

Order Plans

ELECTRICAL SPECIFICATIONS

CODES AND PERMITS: ALL WORK TO BE DONE IN ACCORDANCE WITH APPLICABLE LOCAL AND STATE CODES. PERMIT AND CONNECTION FEES TO BE PAID BY CONTRACTORS AS REQUIRED.

WARRANTY: WORK AND MATERIALS TO BE WARRANTED FOR ONE (1) YEAR AFTER PROJECT COMPLETION.

MANUFACTURER'S INSTALLATION INSTRUCTIONS: ALL EQUIPMENT TO BE INSTALLED IN STRICT ACCORD WITH MANUFACTURER'S INSTALLATION INSTRUCTIONS.

EQUIPMENT NAMEPLATE DATA: EQUIPMENT TO BE OVERCURRENT PROTECTION DEVICES TO COMPLY WITH ACTUAL NAMEPLATE DATA OF EQUIPMENT. COORDINATE REQUIREMENTS WITH OTHER CONTRACTORS AND VENDORS.

RACEWAYS:
 EXTERIOR, BURIED OR EXPOSED - IMC WITH THREADED FITTINGS.
 EXTERIOR, EXPOSED - IMC WITH THREADED FITTINGS, OR EMT WITH COMPRESSION FITTINGS.
 BURIED OR CAST IN CONCRETE - SCH. 40 PVC, WITH IMC STUB UPS WHERE SUBJECT TO DAMAGE.
 INTERIOR - EMT WITH COMPRESSION OR SET-SCREW FITTINGS. CONCEAL IN FINISHED AREAS.

EQUIPMENT AND RECESSED LIGHTING FIXTURE CONNECTIONS - FLEXIBLE METALLIC CONDUIT, LIQUDTIGHT ON EXTERIOR.

OUTLET BOXES:
 INTERIOR - GALVANIZED STEEL, EXTERIOR - CAST ALUMINUM. DO NOT INSTALL BOXES BACK-TO-BACK IN FIRE-RATED WALLS, MINIMUM HORIZONTAL OFFSET TO BE 24".

LOCATE WALL-MOUNTED BOXES/DEVICES IN SYMMETRY WITH WALL FEATURES, SUCH AS PANELING, WAINSCOTS, DOORS, AND WINDOW OPENINGS. COORDINATE LOCATIONS WITH ARCHITECTURAL WALL ELEVATIONS AND FINISH DETAILS. EXACT LOCATIONS TO BE DETERMINED IN THE FIELD, AS DIRECTED.

LOCATE BOXES/DEVICES, INSTALLED IN OR NEAR CASEWORK, AS DIRECTED IN FIELD, IN ACCORDANCE WITH CASEWORK DETAILS.

LOCATE BOXES/DEVICES, INSTALLED NEAR LAVATORIES (AND/OR ASSOCIATED CASEWORK), TO AVOID CONFLICT WITH MIRRORS. COORDINATE LOCATIONS WITH CASEWORK DETAILS AND INTERIOR ELEVATIONS.

WIRING DEVICES:
 TOGGLE SWITCHES: SPECIFICATION GRADE, AC ONLY, 20A 120-277V RATING, FULL SIZE HANDLE (FRAMED TOGGLE NOT ACCEPTABLE.), SIDE WIRED, VERIFY COLOR.
 DUPLEX RECEPTACLES: SPECIFICATION GRADE, AC/DC, 20A 125V RATING, AUTOMATIC GROUNDING CLIP, SIDE WIRED, TAMPER-RESISTANT, GFCI-TYPE WHERE INDICATED OR REQUIRED. VERIFY COLOR. IN ADDITION, DEVICES TO BE HOSPITAL GRADE IN AREAS CLASSIFIED AS "PATIENT CARE AREAS" BY NEC ARTICLE 517.

WIRING DEVICES WITH ISOLATED GROUND TO BE CIRCUITED WITH EQUIPMENT GROUNDING AND ISOLATED GROUNDING CONDUCTORS, EACH WITH UNIQUE COLOR CODING.

FLOOR MOUNTED DEVICES:
 (USE CAST-IN-PLACE DEVICES WHERE POSSIBLE.)

