBLE METAL CONDUIT SHALL BE USED FOR EQUIPMENT CONNECTIONS, BUT NOT AS A WIRING METHOD OTHERWISE.
E. MC CABLE MAY BE USED AS A WIRING METHOD WHERE ALLOWED BY CODE.
F. RACEWAY PENETRATIONS THROUGH FLOOR SLABS AND FIRE-RATED WALLS SHALL BE FILLED WITH IMPERVIOUS, NON-SHRINK GROUT SUFFICIENTLY TIGHT TO PREVENT THE TRANSFER OF SMOKE, WATER, AND DUST.
G. CONDUIT INSTALLED UNDERGROUND OR IN CONCRETE SHALL HAVE JOINTS MADE WATER-TIGHT BY USE OF POLYTETRA-FLUOROETHYLENE TAPE.

PART 3: CONDUCTORS

- A. ALL CONDUCTORS SHALL BE SINGLE CONDUCTOR COPPER. THIN THWN, SOLID FOR SIZES #14 THROUGH #10. THIN THWN STRANDED FOR SIZES #8 AND LARGER.
B. BRANCH CIRCUITS SHALL NOT BE SMALLER THAN #12 AWG. CONTROL WIRING SHALL BE #14 AWG.
C. CONDUCTORS SHALL BE COLOR CODED BLACK/RED/BLUE FOR 120/208 VOLT SYSTEMS.
D. WIRING TO LIGHTING FIXTURES SHALL BE AS REQUIRED BY UL LABELS.
E. ALL BRANCH CIRCUIT CONDUITS OR CABLE ASSEMBLIES SHALL CONTAIN AN INSULATED GREEN GROUNDING CONDUCTOR SIZED PER NEC 250-122.
F. ALL CONDUCTORS INSTALLED IN ELECTRICAL RACEWAYS SHALL BE SUPPORTED AT INTERVALS AS REQUIRED PER NEC ARTICLE 318.
G. ALL EQUIPMENT AND DEVICE TERMINATIONS SHALL BE UL LISTED FOR USE WITH 75°C INSULATED CONDUCTORS AT THEIR TEMPERATURE RATING.
H. PROVIDE A SEPARATE NEUTRAL FOR EACH PHASE CONDUCTOR IN ALL BRANCH CIRCUITS.

