

1. GENERAL

- 1.1. REQUIREMENTS, INSTRUCTIONS TO BIDDERS, THIS SPECIFICATIONS AND ANY ADDENDA HERETO FORM PART OF THE CONTRACT DOCUMENTS AND SHALL BE READ IN CONJUNCTION WITH THEM. WORK TO INCLUDE THE FURNISHING OF ALL LABOR AND MATERIALS UNLESS OTHERWISE SPECIFIED OTHERWISE TO COMPLETE AND PUT INTO OPERATING CONDITIONS ALL ELECTRICAL SYSTEMS AS INDICATED ON THE DRAWINGS AND SPECIFIED HEREIN.
- 1.2. RESPONSIBILITY AS TO WHICH TRADES PROVIDES REQUIRED ARTICLES OR MATERIAL RESTS SOLELY WITH THE GENERAL CONTRACT TRADE. EXTRAS WILL BE CONSIDERED BASED ON GROUNDS OF DIFFERENCE OF INTERPRETATION OF SPECIFICATIONS AS TO WHICH TRADE INVOLVED SHALL PROVIDE CERTAIN SPECIALITIES OR MATERIALS.
- 1.3. MUST: THIS WORD, OR THE TERMS "REQUIRED" OR "SHALL", MEAN THAT THE DEFINITION IS AN ABSOLUTE REQUIREMENT OF THE SPECIFICATION.

2. DRAWINGS AND SPECIFICATIONS

- 2.1. DRAWINGS AND SPECIFICATIONS ARE COMPLEMENTARY TO EACH OTHER AND WHAT IS CALLED FOR BY ONE TO BE BINDING AS IF CALLED FOR BY OTHER.
- 2.2. SHOULD ANY DISCREPANCY APPEAR BETWEEN DRAWINGS AND SPECIFICATIONS WHICH LEAVES ELECTRICAL CONTRACTOR IN DOUBT AS TO TRUE INTENT AND MEANING, OBTAIN RULING BEFORE SUBMITTING BID. IF THIS IS NOT DONE, IT WILL BE ASSUMED THAT THE MOST EXPENSIVE ALTERNATE HAS BEEN FIGURED.

3. EXAMINATION OF OTHER DRAWINGS

- 3.1. THIS CONTRACTOR TO EXAMINE CAREFULLY STRUCTURAL, ARCHITECTURAL AND MECHANICAL DRAWINGS AND WORK OF OTHER TRADES AND SATISFY HIMSELF THAT THE WORK UNDER THIS CONTRACT CAN BE SATISFACTORY CARRIED OUT WITHOUT CHANGES TO THE BUILDING AS SHOWN ON THE PLANS. SHOULD ANY DIFFICULTY ARISE SHOWING CONFLICT WITH, OR REQUIRING ADDITIONAL WORK BEYOND THE WORK OF THESE DRAWINGS, BRING THIS MATTER TO THE ATTENTION OF THE CONTRACT ADMINISTRATOR BEFORE SUBMITTING BID.

4. UNIFORMITY OF EQUIPMENT

- 4.1. UNLESS OTHERWISE SPECIFIED, UNIFORMITY OF MANUFACTURER TO BE MAINTAINED FOR ANY PARTICULAR ITEM THROUGHOUT.

5. STANDARDS OF MATERIAL AND WORKMANSHIP

- 5.1. ALL MATERIALS TO BE NEW AND OF THE QUALITY SPECIFIED AND CONFORM TO THE STANDARDS OF THE CSA. WHERE EQUIPMENT OR MATERIALS ARE SPECIFIED BY TECHNICAL DESCRIPTION ONLY, THEY SHALL BE OF THE BEST COMMERCIAL QUALITY OBTAINABLE FOR THE PURPOSE.
- 5.2. ALL WORK TO BE EXECUTED IN A NEAT AND WORKMANLIKE MANNER BY QUALIFIED TRADESMEN. ELECTRICAL CONTRACTOR TO KEEP A COMPETENT FOREMAN AND NECESSARY ASSISTANTS ON THE JOB DURING THE PROGRESS OF THE WORK.
- 5.3. ALL MATERIAL AND INSTALLATION SHALL MATCH BUILDING STANDARD UNLESS IT IS NOTED ON THE DRAWINGS.

