

GENERAL CONDITIONS

- DRAWINGS ARE DIAGRAMMATIC AND INDICATE THE GENERAL ARRANGEMENT OF SYSTEMS AND WORK. CONTRACTOR SHALL PROVIDE AND INSTALL ALL NECESSARY ELECTRICAL EQUIPMENT NECESSARY TO FULFILL 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 LATEST EDITION OF THE CANADIAN ELECTRICAL CODE, CSA, NEMA, NFPA, BUILDING STANDARDS AND ALL AUTHORITIES HAVING JURISDICTION. THE CONTRACTOR SHALL PAY FOR AND OBTAIN ALL REQUIRED PERMITS AND CERTIFICATES OF REQUIRED ORDINANCES, AND DELIVER THEM TO THE CITY'S REPRESENTATIVE.
- THE CONTRACTOR SHALL VISIT AND EXAMINE CAREFULLY THE AREAS AFFECTED BY THIS WORK TO BECOME FAMILIAR WITH EXISTING CONDITIONS AND WITH DIFFICULTIES THAT WILL ATTEND THE EXECUTION OF THIS WORK. THE CONTRACTOR SHALL PERFORM THIS PRIOR TO SUBMITTING HIS BID, SUBMITTING A BID WILL BE CONSTRUED AS EVIDENCE THAT SUCH AN EXAMINATION HAS BEEN MADE AND LATER CLAIMS WILL NOT BE RECOGNIZED FOR EXTRA LABOR, EQUIPMENT, OR MATERIALS REQUIRED BECAUSE OF DIFFICULTIES ENCOUNTERED WHICH COULD HAVE BEEN FORESEEN HAD SUCH AN EXAMINATION BEEN MADE.
- UPON REVIEW OF THE DRAWINGS PRIOR TO SUBMITTING HIS BID, THE ELECTRICAL SUBCONTRACTOR SHALL INFORM THE CONTRACT ADMINISTRATOR OF ANY DISCREPANCIES WITHIN THE DRAWINGS AND REQUEST CLARIFICATION CONCERNING THE DISCREPANCIES. LATER CLAIMS WILL NOT BE RECOGNIZED FOR EXTRA LABOR, EQUIPMENT OR MATERIALS SHOULD SUCH PROCEDURE NOT BE FOLLOWED.
- THE CONTRACTOR SHALL COORDINATE THIS WORK WITH OTHER CONTRACTORS WHOSE WORK MIGHT AFFECT THIS INSTALLATION. THE CONTRACTOR SHALL ARRANGE ALL PARTS OF THIS WORK AND EQUIPMENT IN PROPER RELATION TO THE WORK AND EQUIPMENT OF OTHERS.
- THE ELECTRICAL SUBCONTRACTOR SHALL BE RESPONSIBLE FOR ALL CONDUIT, OUTLET BOXES, POKE-THRU SERVICE FITTINGS REQUIRED TO FACILITATE THE INSTALLATION OF POWER AND 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, FIRE ALARM DEVICES, ETC. SHALL BE AS PER CODES GUIDELINES AND/OR DETERMINED FROM THE ARCHITECT'S DRAWINGS. CONFIRM IF UNSURE.
- THE "GENERAL CONDITIONS OF THE CONTRACT FOR CONSTRUCTION" 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 OR NOT IN THESE PLANS AND SPECIFICATIONS. SUCH INSTALLATIONS SHALL INCLUDE, BUT ARE NOT SPECIFICALLY LIMITED TO THE FOLLOWING:
 - INSTALLATION LIGHTING LUMINAIRES AND DRIVERS TO MAKE UNITS FULLY OPERATIONAL.
 - INSTALLATION OF WALL SWITCHES, RECEPTACLES, TELEPHONE OUTLETS, ETC.
 - INSTALLATION OF RACEWAYS AND CIRCUIT WIRING.
 - CUTTING, CHANNELING, CORING AND CHASING REQUIRED TO ACCOMMODATE THE INSTALLATION OF ELECTRICAL WORK AND ROUGH PATCHING.
 - INSTALLATION OF ELECTRICAL DISTRIBUTION EQUIPMENT.
 - INSTALLATION OF HVAC POWER WIRING AND FINAL CONNECTIONS TO HVAC EQUIPMENT.
 - INSTALLATION OF CONDUIT, JUNCTION BOXES, PULL BOXES, ETC. REQUIRED FOR THE AFOREMENTIONED EQUIPMENT.
 - INSTALLATION, MODIFICATIONS AND VERIFICATION (OF AFFECTED ZONES) OF THE FIRE ALARM SYSTEM AND DEVICES.