PART 4: WIRING DEVICES

- A. WIRING DEVICES SHALL BE WHITE WITH STAINLESS STEEL COVER PLATES, SPECIFICATION GRADE AS INDICATED BELOW, EQUAL TO THE COOPER QUALITY INDICATED.
TOGGLE SWITCHES SHALL BE AS FOLLOWS:
SINGLE POLE 20 AMP COOPER 1221
THREE WAY 20 AMP COOPER 1223
FOUR WAY 20 AMP COOPER 1224
SINGLE POLE/PILOT 20 AMP COOPER 1221PL
DUPLEX RECEPTACLES SHALL HAVE A NYLON FACE AND SHALL BE AS FOLLOWS:
15 AMP DUPLEX COOPER 5252
20 AMP DUPLEX COOPER 5382
15 AMP DUPLEX-GFCI COOPER GF5262
20 AMP DUPLEX-GFCI COOPER GF5362
20 AMP DUPLEX/US/TAMPER COOPER TR7745
15 AMP DUPLEX-IG COOPER IG5252
20 AMP DUPLEX-IG COOPER IG5362
B. DUPLEX RECEPTACLES ON DEDICATED CIRCUIT SHALL BE 20 AMP. OTHER DUPLEX RECEPTACLES MAY BE 15 AMP, UNLESS OTHERWISE NOTED.
C. OUTLET BOXES SHALL NOT BE MOUNTED BACK-TO-BACK.
D. A MAXIMUM OF 10 RECEPTACLES SHALL BE ON EACH BRANCH CIRCUIT.
E. WEATHERPROOF COVERS SHALL HAVE A LID SO THAT PLUGS MAY BE INSTALLED WITHOUT COMPROMISING THE WP FUNCTION, EQUAL TO INTERMATIC GUARDIAN ONE #WP102CC.
F. ALL OUTLETS (INCLUDING TELEPHONE, CABLE TV AND DATA) SHALL HAVE COVER PLATES, BLANK IF NOT USED.
PART 5: DISCONNECT SWITCHES
A. DISCONNECT SWITCHES SHALL BE HEAVY-DUTY TYPE IN NEMA 1 ENCLOSURES (UNLESS OTHERWISE INDICATED), FUSED OR NON-FUSED AS INDICATED.
PART 6: ELECTRICAL GEAR
A. CAROLINA PRODUCTS, INC (CPI) SHALL BE BASIS OF DESIGN FOR MODULAR PANELBOARD SYSTEM.
B. PANELBOARDS SHALL BE DEAD-FRONT SAFETY TYPE.
C. PROVIDE HANDLE LOCK-ON DEVICES ON ALL CIRCUIT BREAKERS CONNECTED TO EMERGENCY, EXIT, AND NIGHT LIGHTING, FIRE ALARM, TELEPHONE AND SECURITY SYSTEMS.
D. CIRCUIT BREAKERS USED FOR SWITCHING OF LIGHTING OR SIGN CIRCUITS SHALL BE SWITCHING DUTY RATED AND SHALL BE MARKED "SWD".
PART 7: LIGHT FIXTURES
A. CATALOG NUMBERS GIVEN DENOTE MINIMUM QUALITY AND PERFORMANCE REQUIRED.
B. LAY-IN FIXTURES SHALL BE SUSPENDED FROM STRUCTURE WITH 2 WIRES AT OPPOSITE CORNERS.
C. SEE ARCHITECTURAL REFLECTED CEILING PLANS FOR EXACT LOCATION OF LIGHT FIXTURES.
D. ALL RECESSED LIGHTING FIXTURES SHALL BE THERMALLY PROTECTED.
E. LED FIXTURE SHALL HAVE 0-10V DIMMING DRIVERS AS SPECIFIED IN LIGHT FIXTURE SCHEDULE.
F. LED FIXTURES SHALL BE SPECIFICATION GRADE AND DRIVERS SHALL HAVE INFRASH PROTECTION
PART 8: TELEPHONE/DATA SYSTEM
A. FURNISH AND INSTALL A COMPLETE TELEPHONE/DATA CONDUIT SYSTEM AS INDICATED ON THE DRAWINGS.
B. PULL AND LEAVE IN EACH CONDUIT ONE PULL CORD FOR FILLING IN CABLE.
C. TELEPHONE SERVICE CONDUITS SHALL BE PROVIDED TO THE PROPERTY LINE OR AS INDICATED ON THE DRAWINGS.
D. THE ELECTRICAL CONTRACTOR SHALL FURNISH AND INSTALL A #6 AWG GREEN COPPER WIRE IN TELEPHONE/DATA CONDUITS.
PART 9: LIGHTING CONTROLS
A. FURNISH AND INSTALL AN ELECTRONIC TIME CONTROLLER WHERE INDICATED.
B. LIGHTING CONTACTORS SHALL SWITCH A LOAD AT 120 VOLTS, 60 HZ AND SHALL HAVE THE NUMBER OF POLES INDICATED ON THE DRAWINGS.
C. ALL LIGHTING CONTACTORS SHALL BE ELECTRICALLY HELD AND HAVE A NEMA 1 ENCLOSURE UNLESS OTHERWISE NOTED.
D. CONTACTORS SHALL BE HOUSED IN CPI ENCLOSURE.

