

GENERAL CONDITIONS

- DRAWINGS ARE DIAGRAMMATIC AND INDICATE THE GENERAL ARRANGEMENT OF SYSTEMS AND WORK. ELECTRICAL CONTRACTOR SHALL PROVIDE AND INSTALL ALL ELECTRICAL EQUIPMENT NECESSARY TO FULLFILL APPLICABLE CODES, REGULATIONS, BUILDING STANDARDS AND THE BEST PRACTICES OF THE TRADE FOR INSTALLATION OF ELECTRICAL WORK.
- ALL ELECTRICAL WORK, MATERIALS AND EQUIPMENT SHALL CONFORM WITH THE REQUIREMENTS OF THE CANADIAN ELECTRICAL CODE, CSA, ULC, NEMA, BUILDING STANDARDS AND ALL AUTHORITIES HAVING JURISDICTION. THE ELECTRICAL CONTRACTOR SHALL PAY FOR AND OBTAIN ALL REQUIRED PERMITS AND CERTIFICATES OF REQUIRED ORDINANCES.
- THE ELECTRICAL CONTRACTOR SHALL VISIT AND EXAMINE CAREFULLY THE AREAS AFFECTED BY THIS WORK TO BECOME FAMILIAR WITH NEW BUILDING CONDITIONS AND WITH DIFFICULTIES THAT WILL ATTEND THE EXECUTION OF THIS WORK. SUBMITTING A PROPOSAL WILL BE CONSTRUED AS EVIDENCE THAT SUCH AN EXAMINATION HAS BEEN MADE AND LATER CLAIMS WILL NOT BE RECOGNIZED FOR EXTRA LABOUR, EQUIPMENT, OR MATERIALS REQUIRED BECAUSE OF DIFFICULTIES ENCOUNTERED WHICH COULD HAVE BEEN FORESEEN HAD SUCH AN EXAMINATION BEEN MADE.
- UPON REVIEW OF THE DRAWINGS, THE ELECTRICAL CONTRACTOR SHALL INFORM THE CONTRACT ADMINISTRATOR OF ANY DISCREPANCIES WITHIN THE DRAWINGS AND REQUEST CLARIFICATION CONCERNING THE DISCREPANCIES.
- THE ELECTRICAL CONTRACTOR SHALL COORDINATE THIS WORK WITH OTHER SUBCONTRACTORS WHOSE WORK MIGHT AFFECT THIS INSTALLATION. THE ELECTRICAL SUBCONTRACTOR SHALL ARRANGE ALL PARTS OF THIS WORK AND EQUIPMENT IN PROPER RELATION TO THE WORK AND EQUIPMENT OF OTHERS.
- THE ELECTRICAL CONTRACTOR SHALL BE RESPONSIBLE FOR ALL CONDUIT, OUTLET BOXES, POKE-THRU SERVICE FITTINGS REQUIRED TO FACILITATE THE INSTALLATION OF COMMUNICATION WIRING AND DEVICES.
- THE DRAWINGS INDICATE THE SIZE AND GENERAL LOCATION OF WORK. SCALED DIMENSIONS SHALL NOT BE USED. VERIFY SCALE WITH ARCHITECTURAL DRAWINGS. THE EXACT LOCATION AND ELEVATION OF ALL LIGHTING FIXTURES, SWITCHES, RECEPTACLES, ETC. SHALL BE DETERMINED FROM THE ARCHITECTS DRAWINGS.
- THE "GENERAL CONDITIONS OF THE CONTRACT FOR CONSTRUCTION" AS APPLICABLE, ARE PART OF THE CONTRACT.

SCOPE OF WORK

- THE CONTRACTOR SHALL PROVIDE ALL MATERIALS, LABOR, TOOLS, SUPERVISION, ETC. REQUIRED TO INSTALL COMPLETE OPERATIONAL ELECTRICAL SYSTEMS AS DESCRIBED IN THESE PLANS AND SPECIFICATIONS. SUCH INSTALLATIONS SHALL INCLUDE, BUT ARE NOT SPECIFICALLY LIMITED TO THE FOLLOWING:
 - INSTALLATION OF RACEWAY AND CIRCUIT WIRING.
 - CUTTING, CHANNELING, CORING AND CHASING REQUIRED TO ACCOMMODATE THE INSTALLATION OF ELECTRICAL WORK AND ROUGH PATCHING.
 - INSTALLATION OF ANY REQUIRED ELECTRICAL DISTRIBUTION EQUIPMENT.
 - INSTALLATION OF CONDUIT, JUNCTION BOXES, PULL BOXES, ETC. REQUIRED FOR THE AFOREMENTIONED EQUIPMENT.
 - LIGHTING
 - OUTLETS