PANEL BOARDS

- A NEW OR UPDATED TYPEWRITTEN DIRECTORY OF CIRCUITS SHALL BE INSTALLED INSIDE OF EACH PANEL BOARD DOOR. THE LIST SHALL INCLUDE AS-BUILT CONDITIONS INCLUDING ALL TYPES OF DEVICES SERVED BY EACH CIRCUIT. EACH PANEL SHALL BE EXTERNALLY TAGGED WITH PERMANENT PHENOLIC PLATE INDICATING PANEL IDENTIFICATION AND VOLTAGE.
- PHASE LEGS OF PANELS SHALL BE BALANCED. ANY PANEL FOUND WITH UNBALANCED LOADS SHALL HAVE ITS CIRCUITS REARRANGED AS REQUIRED TO BALANCE PHASE LEGS.
- THE SHORT CIRCUIT RATING OF A PANEL SHALL APPLY TO ALL BRANCH DEVICES. SERIES CONNECTED SHORT CIRCUIT RATING OF BRANCH DEVICES WILL NOT BE ACCEPTED.

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 FOR TIME DELAY OVERLOAD PROTECTION AND MAGNETIC ELEMENT FOR SHORT CIRCUIT PROTECTION.
- ALL CIRCUIT BREAKERS FEEDING HVAC EQUIPMENT SHALL BE HACR RATED.
- ALL CIRCUIT BREAKERS FEEDING LIGHTING BRANCH CIRCUITS SHALL BE APPROVED FOR THAT USE AND MARKED "SWD".
- 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" 0-800 AMPERE FUSES.
- CIRCUIT BREAKERS AND FUSES SHALL BE SIZED IN ACCORDANCE WITH THE REQUIREMENTS OF THE EQUIPMENT BEING SERVED. VERIFY 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 AND LOCATION.

DISCONNECT SWITCHES

- THE CONTRACTOR SHALL SUPPLY AND INSTALL DISCONNECT SWITCHES AS SHOWN ON THE PLANS, OR AS OTHERWISE REQUIRED BY CODE, WHETHER SHOWN ON PLANS OR NOT.
- ALL SWITCHES SHALL BE HEAVY DUTY QUICK-MAKE QUICK-BREAK TYPE, RATED AS REQUIRED. EACH SWITCH SHALL HAVE A SUFFICIENT NUMBER OF POLES TO INTERRUPT ALL UNGROUNDED CONDUCTORS. DISCONNECT SWITCHES SERVING MOTOR LOADS SHALL BE HORSEPOWER RATED.
- FUSES SHALL BE INSTALLED IN ALL FUSED SWITCHES, SIZED AS INDICATED OR NOT ON PLANS.
- UNLESS OTHERWISE NOTED, INDOOR SWITCHES SHALL BE PROVIDED WITH NEMA 1 ENCLOSURES; OUTDOOR SWITCHES WITH NEMA 4 ENCLOSURES.