SINGLE SERVICE FLOOR BOXES (SIMPLEX): PVC FLUSH MOUNT BOX WITH POWER OR COMMUNICATION AND DATA DEVICES; HINGED TOP WITH RECESS FOR CORD ENTRY, CARPET FLANGE, BOXES FOR NEMA 5-20R RECEPTACLE, (1) RJ-11 TELEPHONE JACK, (1) RJ-45 DATA JACK, ACCESSORIES AS NOTED. COORDINATE VOICE/DATA CONNECTION REQUIREMENTS WITH SYSTEM VENDORS.

CARLON E976RFB, E976I COVER, E976AK2 ACTIVATION KIT

MULTIPLE SERVICE FLOOR BOXES (DUPLX): PVC FLUSH MOUNT BOX WITH POWER, COMMUNICATION AND DATA DEVICES; HINGED TOP WITH RECESS FOR CORD ENTRY, CARPET FLANGE, DUPLEX NEMA 5-20R RECEPTACLE, (1) RJ-11 TELEPHONE JACK, (1) RJ-45 DATA JACK, ACCESSORIES AS NOTED. COORDINATE VOICE/DATA CONNECTION REQUIREMENTS WITH SYSTEM VENDORS.

CARLON E976RFB (2 GANGED), E976I COVER, E976AK2 ACTIVATION KIT

DIMMER SWITCHES, WALL-MOUNT
 DIMMERS (LED, 0-10V): SOLID STATE CIRCUITRY, ARCHITECTURAL PRESET SLIDE DIMMER, SEPARATE ON-OFF SWITCH, 100%-1% DIMMING OF LED DRIVERS, DIMMING 0-10V, DESIGNER-STYLE FACEPLATE WITH IVORY FINISH, 8.0 AMPS CAPACITY, 120V, 77V RATED, UL LISTED.

SINGLE POLE FUNCTION LUTRON "DIVA"
 3-WAY FUNCTION LUTRON "DIVA" DV5CTV

DIMMERS (LED, 0-10V): SOLID STATE CIRCUITRY, ARCHITECTURAL PRESET SLIDE DIMMER, SEPARATE ON-OFF SWITCH, 100%-1% DIMMING OF LED DRIVERS, DIMMING 0-10V, DESIGNER-STYLE FACEPLATE WITH IVORY FINISH, 8.0 AMPS CAPACITY, 120V RATED, UL LISTED.

SINGLE POLE FUNCTION LUTRON "LYNEO LX"
 3-WAY FUNCTION LUTRON "LYNEO LX" LXELV-603PL

MOTION DETECTOR SWITCHES:
 ELECTRONIC, PASSIVE INFRARED, WALL BOX SWITCH, SPST, AUTO/OFF, LED SENSING VERIFICATION, 30-SECOND TO 30-MINUTE TIME DELAY OFF, PUSH BUTTON FOR MANUAL OFF CAPABILITY, RATED 800W INCANDESCENT/800W FLUORESCENT AT 120 VOLTS AND 1800W FLUORESCENT AT 277 VOLTS, MOUNT IN SINGLE GANG 2-BOX, 2-WIRE OPERATION.

LEVITON 00S15-ID OR HUBBELL WS120T (120V)

COVER PLATES:
 INTERIOR - IVORY NYLON ON FLUSH BOXES (FINISHED AREAS), GALVANIZED STEEL WITH ROUNDED EDGES ON SURFACE MOUNTED BOXES (UNFINISHED AREAS ONLY).
 EXTERIOR - WEATHERPROOF GFI COVERPLATES TO BE CAST ALUMINUM.