RACEWAYS

- DRAWINGS DO NOT SHOW ALL CONDUITS, WHERE CONDUIT IS USED, 3/4" (21mm) MINIMUM CONDUIT SHALL BE PROVIDED. USE RIGID OR THREADED EMT WITH COUPLINGS, RIGID PVC, FLEXIBLE METAL CONDUIT AND LIQUID-TIGHT FLEXIBLE METAL CONDUIT WHERE REQUIRED TO MEET LATEST CEC EDITION.
- ALL CONDUITS TO BE SUPPORTED BY STANDOFFS. CONNECTION TO CEILING SUPPORTS SHALL NOT BE PERMITTED. ALL CONDUIT SHALL BE RUN CONCEALED.
- WHEREVER CONDUITS PASS THROUGH FLOORS OR FIRE RATED PARTITIONS, SLEEVES SHALL BE INSTALLED. SLEEVES SHALL BE GROUDED IN PLACE IN THE SUPPORTING WALL OR FLOOR. THE SPACE BETWEEN THE SLEEVE AND CONDUIT SHALL BE PACKED WITH AN APPROVED, NONCOMBUSTIBLE, FIRE STOPPING MATERIAL. ALL NEW HOLES SHALL BE CORE DRILLED. NO CHIPPING SHALL BE PERMITTED, EXCEPT AS APPROVED BY THE PROJECT MANAGER.
- FLEXIBLE CONDUIT SHALL BE USED TO MAKE FINAL CONNECTIONS TO MOTORS, TRANSFORMERS, EXPANSION JOINTS OR WHERE THE INSTALLATION FOR RIGID CONDUIT IS IMPRACTICAL.
- WIRING SHALL BE RUN CONCEALED IN WALLS, ABOVE CEILING OR BELOW FLOOR WHERE POSSIBLE. INSTALL CONDUIT PARALLEL TO BUILDING LINES. CLEAR ALL OPENINGS, PIPES, DUCTS, STRUCTURAL COMPONENTS, ETC.
- INSTALL CONDUIT CONTINUOUS BETWEEN BOXES AND CABINETS WITH NO MORE THAN FOUR 90 DEGREE BENDS. SECURELY FASTEN IN PLACE WITH STRAPS, HANGERS, AND STEEL SUPPORTS AS REQUIRED.
- DO NOT SUPPORT CONDUIT FROM SUSPENDED CEILING GRID OR SUSPENSION WIRES. REAM AND THOROUGHLY CLEAN CONDUIT ENDS BEFORE INSTALLATION. OPENINGS SHALL BE PLUGGED OR COVERED TO KEEP CONDUIT CLEAN.

WIRE AND CABLE

- FLEXIBLE CONDUITS AND AC90 (BX) CABLE WILL NOT BE PERMITTED WITH THE EXCEPTION OF THE FINAL CONNECTION FROM THE JUNCTION BOX TO LIGHT FIXTURE WHEN THE DISTANCE FROM THE JUNCTION BOX TO THE LIGHT FIXTURE IS NOT MORE THAN 1.8M. FOR FINAL CONNECTION FROM JUNCTION BOX TO MOTORS AND EQUIPMENT, WITHIN MILLWORK AND FOR VERTICAL DROP WITHIN WALLS AND PARTITIONS TO RECEPTACLES LOOPING OF BX FROM FIXTURE TO FIXTURE OR FROM RECEPTACLE TO RECEPTACLE WILL NOT BE ACCEPTED.
- ALL CONDUCTORS SHALL BE SUPPLY ANNOUNCED WITH PURE INSULATED COPPER. ALL CONDUCTORS SHALL HAVE 600 VOLT RATED INSULATION AND RATED 90 DEGREE CELSIUS UNLESS OTHERWISE NOTED.
- CONDUCTORS #8 AWG AND LARGER SHALL BE STRANDED, #10 AND SMALLER SHALL BE SOLID.
- THE MINIMUM WIRE SIZE FOR BRANCH CIRCUITS SHALL BE #12 AWG. LAYOUT OF BRANCH CIRCUIT WIRING AND ARRANGEMENT OF HOME RUNS SHALL BE FOR MAXIMUM ECONOMY AND EFFICIENCY.
- FACTORY COLOR CODING SHALL CONFORM TO THE BUILDING STANDARD OR AS REQUIRED BY THE UTILITY.
- TAG ALL FEEDERS IN ALL PULL BOXES AND IN ALL GUTTER SPACE AND WIREWAYS THROUGH WHICH THEY PASS.
- MAKE SPLICES IN FEEDER TAPS IN PANEL BOX GUTTERS WITH PRESSURE TYPE CONNECTORS.
- SPLICES IN CIRCUITS SHALL BE TWISTED AND MADE MECHANICALLY TIGHT. SECURE WITH SCOTCHLOCK OR PITGAIL CONNECTORS. CRIMP TYPE CONNECTORS SHALL NOT BE USED.
- CONTRACTOR TO BAND AND LABEL CONDUIT AS PER CITY'S STANDARDS.
- ALL WIRES AND CABLES TO COMPLY WITH NATIONAL BUILDING CODE PART 3 AS DIRECTED BY BUILDING CLASSIFICATION.
- ALL WIRING IN NON-COMBUSTIBLE CONSTRUCTION MUST BE FT-4 RATED TO MEET FLAME SPREAD CEC RULE 2-126 REQUIREMENTS.