RACEWAYS

- WHERE CONDUIT IS USED, 3/4" MINIMUM CONDUIT SHALL BE PROVIDED.
- ALL CONDUITS TO BE SUPPORTED BY STANDOFFS. CONNECTION TO CEILING SUPPORTS SHALL NOT BE PERMITTED. ALL CONDUIT SHALL BE RUN CONCEALED.
- EMPTY CONDUIT FOR NEW TELEPHONE OUTLETS IN PARTITIONS SHALL BE 1" THIN WALL RUN CONCEALED IN WALLS, TERMINATED AND BUSHED 6" IN ACCESSIBLE HUNG CEILING AND DIRECTED TOWARDS CLOSET. ALL EMPTY CONDUIT SHALL BE FURNISHED WITH A DRAG LINE.
- ALL CONDUITS INSTALLED OUTDOORS SHALL BE RIGID GALVANIZED WITH THREADED CONNECTIONS. ALL CONDUITS INSTALLED UNDERGROUND OR IN CONCRETE SLABS SHALL BE RIGID PVC WITH A SEPARATE GROUNDING CONDUCTOR AND CONCRETE ENCASEMENT WHERE REQUIRED.
- 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 CHOPPING SHALL BE PERMITTED, EXCEPT AS APPROVED BY THE PROJECT MANAGER.
- FLEXIBLE CONDUIT SHALL BE USED TO MAKE FINAL CONNECTIONS TO MOTORS, TRANSFORMERS, RECESSED LIGHTING FIXTURES, EXPANSION JOINTS OR WHERE THE INSTALLATION OF 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.
- RACEWAY ROOF PENETRATIONS SHALL BE FINISHED BY THE BUILDING APPROVED ROOF CONTRACTOR. ELECTRICAL SUBCONTRACTOR SHALL PAY FOR ROOFING SERVICES.

WIRE AND CABLE

- FOR CONCEALED BRANCH CIRCUIT WIRING, ELECTRICAL METAL CONDUIT EMT SHALL BE USED. FLEXIBLE METAL CONDUIT AND ROMEX MAY NOT BE USED.
- ALL CONDUCTORS SHALL BE SOFT ANNEALED 98% 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.
- RECESSED LIGHTING FIXTURES IN HUNG CEILING SHALL BE SUPPLIED WITH 6X IN LENGTHS NOT TO EXCEED 6 FEET FROM ADJACENT JUNCTION BOXES.
- FACTORY COLOR CODING SHALL CONFORM TO THE BUILDING STANDARD OR AS REQUIRED BY THE UTILITY COMPANY.
- TAG ALL FEEDERS IN ALL PULL BOXES AND IN ALL GUTTER SPACE AND WIRWAYS 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 PIGTAIL CONNECTORS. CRIMP TYPE CONNECTORS SHALL NOT BE USED.

WIRING DEVICES

- WIRING DEVICES SHALL BE OF THE SPECIFICATION GRADE UNLESS OTHERWISE SPECIFIED. ALL DEVICES SHALL BE FLUSH MOUNTED UNLESS OTHERWISE NOTED. SWITCHES SHALL BE MANUFACTURED BY LEVITON OR APPROVED EQUAL IN ACCORDANCE WITH 87.
- SINGLE POLE SWITCHES SHALL BE 347 VOLTS, RATED AT 20 AMPERES. QUIET OPERATION TYPE AND COLOR OF SWITCH AS DIRECTED BY CONTRACT ADMINISTRATOR.
- SWITCH AND RECEPTACLE PLATES SHALL BE PLUMB AND SHALL FIT FLAT AGAINST WALL. FINISH AS DIRECTED BY CONTRACT ADMINISTRATOR.
- ALL SWITCH AND RECEPTACLE MOUNTING HEIGHTS AND LOCATIONS SHALL BE TAKEN FROM CONTRACT ADMINISTRATOR'S DRAWINGS UNLESS OTHERWISE NOTED.
- MULTIPLE DEVICES AT A COMMON LOCATION SHALL BE INSTALLED IN A COMMON MULTIGANG DEVICE PLATE.
- ALL WIRING DEVICES TO BE DECORA STYLE.
- SWITCH COVERPLATES TO BE STAINLESS STEEL AND INDICATE 347V.

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.