ELECTRICAL SYMBOLS SCHEDULE

- CONDUIT AND/OR WIRING SYSTEM CONCEALED IN CONSTRUCTION IN FINISHED AREAS, EXPOSED IN UNFINISHED AREAS.
CONDUIT AND/OR WIRING SYSTEM CONCEALED BELOW FLOOR OR FLOOR SLAB.
CONDUIT STUB. TERMINATE WITH BUSHING OR CAP IF UNDERGROUND.
BREAK IN CONDUIT, SEE PLAN FOR CONTINUATION.
NON-RIGID RACEWAY SYSTEM
BRANCH CIRCUIT HOMERUN TO PANEL.
JUNCTION BOX SIZED PER NEC.
S SINGLE POLE SWITCH, 20 AMP, 120/277 VOLT, COOPER 1221, OR EQUAL.
S3 THREE WAY SWITCH, 20 AMP, 120/277 VOLT, COOPER 1223, OR EQUAL.
S3cc WALL MOUNTED, PIR/MICROPHONICS TECHNOLOGY OCCUPANCY SENSOR, 120/277 VOLT, SENSOR SWITCH WSX, OR EQUAL WITH 15 FT MINOR MOTION COVERAGE, MINIMUM.
TORK OR EQUAL 120V PHOTOCELL MOUNTED IN NEMA 3R ENCLOSURE
C Ceiling MOUNTED, PIR/MICROPHONICS TECHNOLOGY OCCUPANCY SENSOR, 120/277 VOLT, SENSOR SWITCH CM9 PDT, OR EQUAL WITH 12 FT RADIAL MINOR MOTION COVERAGE, MINIMUM.
S3 DIMMER SWITCH, LUTRON OR EQUAL. DIMMER SWITCH SHALL MATCH RESPECTIVE DIMMING CHARACTERISTIC OF LUMINAIRE.
FRACTIONAL HORSEPOWER MANUAL MOTOR STARTER WITH O.L.S./NEMA 3R ENCLOSURE.
DUPLEX RECEPTACLE, 15 AMP, 120 VOLT (USE 20 AMP FOR SINGLE RECEPTACLE ON A CIRCUIT.) MOUNT 18" A.F.F., U.O.N., COOPER 5252 OR EQUAL.
DUPLEX RECEPTACLE MOUNTED ABOVE COUNTER BACKSPASH, OR AT 48" A.F.F. U.O.N., COOPER 5252 OR EQUAL.
DOUBLE DUPLEX RECEPTACLE MOUNT AT 18" A.F.F. TWO NEMA 5-15R DUPLEX RECEPTACLES IN A COMMON BOX AND COVER PLATE.
ISOLATED GOUNDED DOUBLE DUPLEX RECEPTACLE MOUNT AT 18" A.F.F. U.O.N. TWO NEMA 5-15R DUPLEX RECEPTACLES IN A COMMON BOX AND COVER PLATE.
GROUND FAULT CIRCUIT INTERRUPTER RECEPTACLE. NEMA 5-20R DUPLEX. ALL RECEPTACLES INSTALLED OUTSIDE, WITHIN 6" OF A SINK OR IN A KITCHEN SHALL BE GFCI.
WEATHERPROOF RECEPTACLE. NEMA 5-15R DUPLEX. COVER SHALL BE COPPER #1991 WHERE MOUNTED HORIZONTAL AND #4966 WHERE MOUNTED VERTICAL.
DUPLEX RECEPTACLE MOUNTED FOR FLOOR AND 10" FOR CEILING.
WALL MOUNTED CONNECTION TO KITCHEN EQUIPMENT, NUMBER INDICATES TYPE, SEE KITCHEN EQUIPMENT SCHEDULE.
FRACTIONAL HORSEPOWER MOTOR CONNECTION.
CIRCUIT CONNECTION, NUMBER INDICATES HORSEPOWER.
CONNECTION FOR WATER HEATER, VOLTAGE, PHASE AND SIZE AS INDICATED.
DATA OUTLET SHALL BE GANG BOX WITH SINGLE GANG OPENING, MOUNT AT 18" F.F. WITH 3/4" MIN. ABOVE ACCESSIBLE CEILING.
RECESSED FLUORESCENT LIGHTING FIXTURE. LETTER IS FIXTURE TYPE, SEE LIGHT FIXTURE SCHEDULE.
ROUND RECESSED OR SURFACE MOUNTED LIGHT FIXTURE.
WALL MOUNTED ROUND LIGHT FIXTURE.
WALL MOUNTED LINEAR LIGHT FIXTURE.
FIXTURE WITH INTEGRAL 1100 LUMEN BATTERY INVERTER AND/OR ON EMERGENCY LIGHTING CIRCUIT.
WALL MOUNTED EMERGENCY LIGHTING BATTERY PACK FIXTURE.
WALL MOUNTED COMBINATION EMERGENCY BATTERY PACK AND EXIT SIGN.
DUCT SMOKE DETECTOR.
DUCT DETECTOR REMOTE INDICATING LIGHT.
NONFUSED DISCONNECT SWITCH, SIZE AS INDICATED ON DRAWINGS, NEMA 1 ENCLOSURE U.O.N.
FUSED DISCONNECT SWITCH, SIZE AS INDICATED ON DRAWINGS, FUSE PER NAMEPLATE DATA OR AS INDICATED, NEMA 1 ENCLOSURE U.O.N.
LIGHTING AND/OR POWER PANEL BOARD, SURFACE MOUNTED WITH REQUIRED CODE CLEARANCE.
PLYWOOD TELEPHONE OR DATA BACKBOARD.
WALL MOUNTED UTILITY METER.