LIGHTING LUMINAIRES

- ALL LUMINAIRES, LAMPS ARE FURNISHED AND INSTALLED BY THE ELECTRICAL CONTRACTOR.
 - ALL LIGHT FIXTURE MOUNTING HARDWARE SHALL MATCH CEILING TYPES.
 - PROVIDE LAMPS SUITABLE FOR LIGHTING FIXTURES IN WHICH THEY ARE USED AND AS INDICATED ON THE DRAWINGS.
 - LUMINAIRES SHALL HAVE A VISIBLE CSA LABEL.
 - PROVIDE SUPPORTING DEVICES, PLASTER FRAMES, JUNCTION BOXES AND OUTLET BOXES WHERE REQUIRED.
 - WHERE SOFFITS OR CEILING HAVE THERMAL INSULATION, PROVIDE FIXTURES WHICH ARE CSA APPROVED FOR SUCH USE.
- LED LUMINAIRES
- LEDS TO PROVIDE MINIMUM 80 CRI
 - LUMEN OUTPUT AS SPECIFIED IN LUMINAIRE SCHEDULES
 - L70 RATING OF 100,000+ HOURS, L85 AT 44,000 HOURS.

DRIVERS

- HIGH EFFICIENCY >90%.
- GREATER THAN 0.9 PF AND LESS THAN 20% THD.
- GREATER THAN 50,000 HOURS LIFE TIME.
- 5-YEAR LIMITED WARRANTY.
- ROHS COMPLIANCE
- SAFETY APPROBATIONS (UL, CSA, CE, ENEC, PSE, SELV OR COC.)
- DIMMABLE AND PROGRAMMABLE.
- DESIGNED TO MEET THE NEEDS OF LED LIGHTING
- AVAILABLE IN EITHER DEDICATED INPUT VOLTAGE OR INTELLIVOLT OPTIONS.
- ADJUSTABLE OUTPUT CURRENT (AOC) FEATURE.
- ENABLE USE OF LIGHTING CONTROLS TO HELP INCREASE ENERGY SAVING THROUGH A WIDE VARIETY OF PROTOCOLS, SUCH AS 0-10V.

LUMINAIRE INSTALLATION

- INSTALL LUMINAIRES AT LOCATIONS INDICATED, COMPLETE WITH ALL WIRING, CONNECTIONS, FITTINGS, HANGERS, ALIGNERS, BOX COVERS AND ACCESSORIES, AS REQUIRED.
- INSTALL LUMINAIRES PARALLEL WITH BUILDING LINES. WALL-MOUNTED LUMINAIRES SHALL BE INSTALLED PLUMB.
- REVIEW ALL CEILING TYPE, CONSTRUCTION DETAILS AND MOUNTING ARRANGEMENTS BEFORE PLACING LUMINAIRE ORDERS AND ENSURE THAT ALL MOUNTING ASSEMBLIES, FRAMES, RINGS AND SIMILAR FEATURES ARE INCLUDED FOR AND MATCH THE REQUIRED INSTALLATION.
- ALL LUMINAIRES AND ASSEMBLIES SHALL BE PROPERLY SECURED AND SUPPORTED. SUPPORT LUMINAIRES INDEPENDENT OF THE CEILING CONSTRUCTION. COMPLETE WITH ALL FASTENERS, FRAMING AND HANGERS, AS MAY BE REQUIRED. DO NOT SECURE LUMINAIRE TO MECHANICAL DUCTWORK OR OTHER VIBRATION PRODUCING APPARATUS, UNLESS SPECIFICALLY DETAILED ON THE DRAWINGS.
- WHERE A LUMINAIRE IS SUSPENDED FROM THE CEILING USING A SELF-ALIGNING BOX COVER, AN ADDITIONAL GROUND WIRE FROM THE OUTLET BOX TO THE LUMINAIRE SHALL BE PROVIDED.
- COORDINATE THE INSTALLATION OF LUMINAIRES WITH THE WORK OF OTHER TRADES, ENSURING THAT THE NECESSARY DEPTHS AND MOUNTING SPACES ARE PROVIDED. LUMINAIRES WHICH CANNOT BE INSTALLED DUE TO A CONFLICT WITH STRUCTURAL MEMBERS, PIPES OR DUCTWORK SHALL BE RELOCATED TO A MORE SUITABLE LOCATION, AS DIRECTED BY THE CONTRACT ADMIN.