MOUNTING HEIGHTS:
 WIRING DEVICES, AND OTHER EQUIPMENT TO, UNLESS NOTED OTHERWISE, BE MOUNTED WITH RESPECT TO INDICATED SURFACE AS FOLLOWS:
 RECEPTACLES: 18" AFF (GENERAL USE)
 8" ABOVE WORK SURFACE (AT BUILT-IN MILLWORK)
 42" AFF (ADJACENT TO LAVATORY OR SINK IN TOILET)
 SWITCHES: 48" AFF
 VOICE/DATA: SAME AS RECEPTACLES
 THERMOSTATS: 48" AFF
 TELEVISION/CATV: 72" AFF (OR AS DIRECTED)
 PANELBOARDS: 78" TO TOP CKT BKR OR SWITCH (PER NEC 380-8(A))

WIRING:
 COPPER CONDUCTORS: 98% CONDUCTIVITY ANNEALED COPPER PER ASTM B3, AND SHALL BE TINNED OR UNTINNED IN ACCORDANCE WITH ESTABLISHED STANDARDS FOR THE TYPE OF INSULATION APPLIED OVER THE CONDUCTORS.

WIRING NO.10 AWG AND SMALLER MAY HAVE SOLID OR STRANDED CONDUCTORS, AND NO.8 AWG AND LARGER SHALL HAVE STRANDED CONDUCTORS. IF STRANDED CONDUCTORS ARE USED, CONNECTIONS TO WIRING DEVICES MUST BE MADE WITH SOLID CONDUCTOR PITGALLS.

ACCEPTABLE MANUFACTURERS: ANACONDA, PHELPS DODGE, SOUTHWIRE, GENERAL ELECTRIC, AETNA

ALUMINUM CONDUCTORS: TYPE XHHW-2, COMPACT-STRANDED, AA 8000-SERIES ALUMINUM ALLOY. TERMINATIONS AND CONNECTIONS TO CONFORM TO EET-NEMA CLASS A AND U.L. STANDARD 486B, MARKED "AL7CU" FOR 75 C RATED CIRCUITS AND "AL9CU" FOR 90 C RATED CIRCUITS.

ACCEPTABLE MANUFACTURERS: ALCAN "STABILOY", ALCOA "EXCELLOY", SOUTHWIRE "ALUMAFLEX"

CONDUCTOR TYPE AND USAGE:
 COPPER CONDUCTORS MAY BE USED FOR CIRCUITS AND FEEDERS WITH ANY AMPACITY.

ALUMINUM CONDUCTORS MAY ONLY BE USED FOR CIRCUITS AND FEEDERS WITH AMPACITY OF 60-AMPS AND GREATER.

INSULATION FOR POWER CONDUCTORS TO BE TYPE THHN OR XHHW, RATED 600 VOLTS, UNLESS OTHERWISE INDICATED. BRANCH CIRCUIT CONDUCTORS SIZES #6 AWG AND SMALLER, MAY BE TYPE THN OR THHN. INSULATION TO BE COLOR CODED AS REQUIRED BY THE N.E.C. AND AS SPECIFIED BELOW. FOR CONDUCTORS INSTALLED IN FLUORESCENT FIXTURE RUNS, USE TYPE RHH, XHHW, OR THHN INSULATION.

METAL CLAD CABLE (MC):
 COPPER CONDUCTORS, 600V INSULATION TYPE THHN (TFN OR TFEN FOR 16 AWG AND SMALLER), CONTINUOUS ALUMINUM SHEATH (CORRUGATED OR SMOOTH) ACCEPTABLE MANUFACTURERS: ALUFLEX "ARMORLITE", COLEMAN CABLE "CORRA/CLAD", OKONITE "OKO CLAD", ROCKBESTOS "GUARDEX".

USE: 20-AMP BRANCH CIRCUITS (WHEN ACCEPTABLE TO LOCAL AUTHORITIES)

METAL CLAD CABLE (TYPE MC-PCS):
 TO BE DUAL FUNCTION FOR POWER AND CONTROL, WITH INDIVIDUALLY INSULATED COPPER CONDUCTORS FOR POWER, INCLUDING INSULATED GREEN GROUNDING WIRE, 600V INSULATION, TYPE THHN/THWN, PLUS 16/2 CONTROL WIRING (PURPLE AND GRAY COLOR), AND OVERALL INTERLOCKING ALUMINUM ARMOR.

USE: 20-AMP LIGHTING CIRCUITS WITH 0-10V DIMMING (WHEN ACCEPTABLE TO LOCAL AHJ).