GROUNDING

- 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 GUIDELINES AS PER CANADIAN ELECTRICAL CODE.
- GROUND CLAMPS SHALL BE LISTED SPECIFICALLY FOR GROUNDING, WHERE GROUNDING CONDUCTOR IS ENCLOSED IN CONDUIT. GROUND CLAMP SHALL GROUND BOTH CONDUCTOR AND CONDUIT.

FIRE ALARM SYSTEM

- THE WORK COVERED BY THIS SECTION OF THE SPECIFICATIONS INCLUDES THE FURNISHING OF ALL PERMITS, FEES, LABOR, EQUIPMENT, MATERIALS, AND PERFORMANCE OF ALL OPERATIONS IN CONNECTION WITH THE INSTALLATION OF THE FIRE ALARM SYSTEM AS SHOWN ON THE DRAWINGS AND AS HEREIN SPECIFIED.
- THE COMPLETE INSTALLATION SHALL CONFORM TO THE APPLICABLE SECTIONS OF THE NATIONAL BUILDING CODE OF CANADA, THE CANADIAN ELECTRICAL CODE AND LOCAL CODE REQUIREMENTS.
- EACH AND ALL ITEMS OF THE FIRE ALARM SYSTEM SHALL BE LISTED AS A PRODUCT TO MATCH EXISTING FIRE ALARM SYSTEM AND MANUFACTURER.
- THE SYSTEM ALARM OPERATION SUBSEQUENT TO THE ALARM ACTIVATION OF ANY INITIATING DEVICE SHALL BE AS FOLLOWS:
 - THE APPROPRIATE INITIATING DEVICE CIRCUIT RED LED SHALL FLASH ON THE CONTROL PANEL.
 - A PULSING ALARM TONE SHALL OCCUR WITHIN THE CONTROL PANEL UNTIL SILENCED. ALL ALARM INDICATING APPLIANCES SHALL SOUND AND
 - OR DISPLAY IN A SYNCHRONIZED CONTINUOUS PATTERN UNTIL SILENCED BY THE ALARM SILENCE SWITCH.
 - A SUPERVISED SIGNAL TO NOTIFY THE LOCAL FIRE DEPARTMENT OR AN APPROVED CENTRAL STATION SHALL BE ACTIVATED.
 - THE MECHANICAL CONTROLS SHALL ACTIVATE THE AIR HANDLING SYSTEMS AS REQUIRED TO SHUTDOWN ALL FANS AND GAS SUPPLY VALVES.
- THE CONTRACTOR SHALL WARRANT THE COMPLETED FIRE ALARM SYSTEM WIRING AND EQUIPMENT TO BE FREE FROM INHERENT MECHANICAL AND ELECTRICAL DEFECTS FOR A PERIOD OF ONE (1) YEAR FROM THE DATE OF THE COMPLETED AND CERTIFIED TEST OR FROM THE DATE OF FIRST BENEFICIAL USE.
- ELECTRICAL SUBCONTRACTOR TO PROVIDE VERIFICATION REPORT OF ALL AFFECTED ZONES WITH THE RENOVATED AREA.
- SUBMIT COMPLETE FIRE ALARM VERIFICATION REPORT TO CONTRACT ADMINISTRATOR BEFORE REQUESTING OF SUBSTANTIAL COMPLETION OF THE PROJECT.

TEMPORARY LIGHTING AND 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 12 HOUR BEFORE THE START OF THE FIRST TRADE THROUGH 1/2 HOUR AFTER THE END OF THE LAST TRADE.
- SYSTEM SHALL BE NOMINALLY 120/208 VOLT, 3 PHASE, 4 WIRE ADEQUATE FOR ALL CONSTRUCTION NEEDS.

FIRESTOPPING

- FIRE STOP/SMOKE SEAL TO THE FOLLOWING STANDARDS: CAN4-S115M, CAN4-S101M, ASTM E64, 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.