FIRESTOPPING

- FIRE STOP/SMOKE SEAL TO THE FOLLOWING STANDARDS; CAN4-S115M, CAN4-S101M, ASTM E84, ASTM E119, ASTM E814, ULC FIRESTOP SYSTEMS AND COMPONENTS AND THE FACTORY MUTUAL RESEARCH APPROVAL GUIDE. FIRESTOPPING SHALL BE PERFORMED BY THE FOLLOWING CONTRACTORS:
 - NATIONAL FIRESTOP LTD., 405 GUNN ROAD, WPG., MB
 - TOTAL FIRE STOP SYSTEMS LIMITED, STONY MOUNTAIN, MB
 - WESTERN INDUSTRIAL SERVICES LTD., 1475 DUGALD ROAD, WPG., MB
- THE FOLLOWING MANUFACTURERS PRODUCTS/SYSTEMS SHALL BE USED:
 - 3M FIRE PROTECTION PRODUCTS
 - AD FIRE PROTECTION SYSTEMS INC.
 - HILTI FIRE STOP SYSTEMS
 - JOHNS MANVILLE FIRE PROTECTION SYSTEMS
- PROVIDE DETAILED SHOP DRAWINGS FOR REVIEW OF METHODS AND MATERIALS INTENDED FOR USE PRIOR TO PERFORMING THE WORK, AS REQUIRED.
- ASSEMBLY INFORMATION WALL PLATES SHALL BE PROVIDED AT EACH FIRESTOP INSTALLATION SITE.
- INSTALL FIRE STOPPING AT ALL FIRE SEPARATION PENETRATIONS IN STRICT ACCORDANCE WITH THE MANUFACTURERS INSTRUCTION AND IN COMPLIANCE WITH ALL APPLICABLE CODES AND STANDARDS.

GROUNDING

- GROUNDING CONDUCTORS SYSTEM, CIRCUIT AND EQUIPMENT GROUNDING TO BE BARE STRANDED COPPER, SIZED IN ACCORDANCE WITH CANADIAN ELECTRICAL CODE.
- NON-CORRODING ACCESSORIES NECESSARY FOR GROUNDING SYSTEM, TYPE, SIZE, MATERIAL AS INDICATED, INCLUDING BUT NOT NECESSARILY LIMITED TO:
 - GROUNDING AND BONDING BUSHINGS.
 - PROTECTIVE TYPE CLAMPS.
 - BOLTED TYPE CONDUCTOR CONNECTORS.
 - THERMIT WELDED TYPE CONDUCTOR CONNECTORS.
 - BONDING JUMPFERS, STRAPS.
 - PRESSURE WIRE CONNECTORS
- ALL ELECTRICAL SYSTEMS SHALL BE GROUNDED AS REQUIRED BY THE CANADIAN ELECTRICAL CODE. THE LOCAL UTILITY COMPANY AND ALL OTHER LOCAL AUTHORITIES HAVING JURISDICTION, PERMANENTLY AND EFFECTIVELY GROUND ALL METALLIC CONDUITS, SUPPORTS, CABINETS, PANEL BOARDS AND SYSTEM GROUNDING NEUTRAL.
- A SEPARATE GROUNDING CONDUCTOR SHALL BE INSTALLED IN ALL FLEXIBLE AND NONMETALLIC CONDUITS SIZED IN ACCORDANCE WITH THE EQUIPMENT GROUNDING CONDUCTOR TABLE OF THE CANADIAN ELECTRICAL CODE.
- GROUND CLAMPS SHALL BE LISTED SPECIFICALLY FOR GROUNDING, WHERE GROUNDING CONDUCTOR IS IN CONDUIT, GROUND CLAMP SHALL GROUND BOTH CONDUCTOR AND CONDUIT.

GROUNDING INSTALLATION

- INSTALL COMPLETE PERMANENT, CONTINUOUS, SYSTEM AND CIRCUIT, GROUNDING SYSTEMS INCLUDING ELECTRODES, CONDUCTORS, CONNECTORS AND ACCESSORIES TO CONFORM TO REQUIREMENTS OF LOCAL AUTHORITY HAVING JURISDICTION OVER INSTALLATION.
- INSTALL CONNECTORS TO MANUFACTURER'S INSTRUCTIONS.
- PROTECT EXPOSED GROUNDING CONDUCTORS FROM MECHANICAL INJURY.
- MAKE BURIED CONNECTIONS USING COPPER WELDING BY THERMIT PROCESS.
- USE MECHANICAL CONNECTORS FOR GROUNDING CONNECTIONS TO EQUIPMENT PROVIDED WITH LUGS. SOLDERED JOINTS NOT PERMITTED.
- INSTALL BONDING WIRE FOR FLEXIBLE CONDUIT, CONNECTED TO BOTH ENDS TO GROUNDING BUSHING, SOLDERLESS LUG, CLAMP OR CLIP WASHER AND SCREW, NEATLY CLEAT BONDING WIRE TO EXTERIOR OF FLEXIBLE CONDUIT.
- MAKE GROUNDING CONNECTIONS IN RADIAL CONFIGURATION ONLY, WITH CONNECTIONS TERMINATING AT SINGLE GROUNDING POINT. AVOID LOOP CONNECTIONS.
- BOND SINGLE CONDUCTOR, METALLIC ARMORED CABLES TO CABINET AT SUPPLY END, AND PROVIDE NON-METALLIC ENRYE PLATE AT LOAD END AND RUN SEPARATE GROUND CONDUCTOR.
- PROVIDE SEPARATE GROUND CONDUCTORS IN PVC CONDUIT, PLASTIC OR FIBREGLASS RACEWAYS.
- INSTALL SYSTEM AND CIRCUIT GROUNDING CONNECTIONS TO NEUTRAL POINTS OF 600V AND 208V SYSTEMS.