METAL CLAD CABLE (TYPE HCF MC-AP):
 FOR USE IN HEALTH CARE AREAS COVERED BY NEC ARTICLE 517, TO HAVE INDIVIDUALLY INSULATED COPPER CONDUCTORS, INCLUDING INSULATED GREEN GROUNDING WIRE, 600V INSULATION, TYPE THHN/THWN, INTERLOCKING ALUMINUM ARMOR WITH GREEN COLOR, AND ADDITIONAL FULL-SIZE ALUMINUM GROUNDING/BONDING CONDUCTOR.

USE: 20-AMP BRANCH CIRCUITS, NON-ESSENTIAL ELECTRICAL SYSTEMS (WHEN ACCEPTABLE TO LOCAL AHJ).

WIRES AND CABLES INSTALLATION:
 ALL SPLICES, TAPS, CONNECTIONS, TERMINATIONS, ETC., TO BE MADE WITH APPROPRIATE CONNECTORS IN A WORKMANLIKE MANNER AND IN COMPLIANCE WITH N.E.C.

MULTIWIRE BRANCH CIRCUITS ARE NOT PERMITTED. MULTIPLE LIGHTING AND APPLIANCE CIRCUITS MAY NOT BE COMBINED TO UTILIZE COMMON NEUTRAL CONDUCTOR. (REFER TO 2008 NEC 210.4)

ALL 15A AND 20A CIRCUIT WIRING TO BE MINIMUM #12 AWG, OR LARGER AS INDICATED. PROVIDE #10 AWG WHERE CIRCUIT HOMERUNS EXCEED 60 FEET (120V). NO WIRE SMALLER THAN #12 AWG PERMITTED SERVING LIGHTING OR OUTLETS.

USE CONDUCTORS NOT SMALLER THAN #14 AWG FOR CLASS 1 CONTROL AND SIGNAL CIRCUITS. USE CONDUCTORS NOT SMALLER THAN #16 AWG FOR CLASS 2 LOW ENERGY REMOTE CONTROL AND SIGNAL CIRCUITS. CONDUCTORS FOR SPECIAL SIGNAL, COMMUNICATIONS, AND SIMILAR SYSTEMS SHALL BE SIZED AS INDICATED ON DRAWINGS OR AS REQUIRED BY VENDOR.

SPLICES FOR ANY COMBINATION OF STRANDED AND/OR SOLID COPPER WIRE UP TO 3/8" #26 TO BE MADE WITH SOLDERLESS ELECTRICAL SPRING CONNECTOR TYPE. SPLICES FOR LARGER WIRE TO BE SOLDERLESS COMPRESSION INDENTION TYPE PROPERLY TAPED.

LIGHTING FIXTURES: AS SCHEDULED, COMPLETE WITH LAMPS OR LED SOURCES.

EXIT AND EMERGENCY LIGHTING:
 PROVIDE EXIT LIGHTING FIXTURES LOCATED AND ARRANGED TO CLEARLY INDICATE EGRESS PATHS. FIXTURES AND INSTALLATION SHALL COMPLY WITH NFPA #101 SECTION 7.10.1.

PROVIDE EMERGENCY LIGHTING FIXTURES LOCATED AND ARRANGED TO ILLUMINATE EGRESS PATHS WITH 1.0 FOOTCANDLE (MIN.). FIXTURES AND INSTALLATION SHALL COMPLY WITH NFPA #101 SECTION 5-9.

CONNECT FIXTURES TO UNSWITCHED CONDUCTOR OF LOCAL LIGHTING CIRCUIT SUCH THAT BATTERY POWER SUPPLY AUTOMATICALLY ILLUMINATES LAMPS WHEN NORMAL POWER SUPPLY IS DISRUPTED.

CONNECT LED FIXTURES WITH EMERGENCY BALLASTS TO SWITCH LEG AND TO UNSWITCHED CONDUCTOR SUCH THAT LAMPS ARE NORMALLY CONTROLLED BY SWITCH, BUT BATTERY POWER SUPPLY AUTOMATICALLY ILLUMINATES LAMPS WHEN NORMAL POWER SUPPLY IS DISRUPTED.