6. RECORD PLANS

- 6.1. THE CONTRACT ADMINISTRATOR WILL FURNISH TO THE ELECTRICAL CONTRACTOR ONE SET OF PRINTS TO BE USED FOR RECORD PURPOSES. ALL REVISIONS MADE ON SITE DURING CONSTRUCTION TO BE ACCURATELY RECORDED.
- 6.2. ELECTRICAL CONTRACTOR TO PRODUCE AT HIS OWN EXPENSE A SET OF AUTOCAD DRAWINGS INCLUDING ALL CHANGES TO THE ORIGINAL BID DRAWINGS COVERED BY ADDENDA, CHANGE ORDER, FIELD CHANGES, JOB CONDITIONS ETC., AND TURN THESE OVER TO THE CONTRACT ADMINISTRATOR IN ELECTRONIC AND HARD COPY FORM. COMPLETED RECORD DRAWINGS TO BE CLEARLY MARKED "RECORD DRAWINGS".
- 6.3. SHOW ALL MAJOR, JUNCTION BOXES, CORE HOLES, CONDUIT HOME RUNS AND CIRCUIT NUMBERS ON AS-BUILT DRAWINGS.
- 6.4. PROVIDE THREE COPIES OF MAINTENANCE MANUALS TO INCLUDE ALL NEW ELECTRICAL EQUIPMENT SUCH AS: LIGHT FIXTURES, EXIT LIGHTS, BATTERY UNITS, LIGHTING CONTROLS, PANELS, TRANSFORMERS.
- 6.5. PROVIDE AS-BUILT DRAWINGS AND MANUALS TO BUILDING MANAGEMENT AT TIME OF COMPLETION. DRAWINGS AND MANUALS SHALL BE REVIEWED, APPROVED AND STAMPED BY CONTRACT ADMINISTRATOR AT COMPLETION.

7. SHOP DRAWINGS

- 7.1. ELECTRICAL CONTRACTOR TO SUBMIT TO THE CONTRACT ADMINISTRATOR FOR REVIEW, SHOP DRAWINGS OF ELECTRICAL COMPONENTS AS INDICATED.
- 7.2. ALL DRAWINGS TO BE SUBMITTED IN TRIPLICATE AND TWO COPIES WILL BE RETURNED TO THE ELECTRICAL CONTRACTOR, SUBMIT ADDITIONAL COPIES FOR APPROVAL AS MAY BE REQUIRED.
- 7.3. CONTRACT ADMINISTRATOR'S REVIEW OF SHOP DRAWINGS TO BE FOR GENERAL DESIGN ONLY AND WILL NOT RELIEVE ELECTRICAL CONTRACTOR OR SUPPLIERS FROM RESPONSIBILITY FOR ERRORS, PROPER FITTING, CONSTRUCTION OF WORK AND FURNISHING OF MATERIALS. REVIEW WILL NOT BE CONSTRUED AS APPROVING DEPARTURES FROM CONTRACT DOCUMENT REQUIREMENTS IF SUCH DEPARTURES ARE NOT SPECIFICALLY NOTED. ELECTRICAL CONTRACTOR TO BE RESPONSIBLE FOR VERIFYING ALL DIMENSIONS.

8. GUARANTEE WARRANTY

- 8.1. FURNISH A WRITTEN GUARANTEE WARRANTY COUNTERSIGNED AND GUARANTEED BY GENERAL CONTRACT TRADE STATING:
 - 8.1.1. THAT ALL WORK EXECUTED UNDER THIS CONTRACT WILL BE FREE FROM DEFECTS OF MATERIALS AND WORKMANSHIP FOR A PERIOD OF ONE YEAR FROM THE DATE OF FINAL ACCEPTANCE.
 - 8.1.2. THE ABOVE PARTIES FURTHER AGREE TO, AT THEIR OWN EXPENSE, REPAIR AND REPLACE ALL SUCH DEFECTIVE WORK AND OTHER WORK DAMAGED THEREBY WHICH FAILS OR BECOMES DEFECTIVE DURING THE TERM OF GUARANTEE WARRANTY PROVIDED THAT SUCH FAILURE IS NOT DUE TO IMPROPER USAGE.
 - 8.1.3. PERIOD OF THE GUARANTEE SPECIFIED TO IN NO WAY SUPPLANT ANY OTHER GUARANTEE OF A LONGER PERIOD BUT BE BINDING ON WORK NOT OTHERWISE COVERED.