EQUIPMENT GROUNDING

- INSTALL GROUNDING CONNECTIONS TO TYPICAL EQUIPMENT INCLUDED IN, BUT NOT NECESSARILY LIMITED TO: SERVICE EQUIPMENT, TRANSFORMERS, FRAME OF MOTORS, CONTROL PANELS, BUILDING STEEL WORK.

SHOP DRAWINGS

- SUBMIT TO THE CONTRACT ADMIN ELECTRONIC COPIES OF SHOP DRAWINGS.
- FOR SHOP DRAWINGS SUBMITTED ELECTRONICALLY, INCLUDE PROJECT NAME IN SUBJECT LINE.

EXIT LIGHTS

- EXIT LIGHTS SHALL BE LISTED TO NBC2310, C22.2 NO. 141, MAXIMUM CONSUMPTION OF 2.5W, LIFE EXPECTANCY 25 YEAR MINIMUM.
- EMERGENCY CONNECTION FOR 12V DC EMERGENCY POWER.
- MOUNTING: SUITABLE FOR RECESSED, WALL, END-TO-WALL, OR CEILING MOUNTING, AS INDICATED.
- PICTOGRAM DIRECTIONS AS INDICATED.
- MANUFACTURERS: LUMACELL
- INSTALL EXIT LIGHTS AS INDICATED, IN ACCORDANCE WITH NBC-2010, NRCAN C890.
- CONNECT EXIT LIGHTS TO EXIT LIGHT CIRCUITS AS INDICATED.
- CONNECT EMERGENCY CONNECTION TO LIGHTING CIRCUITS AS INDICATED.
- ENSURE THAT EXIT LIGHT CIRCUIT BREAKER IS PAINTED RED AND LOCKED IN ON POSITION.
- WIRING FOR EXIT LIGHT CIRCUITS SHALL BE INSTALLED IN A SEPARATE CONDUIT SYSTEM.

WIRING DEVICES

WIRING DEVICES

- INSTALL APPROVED VAPOUR BOXES FOR EACH JUNCTION BOX MOUNTED ON A VAPOUR BARRIER SURFACE. ASSURE THAT ALL THE WIRE PENETRATIONS ARE CAULKED.
- PROVIDE SERVICE TO CITY'S EQUIPMENT AS PER CITY'S INDICATED LOCATIONS. WHERE CITY'S EQUIPMENT IS PLUG-IN TYPE, ENSURE THAT THE RECEPTACLE FITTING SUITABLE FOR CITY'S EQUIPMENT BEFORE PURCHASE OF RECEPTACLE IS MADE. WHERE CONNECTION TO CITY'S EQUIPMENT IS DIRECT, REVIEW NAMEPLATE OF THIS EQUIPMENT AND INSTALL CONDUIT, WIRING AND BREAKER IN ACCORDANCE WITH REQUIREMENTS OF NAMEPLATE.
- ELECTRICAL CONTRACTOR TO INCLUDE ALL REQUIRED CONNECTIONS, REQUIRED TERMINAL BOXES AND BOX TERMINATIONS.

PULL BOXES, JUNCTION BOXES AND OUTLET BOXES

- PULL BOXES, JUNCTION BOXES AND OUTLET BOXES SHALL BE MANUFACTURED FROM GALVANIZED INDUSTRY STANDARD GAUGE SHEET STEEL.
- PROVIDE PULL BOXES AND JUNCTION BOXES IN RACEWAYS TO ASSURE THAT CABLES ARE NOT DAMAGED WHEN THEY ARE PULLED AND TO FULFILL MINIMUM CODE REQUIREMENTS.
- PULL BOXES AND JUNCTION BOXES SHALL BE SIZED SO THAT THE MINIMUM BENDING RADIUS CRITERIA SPECIFIED FOR THE WIRES AND CABLE ARE MAINTAINED.
- PROVIDE AND INSTALL ALL REQUIRED JUNCTION AND PULL BOXES REGARDLESS WHETHER INDICATED ON DRAWINGS OR NOT.