GENERAL NOTES

- A. ELECTRICAL CONTRACTOR SHALL REVIEW ENTIRE SET OF CONTRACT DOCUMENTS INCLUDING BUT NOT NECESSARILY LIMITED TO ALL ARCHITECTURAL, STRUCTURAL, MECHANICAL, ELECTRICAL, PLUMBING AND ENTIRE PROJECT MANUAL.
B. VERIFY ALL REQUIREMENTS AND COORDINATE EXACT LOCATION OF INCOMING ELECTRICAL SERVICE WITH LOCAL POWER COMPANY PRIOR TO PROJECT START-UP.
C. ENGRAVED, LAMINATED PLASTIC IDENTIFICATION PLATES SHALL BE FURNISHED AND INSTALLED ON ALL PANELS AND SWITCHGEAR.
D. ELECTRICAL CONTRACTOR SHALL CAREFULLY REVIEW DRAWINGS AND SPECIFICATIONS, VISIT THE SITE OF THE WORK, AND SHALL BE RESPONSIBLE AS TO ALL CONDITIONS AND MATTERS THAT ARE NOT AFFEASIBLE WORK OR THE COST THEREOF.
E. SLOTTED NEUTRALS ARE NOT ALLOWED. EACH CIRCUIT SHALL HAVE ITS OWN INDEPENDENT NEUTRAL.
TO GRAB AND ALL SUBCONTRACTORS: NO PRICING SHOULD BE DONE FROM A PARTIAL SET AND NO CHANGE ORDER WILL BE ALLOWED FOR PRICING BASED ONLY ON A PARTIAL SET OF REVIEW OF A SINGLE TRADE'S DRAWINGS.

ABBREVIATIONS

Table with 2 columns: Abbreviation and Description. Includes entries for AMPERE, AMP FRAME, ABOVE FINISHED GRADE, CONDUIT, CIRCUIT, ELECTRIC WATER COOLER, FULL LOAD AMPS, GROUND FAULT CIRCUIT INTERRUPTER, HEATING, VENTILATION AND AIR CONDITIONING, ISOLATED GROUND, KILOVOLT, KILOWATT, MAIN CIRCUIT BREAKER, MOTOR CONTROL CENTER, MISCELLANEOUS, MAIN LUGS ONLY, MANUAL TRANSFER SWITCH, NOT APPLICABLE, NORMALLY CLOSED, NATIONAL ELECTRIC CODE, NIGHT LIGHT, NORMALLY OPEN, NUMBER, NOT TO SCALE, POLE, PHASE, PANELBOARD, SCREW COVER WIRE TROUGH, SURGE PROTECTION DEVICE, SWITCH, TELEPHONE/DATA, TYPICAL, UNDERGROUND, VOLT, UNLESS OTHERWISE NOTED, WEATHERPROOF, TRANSFORMER, NEMA 3R ENCLOSURE.

- NOTES:
1. SEE DEVICE MOUNTING ELEVATION FOR MOUNTING HEIGHTS.
2. SEE SPECIFICATIONS FOR DEVICE COLOR AND COVER PLATE STYLE.

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