TELEPHONE CONDUIT SYSTEM: PROVIDE OUTLET BOX, BLANK COVER PLATE WITH BUSHED HOLE, AND 3/4" FIT STUB INTO NEAREST AVAILABLE CEILING SPACE FOR EACH OUTLET.

COMPUTER CONDUIT SYSTEM: PROVIDE OUTLET BOX, BLANK COVER PLATE WITH SUITABLE TERMINATION, AND 1/2" EMT STUB INTO ACCESSIBLE CEILING SPACE FOR EACH OUTLET.

ELECTRICAL SERVICE AND METERING PROVISIONS:
 EXISTING TO REMAIN. NO ADDITIONAL WORK REQUIRED.

PANELBOARDS:
 AS SCHEDULED. CIRCUIT BREAKERS TO BE FULL MODULE TYPE. HALF-SIZE OR PIGGY-BACK TYPE ARE NOT ACCEPTABLE. PROVIDE AIC RATINGS AS REQUIRED TO ACCOMMODATE AVAILABLE FAULT CURRENT VALUES.

CIRCUIT BREAKER PARAMETERS FOR CIRCUITS SERVING EQUIPMENT AND MOTOR LOADS ARE PROVIDED FOR ESTIMATING PURPOSES ONLY. CIRCUIT BREAKERS TO BE COORDINATED WITH VENDORS AND OTHER CONTRACTORS TO MATCH NAMEPLATE DATA OF INSTALLED EQUIPMENT.

ADJUST CIRCUIT BREAKER LOCATIONS ON PANELBOARD BUSES AS REQUIRED TO BALANCE LOADS BETWEEN ALL PHASES TO WITHIN 10%.

PROVIDE PRINTED LABELS FOR PANELS INDICATING "MARK/ID", AND VOLTAGE/PHASE DESCRIPTION. PROVIDE BREAKER LABELS (NUMERICAL) AND TYPED CIRCUIT DIRECTORY.

DISCONNECTS: SAFETY SWITCHES, HEAVY-DUTY, QUICK-MAKE, QUICK-BREAK OPERATION. ENCLOSURES AS SPECIFIED BELOW.

ENCLOSURES FOR ELECTRICAL EQUIPMENT:
 GENERAL: PROVIDE SUITABLE ENCLOSURES FOR SAFETY SWITCHES, STARTERS, CONTACTORS, PANELBOARDS, TVSS UNITS, CONTROL DEVICES, AND OTHER ELECTRICAL EQUIPMENT.

CONSTRUCTION: ENCLOSURES IN LOCATIONS NOT SUBJECT TO CORROSION TO BE CONSTRUCTED OF CODE GAUGE STEEL WITH BAKED ENAMEL FINISH. IN LOCATIONS SUBJECT TO CORROSION, ENCLOSURES TO BE CONSTRUCTED OF SUITABLE MATERIALS AND FINISHES.

NEMA TYPE: ENCLOSURES TO HAVE NEMA CONFIGURATIONS AS FOLLOWS:
 NEMA 1 - INDOOR, DRY LOCATIONS
 NEMA 3R - OUTDOOR, LOCATIONS SUBJECT TO RAIN, SLEET, ICE

IDENTIFICATION AND NAMEPLATES:
 GENERAL: CLEARLY AND PERMANENTLY IDENTIFY ALL MAJOR ELECTRICAL COMPONENTS AS SPECIFIED BELOW.

PRINTED LABELS: LABELS TO BE PREPARED USING "LABEL-MAKING MACHINE", WITH 1/2" HIGH PRIMARY LETTERS AND 5/16" HIGH SECONDARY LETTERS (BLACK LETTERS ON WHITE SURFACE). LABELS TO BE SECURED WITH SELF-ADHESIVE BACKING, OR OTHER APPROVED PERMANENT MOUNTING METHOD. PROVIDE LABELS FOR THE FOLLOWING COMPONENTS:
 MOTOR STARTERS, CONTACTORS, TIME CLOCKS, DISCONNECT SWITCHES.

MISCELLANEOUS LABELS REQUIRED BY CODE - EXAMPLES INCLUDE: NEC 110-22 AND 230-2.