RECEPTACLES

- DUPLEX RECEPTACLES, NEMA NO. 5-15 R, 125 VAC, 15 A, PARALLEL SLOT, U GROUND, WITH THE FOLLOWING FEATURES:
 - SUITABLE FOR #10 AWG BACK AND SIDE WIRING.
 - BREAK-OFF LINKS FOR USE AS SPLIT RECEPTACLES.
 - DOUBLE WIPE CONTACTS AND NON-RIVETED GROUNDING CONTACTS.
 - ALUMINUM YOKES, BLADES OR TERMINALS OR WITH CUIAL RATING WILL NOT BE ACCEPTED.
 - ACCEPTABLE MANUFACTURER: ARROW HART #TRS262, BRYANT #TRS262, PASS AND SEYMOUR #TRS262
- SINGLE RECEPTACLES NEMA NO. 5-15R, 125V AC, 15A, U-GROUND, SUITABLE FOR #10 BACK AND SIDE WIRING.
- OTHER RECEPTACLES WITH AMPACITY AND VOLTAGE AS REQUIRED.
- RECEPTACLES OF ONE MANUFACTURER THROUGHOUT PROJECT.
- COLOR OF RECEPTACLES SHALL BE AS FOLLOWS:
 - WHITE.
- DUPLEX RECEPTACLES, NEMA NO. 5-20 R, T SLOT, 125 VAC, U GROUND, WITH THE FOLLOWING FEATURES:
 - NYLON FACE
 - SUITABLE FOR #10 AWG BACK AND SIDE WIRING.
 - BREAK-OFF LINKS FOR USE AS SPLIT RECEPTACLES.
 - DOUBLE WIPE CONTACTS AND NON-RIVETED GROUNDING CONTACTS.
 - ALUMINUM YOKES, BLADES OR TERMINALS OR WITH CUIAL RATING WILL NOT BE ACCEPTED.
 - ACCEPTABLE MANUFACTURERS: BRYANT #TRS362, ARROW HART #TRS362, PASS & SEYMOUR #TRS362.
- DUPLEX RECEPTACLES, NEMA NO. 6-30 R, 250 VAC, WITH THE FOLLOWING FEATURES:
 - NYLON FACE
 - SUITABLE FOR #8 AWG BACK AND SIDE WIRING.
 - DOUBLE WIPE CONTACTS AND NON-RIVETED GROUNDING CONTACTS.
 - ALUMINUM YOKES, BLADES OR TERMINALS OR WITH CUIAL RATING WILL NOT BE ACCEPTED.
 - STANDARD OF ACCEPTANCE: PASS & SEYMOUR-LEGRAND #3801, OTHER ACCEPTABLE MANUFACTURERS: BRYANT, ARROW HART.
- ALL WIRING DEVICES TO BE COMPLETE WITH STAINLESS STEEL COVERPLATES.

SPECIAL WIRING DEVICES

- WEATHERPROOF DOUBLE LIFT SPRING LOADED CAST ALUMINUM COVER PLATES, COMPLETE WITH GASKETS FOR WEATHERPROOF DUPLEX RECEPTACLES.
- WEATHERPROOF SPRING LOADED CAST ALUMINUM COVER PLATES COMPLETE WITH GASKETS FOR SINGLE RECEPTACLES OR SWITCHES.
- GROUND FAULT CIRCUIT INTERRUPTER RECEPTACLE, CLASS A RATED, CSA TYPE 5-15R, 125V, 15A FEED THROUGH RATED TO: CSA-C22.2 NO. 144 WITH THE FOLLOWING FEATURES:
 - SPECIFICATION GRADE
 - NYLON MOULDED HOUSING
 - DECORA STYLE
 - SUITABLE FOR NO. 10 AWG FOR SIDE AND BACK WIRING.
 - SOLID STATE GROUND SENSING DEVICE
 - TESTING AND RESET BUTTONS
 - INDICATOR LIGHT TO SHOW STATUS OF GFCCI PROTECTION OPERATION
 - MAIFUNCTION PROTECTION. DEVICE CANNOT BE RESET IF GFCCI IS NON OPERATIONAL OR UNIT IS WIRED INCORRECTLY.
 - 30MA TRIP LEVEL.
- GROUND FAULT CIRCUIT INTERRUPTER RECEPTACLE, CLASS A RATED, CSA TYPE 5-20R, 125V, 20A T-SLOT FEED THROUGH RATED TO: CSA-C22.2 NO. 144 WITH THE FOLLOWING FEATURES:
 - SPECIFICATION GRADE
 - NYLON MOULDED HOUSING
 - DECORA STYLE
 - SUITABLE FOR NO. 10 AWG FOR SIDE AND BACK WIRING.
 - SOLID STATE GROUND SENSING DEVICE
 - TESTING AND RESET BUTTONS
 - INDICATOR LIGHT TO SHOW STATUS OF GFCCI PROTECTION OPERATION
 - MAIFUNCTION PROTECTION. DEVICE CANNOT BE RESET IF GFCCI IS NON OPERATIONAL OR UNIT IS WIRED INCORRECTLY.
 - 30MA TRIP LEVEL.

SWITCHES

- 15A, 120V AC, PREMIUM SPECIFICATION GRADE, SINGLE POLE, COMMERCIAL DECORATOR PADDLE TYPE AND COMPLETE WITH THE FOLLOWING FEATURES:
 - TERMINAL HOLES APPROVED FOR #10 AWG WIRING.
 - SILVER ALLOY CONTACTS.
 - UREA MOLDING
 - SUITABLE FOR SIDE AND BACK WIRING.
 - FULLY RATED FOR TUNGSTEN FILAMENT AND FLUORESCENT LAMPS, AND UP TO 80% OF RATED CAPACITY FOR MOTOR LOADS.
 - STANDARD OF ACCEPTANCE: ARROW HART 7601AM WHITE, OTHER ACCEPTABLE MANUFACTURERS: PASS & SEYMOUR-LEGRAND, HUBBELL, BRYANT,
 - IMPACT RESISTANT
- SWITCHES OF ONE MANUFACTURER THROUGHOUT PROJECT.
- COMPLETE WITH PILOT LIGHT AS INDICATED. PILOT LIGHTS TO BE ILLUMINATED IN THE "OFF" POSITION.
- ACCEPTABLE MANUFACTURER: BRYANT, ARROW HART, PASS AND SEYMOUR.
- FACEPLATES TO BE STAINLESS STEEL.