EXIT LIGHTS

- EXIT LIGHTS SHALL BE LISTED TO NBC2010, C22.2 NO. 141.
- HOUSING: COLD ROLLED STEEL.
- TWO SIDED RED EXIT FACE WITH FIELD SELECTABLE CHEVRONS.
- EMERGENCY: CONNECTION FOR 12V DC EMERGENCY POWER.
- MOUNTING: SUITABLE WALL, END-TO-WALL, OR CEILING MOUNTING, AS INDICATED.
- FACEPLATES: SINGLE OR DOUBLE FACE, AS INDICATED.
- MANUFACTURERS: REFER TO LUMINAIRE SCHEDULE.
- INSTALL EXIT LIGHTS AS INDICATED. IN ACCORDANCE WITH NBC-2010, NRCA 0860.
- 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.

LIGHTING FIXTURES

- ALL LUMINAIRES, LAMPS AND DRIVERS ARE FURNISHED AND INSTALLED BY THE ELECTRICAL SUBCONTRACTOR.
- ALL LIGHT FIXTURE MOUNTING HARDWARE SHALL MATCH CEILING TYPES.
- LUMINAIRES SHALL HAVE A VISIBLE CSA LABEL.
- PROVIDE SUPPORTING DEVICES, PLASTER FRAMES, JUNCTION BOXES AND OUTLET BOXES WHERE REQUIRED.
- WHERE SOFFITS OR CEILINGS HAVE THERMAL INSULATION, PROVIDE FIXTURES WHICH ARE CSA APPROVED FOR SUCH USE.

LED LUMINAIRES

- LEDS TO PROVIDE MINIMUM 80 CRI AT 3500K
 - 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.

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 AND LENS MATERIALS IN ARCHITECTURAL DETAILS, AS INDICATED.
- 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 LUMINAIRES 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 ADMINISTRATOR.

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 CUAL RATING WILL NOT BE ACCEPTED.
 - ACCEPTABLE MANUFACTURER: ARROW HART #5262, BRYANT #5362, PASS AND SEYMOUR #5362
- SINGLE RECEPTACLES NEMA NO. 5-15R, 125V AC, 15A, U-GROUND, SUITABLE FOR #10 AWG BACK AND SIDE WIRING.
- OTHER RECEPTACLES WITH AMPACITY AND VOLTAGE AS REQUIRED.
- RECEPTACLES OF ONE MANUFACTURER THROUGHOUT PROJECT.
- COLOR OF RECEPTACLES SHALL BE WHITE.
- DUPLEX RECEPTACLES, NEMA NO. 5, 20 R, 1 SLT, 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 CUAL RATING WILL NOT BE ACCEPTED.
 - ACCEPTABLE MANUFACTURERS: BRYANT #5362, ARROW HART #5362, PASS & SEYMOUR #5362.
- ALL RECEPTACLE FACEPLATES TO BE STAINLESS STEEL.

MECHANICAL EQUIPMENT

- ALL CONTROL WIRING ASSOCIATED WITH MECHANICAL EQUIPMENT IS THE RESPONSIBILITY OF THE MECHANICAL SUBCONTRACTOR UNLESS NOTED OTHERWISE. THE ELECTRICAL SUBCONTRACTOR IS RESPONSIBLE FOR PROVIDING AND INSTALLING ALL LINE VOLTAGE POWER, CONDUIT AND OUTLET BOXES RELATED TO HVAC CONTROLS. COORDINATE ALL WORK WITH THE MECHANICAL SUBCONTRACTOR.
- COORDINATE WITH MECHANICAL AND PLUMBING CONTRACTORS FOR THE ELECTRICAL REQUIREMENTS OF ALL MECHANICAL EQUIPMENT TO BE INSTALLED. DO NOT RUN CONDUIT AND CONDUCTORS PRIOR TO THE CONFIRMATION OF THE EQUIPMENT REQUIREMENTS.