CIRCUIT ORIGIN: PROVIDE CIRCUIT/FEEDER DATA (CIRCUIT DESIGNATION) FOR EVERY MAJOR ELECTRICAL COMPONENT, AND POWER CIRCUITS FOR HVAC AND PLUMBING EQUIPMENT.

GROUNDING AND BONDING:
 ELECTRICAL GROUNDING AND BONDING TO CONFORM TO ARTICLE 250 OF NEC. NEUTRAL CONDUCTORS, CABLE SHIELDS AND SHEATHS, METALLIC CONDUITS, JUNCTION BOXES ENCLOSURES AND ALL CONDUCTIVE NON-CURRENT CARRYING PARTS OF EQUIPMENT SHALL BE GROUNDED.

ALL BRANCH CIRCUITS AND FEEDERS TO BE PROVIDED WITH INSULATED (GREEN COLOR) GROUNDING CONDUCTORS SIZED PER NEC 250.122. CONDUCTOR DESIGNATIONS ON DRAWINGS DO NOT INCLUDE GROUNDING CONDUCTOR (UNLESS SPECIFICALLY IDENTIFIED AS "G0").

CONNECT GROUNDING CONDUCTORS TO EQUIPMENT AND TO EXPOSED METAL COMPONENTS THAT COULD BECOME ENERGIZED. WHERE DEVICE DOES NOT HAVE A GROUNDING CONNECTION, CONNECT CONDUCTOR TO BOX (OR GROUNDING CLIP) WHERE DEVICE IS INSTALLED.

ALL RACEWAYS 1-1/4" SIZE AND LARGER TO BE TERMINATED AT ENCLOSURES, WIREWAYS, PULLBOXES, PANELBOARDS, ETC. WITH GROUNDING TYPE BUSHINGS, EQUAL TO OZ GEDNEY TYPE BLG OR SBLG. BUSHINGS TO BE CONNECTED BY #6 AWG SOLID BARE COPPER BONDING JUMPER TO EQUIPMENT GROUNDING CONDUCTOR OR GROUND BUS. ALL RACEWAYS CONTAINING CIRCUITS OVER 250V TO COMPLY WITH NEC 250.97.

FIRESTOPPING AND FIRE/SMOKE CAULKING:
 PENETRATIONS OF FIRE-RATED BUILDING COMPONENTS BY PIPES, RACEWAYS, AND WIRING/CABLING SHALL BE PROVIDED WITH APPROPRIATE FIRE BARRIERS. METHODS AND MATERIALS SHALL BE UL LISTED AND SHALL CONFORM TO THE REQUIREMENTS OF ASTM-E814/UL1479.

VOIDS AND OPENINGS SHALL BE SEALED WITH INTUMESCENT CAULK/SEALANT, EQUAL TO STI "LCI SEALANT", 3M "CP-25", OR DOW CORNING #2000. INSTALLATION SHALL BE IN ACCORDANCE WITH MANUFACTURER'S RECOMMENDATIONS.

WHERE ELECTRICAL BOXES ARE INSTALLED IN STUD WALL RATED ASSEMBLIES, PROVIDE INTUMESCENT PUTTY PADS AROUND EXTERIOR OF BOX, EQUAL TO STI "SSP PUTTY PADS".

WHERE UL LISTED SYSTEMS (KHEZ THROUGH-PENETRATION FIRESTOP SYSTEMS) ARE REQUIRED, USE COMPONENTS AS MANUFACTURED BY: 3M, DOW CORNING, HILTI, METALINES, STI, HEVI-DUTY NELSON, OR JOHNS-MANVILLE.

PENETRATIONS OF SMOKE-TIGHT BUILDING COMPONENTS BY RACEWAYS AND WIRING/CABLING SHALL BE PROVIDED WITH APPROPRIATE SMOKE-TIGHT CAULKING. METHODS AND MATERIALS SHALL BE UL LISTED AND SHALL CONFORM TO THE REQUIREMENTS OF APPLICABLE ASTM/UL STANDARDS.



EXPIRATION DATE:
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RENOVATION + PET/CT PROJECT
 CHATTANOOGA OUTPATIENT CENTER
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Revision Schedule		
Rev. #	Rev. Date	Revision Description

Release Date: 5.3.2019
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E3.02