9. SETTING OUT OF THE WORK

- 9.1. ELECTRICAL CONTRACTOR TO BE RESPONSIBLE FOR CORRECTING ALL WORK COMPLETED CONTRARY TO INTENT OF DRAWINGS AND SPECIFICATIONS AND BEAR ALL COST FOR THE SAME. WHERE INTENT OF DRAWINGS AND SPECIFICATIONS IS NOT CLEAR, OBTAIN CLARIFICATION BEFORE PROCEEDING WITH WORK.
- 9.2. ELECTRICAL CONTRACTOR TO GIVE WORK HIS PERSONAL SUPERVISION LAY OUT HIS OWN WORK, DO ALL NECESSARY LEVELING AND MEASURING OR EMPLOY A COMPETENT CONTRACT ADMINISTRATOR TO DO SO, FIGURES, FULL SIZE AND DETAIL DRAWINGS TO TAKE PRECEDENT OVER SCALE MEASUREMENTS.
- 9.3. WHERE ANY EQUIPMENT SUPPLIED BY ELECTRICAL CONTRACTOR MUST BE BUILT IN WITH WORK OF OTHER CONTRACTOR, THIS CONTRACTOR TO BE RESPONSIBLE FOR SUPPLYING THE EQUIPMENT TO BE BUILT IN OR MEASUREMENTS TO ALLOW NECESSARY OPENING TO BE LEFT SO AS NOT TO HOLD UP WORK.
- 9.4. ELECTRICAL CONTRACTOR TO BE RESPONSIBLE FOR ANY DAMAGED CAUSED OR BY ANY OTHER TRADE BY IMPROPER LOCATION OR CARRYING OUT OF HIS WORK.
- 9.5. ELECTRICAL CONTRACTOR IN SETTING OUT OF HIS WORK, TO MAKE REFERENCE TO ARCHITECTURAL, STRUCTURAL, AND MECHANICAL DRAWINGS. CONSULT WITH RESPECTIVE TRADES IN SETTING OUT LOCATIONS FOR CONDUIT RUNS, LIGHTING FIXTURES, PANEL ASSEMBLIES, AND THE LIKE, SO THAT CONFLICTS ARE AVOIDED AND SYMMETRICAL SPACING IS MAINTAINED.
- 9.6. WHERE RECEPTACLES ARE MOUNTED ABOVE COUNTERS, BENCHES, SPLASHBACKS, AND THE LIKE, LOCATION AND MOUNTING HEIGHTS TO BE COORDINATED WITH BUILT-IN UNITS. REFER TO ARCHITECTURAL DETAILS. WHERE RECEPTACLES OCCUR IN OUTSIDE WALLS WHERE HEATING UNITS OCCUR, RECEPTACLE HEIGHT TO BE ADJUSTED TO COORDINATE WITH THE HEATING UNIT.
- 9.7. ELECTRICAL CONTRACTOR TO COORDINATE ANY INTERRUPTIONS TO ADJOINING TENANTS IN ORDER TO AVOID ANY INCONVENIENCES TO SAID TENANT. IF NECESSARY ELECTRICAL CONTRACTOR TO DO

ANY REQUIRED CONNECTIONS ON OFF HOURS.

- 9.8. SWITCH MOUNTING HEIGHTS TO BE COORDINATED WITH ARCHITECTURAL DETAILS AND TO BE ADJUSTED IF REQUIRED, TO COORDINATE WITH PANELING, MASONRY COURSE LINES AND THE LIKE.
 - 9.9. WHERE OUTLETS OCCUR IN EXTERIOR WALLS, ELECTRICAL CONTRACTOR TO ENSURE THAT THERE IS INSULATION BEHIND THE OUTLET BOXES TO PREVENT CONDENSATION THROUGH THE BOXES.
10. EXAMINATION OF SITE
- 10.1. PRIOR TO SUBMITTING BID, ELECTRICAL CONTRACTOR TO CAREFULLY EXAMINE THE SITE AND ASCERTAIN ALL CONDITIONS WHICH ME AFFECT HIS TRADE. NO EXTRAS WILL BE ALLOWED FOR WORK RESULTING FROM CONDITIONS WHAT WOULD HAVE BEEN EVIDENT UPON A THROUGH EXAMINATION OF SITE.