CIRCUIT BREAKERS AND FUSES

- CIRCUIT BREAKERS SHALL BE BOLT-IN TYPE. CIRCUIT BREAKERS SHALL BE OF THE SAME MANUFACTURER AND BE COMPATIBLE WITH THE PANEL BOARD.
- CIRCUIT BREAKERS SHALL BE QUICK-MAKE, QUICK-BREAK COMPENSATED FOR AMBIENT TEMPERATURES AND SHALL HAVE A MINIMUM SHORT CIRCUIT RATING OF 10,000 AMPERES SYMMETRICAL OR HIGHER WHERE NOTED ON PANEL SCHEDULE.
- CIRCUIT BREAKERS SHALL BE OF THE "THERMAL-MAGNETIC" TYPE HAVING BIMETALLIC ELEMENT WHICH PROVIDES OVER LOAD PROTECTION AND MAGNETIC ELEMENT FOR SHORT CIRCUIT PROTECTION.
- ALL CIRCUIT BREAKERS FEEDING HVAC EQUIPMENT SHALL BE HACR RATED.
- FUSES SHALL BE CURRENT LIMITING DUAL ELEMENT TYPE WITH A MINIMUM INTERRUPTING CAPACITY OF 200,000 RMS AMPERES AND OF THE CONTINUOUS CURRENT RATINGS AS SHOWN ON THE DRAWINGS.
- FUSES SHALL HAVE AN AVERAGE MELTING TIME-CURRENT CHARACTERISTICS TO MEET THE UNDERWRITERS' LABORATORIES' REQUIREMENTS FOR "CLASS K" 0-600 AMPERE FUSES.
- CIRCUIT BREAKERS AND FUSES SHALL BE SIZED IN ACCORDANCE WITH THE REQUIREMENTS OF THE EQUIPMENT BEING SERVED. VERIFY AND CONFIRM WITH SUPPLIER EQUIPMENT REQUIREMENTS AS NECESSARY PRIOR TO INSTALLATION OF BRANCH CIRCUIT OVER-CURRENT PROTECTION.
- COORDINATE WITH ALL CONTRACTORS FOR THE ELECTRICAL REQUIREMENTS OF ALL EQUIPMENT TO BE INSTALLED. DO NOT RUN CONDUIT AND CONDUCTORS PRIOR TO THE CONFIRMATION OF THE EQUIPMENT REQUIREMENTS.

TEMPORARY POWER

- FURNISH AND INSTALL WIRING FOR ADEQUATE TEMPORARY LIGHT AND POWER FOR THE PROJECT.
- MAINTAIN THE SYSTEM IN GOOD AND ADEQUATE WORKING CONDITIONS AT ALL TIMES.
- FURNISH AND INSTALL ALL LAMPS, BREAKERS, AND FUSING, AS IS NECESSARY.
- REPLACE BURNED OUT LAMPS, DEFECTIVE BREAKERS OR BLOWN FUSES.
- MAINTENANCE FOR THE ABOVE SHALL BE BASED ON OPERATION 1/2 HOUR BEFORE THE START OF THE FIRST TRADE THROUGH 1/2 HOUR AFTER THE END OF THE LAST TRADE.
- WIRE ADEQUATE FOR ALL CONSTRUCTION NEEDS.

SYSTEM SHUT DOWNS

- SHOULD IT BE NECESSARY TO SHUT DOWN ANY ELECTRICAL SYSTEM, THE CONTRACTOR SHALL NOTIFY THE PROJECT MANAGER IN WRITING, AT LEAST 3 DAYS PRIOR TO THE REQUESTED DATE.