SHOP DRAWINGS

- SUBMIT TO THE CONTRACT ADMINISTRATOR FIVE (5) SETS OF SHOP DRAWINGS FOR THE FOLLOWING:
 - CIRCUIT BREAKERS AND FUSES
 - PANEL BOARDS
 - LIGHTING FIXTURES, DRIVERS AND LAMPS
 - WIRING DEVICES INCLUDING SWITCHES AND RECEPTACLES
 - FIRE ALARM EQUIPMENT AND DEVICES

SYSTEM SHUT DOWNS

- SHOULD IT BE NECESSARY TO SHUT DOWN ANY EXISTING ELECTRICAL SYSTEM, THE CONTRACTOR SHALL NOTIFY THE PROJECT MANAGER AND BUILDING MANAGEMENT. IN WRITING, AT LEAST 3 DAYS PRIOR TO THE REQUESTED DATE. ALL SHUT DOWN WORK SHALL BE DONE AFTER NORMAL BUILDING OPERATING HOURS. IF SO DIRECTED BY THE AFOREMENTIONED PARTIES, AT NO ADDITIONAL COST.

JOB COMPLETION

- AT THE COMPLETION OF THE JOB THE 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 SUBCONTRACTOR SHALL THOROUGHLY TEST ALL NEW ELECTRICAL SYSTEMS, INCLUDING THOSE INSTALLED BY OTHERS AND WIRED BY ELECTRICAL SUBCONTRACTOR. 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 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 CONTRACTOR SHALL OBTAIN, AND GIVE TO THE CITY, AN UNDERWRITERS 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.

SUBSTITUTIONS

- THE CONTRACTOR IS REQUIRED TO BID ON THIS PROJECT WITH THE UNDERSTANDING THAT ALL EQUIPMENT WILL BE PROVIDED AS SPECIFIED.
- ANY SUBSTITUTIONS FROM THE SPECIFIED ITEMS MUST BE INCLUDED WITH A NUMBER INDICATING THE SAVINGS OVER THE SPECIFIED ITEMS THAT THE CITY WILL REALIZE.
- THIS PROVISION IS REQUIRED FOR ALL SPECIFIED ITEMS INCLUDING BUT NOT LIMITED TO SUBSTITUTED "EQUALS", LIGHTING FIXTURES, PANELS AND FIRE ALARM EQUIPMENT.

OPERATING AND MAINTENANCE MANUALS

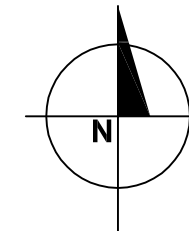
- PROVIDE DATA FOR INCORPORATION INTO MAINTENANCE MANUAL. MANUAL SHALL INCLUDE INSTRUCTIONS FOR ALL EQUIPMENT SUPPLIED. COPY OF REVIEWED SHOP DRAWINGS AND TECHNICAL DATA SUCH AS PARTS LISTS, OPERATING INSTRUCTIONS, MAINTENANCE INSTRUCTIONS, ETC. THREE (3) HARD COVER COPIES AND THREE (3) CDs OF MAINTENANCE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

AS-BUILTS

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

Ownership of Documents:
Drawings and specifications as instruments of service are and shall remain the property of the Architect whether the project for which they are made is executed or not. They are not to be used by the owner on other projects or extensions to the project except by agreement in writing and with appropriate compensation to the Architect.

This drawing shall not be scaled. Follow given dimensions only.



ISSUED FOR

ISSUED FOR CONSTRUCTION AUGUST 24, 2015

SEAL



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PROJECT TITLE

CENTRAL YARDS FIELD SERVICES BUILDING

1220 PACIFIC AVENUE OFFICE RENOVATION

1220 PACIFIC AVE. WINNIPEG MANITOBA

DRAWING TITLE

723-2015_ ELECTRICAL SPECIFICATIONS_E3-R0

DESIGNED BY HCC

DRAWN BY PL

ISSUE DATE 08-24-2015

REVISION No. 0

PROJECT No. 15040

DRAWING No. E3

NOTE: THIS DRAWING SUPERCEDES ALL PREVIOUSLY ISSUED DRAWINGS.