11. CLEANUP

- 11.1. ELECTRICAL CONTRACTOR AND HIS SUBTRADES AT ALL TIMES DURING CONSTRUCTION, KEEP SITE FREE OF ALL DEBRIS, BOXES, PACKING AND THE LIKE RESULTING FROM WORK OF THIS TRADE.
- 11.2. UPON COMPLETION OF WORK, ELECTRICAL INSTALLATION TO BE LEFT IN A CLEAN AND FINISHED CONDITION TO SATISFACTION OF THE CONTRACT ADMINISTRATOR.

12. ACCESS DOORS

- 12.1. ELECTRICAL CONTRACTOR TO SUPPLY AND INSTALL ACCESS DOORS REQUIRED FOR PROPER SERVICING OF ALL ELECTRICAL WORK. ACCESS DOORS TO BE COMPLETE WITH NECESSARY FRAMES AND HINGED DOORS HELD CLOSED WITH CAPTIVE STUDS. ACCESS PANELS TO BE OF NOT LESS THAN 14 GAUGE STEEL, PRIME COATED FINISHED AND PAINTED ON THE JOB TO MATCH THE WALL OR CEILING FINISH.

13. CODES, PERMITS AND INSPECTION

- 13.1. INSTALLATION TO COMPLY WITH REQUIREMENTS OF BUILDING CODES AND CANADIAN ELECTRICAL CODE AND REGULATIONS OF THE INSPECTION DEPARTMENT.
- 13.2. ELECTRICAL CONTRACTOR TO OBTAIN ALL PERMITS REQUIRED AND AFTER COMPLETION OF THE WORK FURNISH TO THE CONTRACT ADMINISTRATOR A CERTIFICATE OF FINAL INSPECTION AND APPROVAL FROM ELECTRICAL INSPECTION DEPARTMENT.

14. MECHANICAL EQUIPMENT

- 14.1. UNLESS OTHERWISE, ELECTRICAL CONTRACTOR TO SUPPLY AND INSTALL ALL CONDUIT AND WIRE, FITTINGS AND CONNECTIONS FOR ALL MECHANICAL EQUIPMENT. MOTOR PROTECTION SWITCHES COMPLETE WITH OVERLOAD RELAYS, AND OTHER REQUIRED PARTS TO COMPLETE THE JOB TO BE SUPPLIED AND INSTALLED BY ELECTRICAL CONTRACTOR. ELECTRICAL CONTRACTOR TO CONFIRM WITH MECHANICAL TRADE SIZE, CHARACTERISTICS AND LOCATIONS OF ALL MECHANICAL EQUIPMENT BEFORE INSTALLATION OF CONDUIT, OUTLETS, HEATERS, AND THE LIKE.

15. TESTS

- 15.1. ALL PORTIONS OF ELECTRICAL WORK TO BE TESTED AND CHECKED FOR SATISFACTORY OPERATION.
- 15.2. BEFORE ENERGIZING ANY PORTION OF ELECTRICAL SYSTEM, PERFORM MEGGER TESTS ON ALL FEEDERS AND BRANCH CIRCUITS. RESULTS OF SUCH TESTS TO CONFORM TO REQUIREMENTS OF CANADIAN ELECTRICAL CODE AND BE TO SATISFACTION OF AUTHORIZED INSPECTION AGENCY AND THE CONTRACT ADMINISTRATOR.
- 15.3. UPON COMPLETION AND IMMEDIATELY PRIOR TO FINAL INSPECTION AND TAKEOVER, CHECK LOAD BALANCE ON ALL FEEDERS AND AL DISTRIBUTION CENTERS, PANELS, AND THE LIKE. TEST TO BE CARRIED OUT BY TURNING ON ALL POSSIBLE LOADS AND CHECKING LOAD CURRENT BALANCE. IF LOAD UNBALANCE EXCEEDS 15% RECONNECT CIRCUITS TO BALANCE LOAD.