JOB COMPLETION

- AT THE COMPLETION OF THE JOB, THE ELECTRICAL CONTRACTOR SHALL THOROUGHLY CLEAN ALL WORK AREA, RESTORING ANY DAMAGED OR DEFACED SURFACES OF FIXTURES OR EQUIPMENT TO THEIR ORIGINAL CONDITION. THE CONTRACTOR SHALL REMOVE ALL TEMPORARY SYSTEMS UNLESS THE CITY SPECIFICALLY REQUESTS THAT THEY BE LEFT IN PLACE.
- THE ELECTRICAL CONTRACTOR SHALL THOROUGHLY TEST ALL NEW ELECTRICAL SYSTEMS, INCLUDING THOSE INSTALLED BY OTHERS AND WIRED BY ELECTICAL CONTRACTOR, CORRECT ALL FAULTY CONDITIONS AT NO EXTRA COST. ALL PANELS SHALL BE BALANCED SO THAT THERE IS NO MORE THAN 10% DIFFERENCE IN PHASE CURRENTS UNDER NORMAL OPERATING CONDITIONS. MODIFY PANEL SCHEDULES AS REQUIRED.
- THE ELECTRICAL CONTRACTOR SHALL DEMONSTRATE TO THE CITY THAT ALL ELECTRICAL DEVICES AND SYSTEMS ARE FULLY FUNCTIONAL, AND SHALL GIVE INSTRUCTIONS IN THEIR OPERATION AS REQUESTED.
- THE ELECTRICAL CONTRACTOR SHALL OBTAIN AND GIVE TO THE CITY, A CSA OR ULC CERTIFICATE COVERING ALL NEW ELECTRICAL EQUIPMENT. THE CONTRACTOR SHALL CORRECT ANY DEFICIENCIES NOTED BY THE INSPECTOR, AT NO EXTRA COST, UNTIL SUCH CERTIFICATE IS RECEIVED.
- ALL WORK SHALL BE GUARANTEED TO BE FULLY OPERATIONAL AND FREE OF DEFECTS FOR A PERIOD OF ONE YEAR FROM THE DATE OF ACCEPTANCE.

OPERATING AND MAINTENANCE MANUALS

- PROVIDE DATA FOR INCORPORATION INTO MAINTENANCE MANUAL. MANUAL SHALL INCLUDE INSTRUCTIONS FOR ALL EQUIPMENT SUPPLIED, COPY OF REVIEWED SHOP DRAWINGS AND TECHNICAL DATA SUCH AS PARTS LISTS, OPERATING INSTRUCTIONS, MAINTENANCE INSTRUCTIONS, ETC. THREE (3) HARD COVER COPIES AND THREE (3) CDs OF MAINTENANCE MANUALS ARE TO BE SUBMITTED.

PANELBOARDS

SUPPLY AND INSTALL ALL CIRCUIT BREAKER TYPE PANELBOARDS AS SHOWN ON THE DRAWINGS.

PANELBOARDS SHALL CONSIST OF CABINETS, TRIMS AND DOORS, CONSTRUCTED OF CODE GAUGE STEEL. CABINETS SHALL NOT EXCEED 5" IN DEPTH UNLESS OTHERWISE SPECIFIED OR NOTED ON THE PLANS. PANELBOARD COVERS SHALL BE FITTED WITH CONCEALED TRIM SCREWS, CONCEALED HINGES, AND CHROMIUM PLATED LOCK AND SNAP CATCH. ALL LOCKS SHALL BE KEYS ALIKE. ALL PANELBOARD TRIMS AND DOORS AN SURFACE MOUNTED. CABINETS SHALL BE PAINTED WITH A RUST-RESISTING PRIMER COAT FOLLOWED BY AN ENAMEL FINISHING COAT. FLUSH TYPE PANELBOARD CABINETS SHALL BE GALVANIZED OR PAINTED.

LOAD CENTRES WILL NOT BE ACCEPTABLE, UNLESS SPECIFIED CALLED FOR.

PANELBOARDS SHALL BE MOUNTED 78" FROM FINISHED FLOOR TO THE TOP UNLESS OTHERWISE SPECIFIED, AND SHALL BE SURFACE MOUNTED.

PANELBOARDS SHALL BE EQUIPPED WITH INTERIORS DESIGNED FOR THE VOLTAGE OF THE SYSTEM COMPLETE WITH NUMBER AND TYPE OF CIRCUIT BREAKERS, SPARE CIRCUIT BREAKERS, BLANK SPACES MAIN BUS, NEUTRALS, ETC., AS SHOWN ON THE DRAWINGS.

PANELBOARDS SHALL CONTAIN 1" WIDE BOLT-IN TYPE CIRCUIT BREAKERS, WITH AMBIENT TEMPERATURE COMPENSATION AND THERMAL MAGNETIC ACTION. MULTIPOLE CIRCUIT BREAKERS SHALL BE OF ONE PIECE CONSTRUCTION. THE BARS WILL NOT BE ACCEPTED. CIRCUIT NUMBERS SHOWN ON THE DRAWINGS SHALL BE GENERALLY ADHERED TO.

CURRENT CARRYING CAPACITY OF PANELBOARDS SHALL BE AT LEAST EQUAL TO THAT OF THE FEEDER SUPPLYING IT, OR AS INDICATED.

SUPPLY AND INSTALL CIRCUIT BREAKER LOCK CLIPS ON CIRCUITS DESIGNATED BY THE CONTRACT ADMIN. APPROXIMATELY FIVE (5) CLIPS PEER PANEL TO BE PROVIDED.

PANELBOARD AND CDP MAINS TO BE TIN PLATED COPPER.

PANELBOARD AND CDP NEUTRAL AND GROUND BARS TO BE COPPER.

INTERUPTING CAPACITIES TO BE AS INDICATED ON DRAWINGS.

PANELS AND BREAKERS TO BE SHIPPED FROM FACTORY AS A UNIT.

AS-BUILTS

- PROVIDE MARKUPS OF REDLINE "AS-BUILT" DRAWINGS.