16. PAINTING AND FINISHES

- 16.1. ALL ELECTRICAL FITTINGS, SUPPORT, HANGER RODS, PULLBOXES, CHANNEL FRAMES, CONDUIT RACKS, OUTLET BOXES, BRACKETS, CLAMPS AND ALL OTHER SIMILAR COMPONENTS OF THE ELECTRICAL INSTALLATION TO HAVE GALVANIZED FINISH OR PAINT FINISH OVER CORROSION-RESISTANCE PRIMER.
- 16.2. ALL PANEL TO BE FACTORY FINISHED WITH SPRAY-ON AIR DRY ENAMEL. ALL ENAMEL TO BE APPLIED OVER CORROSION-RESISTANCE PRIMER. MATT OR FLAT TYPE FINISH PAINT WILL NOT BE ACCEPTED. ALL PANELS OR SIMILAR FACTORY FINISHED UNITS THAT ARE SCRATCHED OR MARKED DURING INSTALLATION TO BE TOUCHED UP WITH MATCHING SPRY-ON AIR DRY LAQUER AND IF REQUIRED TO PROVIDE SATISFACTORY JOB TO BE COMPLETELY REFINISHED.
- 16.3. ALL 120/208 VOLTS PANELBOARDS, PULLBOXES AND THE LIKE TO BE FINISHED IN GRAY ENAMEL.
- 16.4. PULLBOXES, JUNCTIONBOXES, TERMINAL PANELS, AND THE LIKE TO BE FINISHED IN ACCORDANCE WITH EXISTING BUILDING.

17. CONDUIT

- 17.1. ALL WIRE AND CABLE TO BE INSTALLED IN CONDUIT EXCEPT WHERE IS NOTED OTHERWISE ON THE DRAWINGS. BX WIRING MAY BE UTILIZED FOR DROPS FROM JUNCTION BOXES TO OUTLETS AND LIGHTS NOT TO EXCEED 30 FEET IN LENGTH.
- 17.2. CONDUIT TO BE ELECTRIC METALLIC TUBING, UTILIZE RIGID GALVANIZED STEEL CONDUIT FOR ALL EXPOSED RUNS OUTDOOR AND UNDERGROUND AND WHERE IN JUDGMENT BY THE ELECTRICAL INSPECTION AUTHORITY IS SUBJECT TO MECHANICAL DAMAGE.
- 17.3. SURFACE MOUNTED CONDUITS TO BE INSTALLED PARALLEL TO STRUCTURAL LINES AND WHERE BENDS OCCUR IN PARALLEL RUNS, THEY SHALL BE CONCENTRIC.
- 17.4. CONDUITS TO BE INSTALLED FREE FROM DENTS AND HAVE ENDS PLUGGED TO PREVENT ENTRANCE OF DUST OR MOISTURE.
- 17.5. ALL CONDUITS, EXCEPT WHERE OTHERWISE TO BE SIZED IN ACCORDANCE WITH CANADIAN ELECTRICAL CODE.
- 17.6. FLEXIBLE CONDUIT CONNECTIONS TO MOTORS, CONTROLS, AND THE LIKE TO BE FLEXIBLE PLASTIC JACKETED, SEAL TIGHT OR APPROVED EQUAL. FLEXIBLE CONDUIT CONNECTIONS ARE REQUIRED TO ALL MOTORS FROM STUB-UP OR JUNCTION BOXES.
- 17.7. APPROPRIATE AND COORDINATED METAL TYPE FITTINGS TO BE USED WITH CONDUITS.

18. EXPANSION JOINTS

- 18.1. WHERE CONDUITS ARE INSTALLED IN CONCRETE SLABS AND CROSS STRUCTURAL EXPANSION JOINTS, AN APPROVED EXPANSION FITTING COMPLETE WITH BONDING JUMPER AND CLAMPS SHALL BE INSTALLED. ELECTRICAL CONTRACTOR USE APPROVED EXPANSION JOINTS.

19. WIRE AND CABLE

- 19.1. ALL BUILDING WIRING TO BE APPROVED COPPER OR ALUMINUM.
- 19.2. MINIMUM CONDUCTOR SIZE IS #12 AWG TO BE USED.
- 19.3. SMALL CONDUCTORS FOR CONTROL OR LOW VOLTAGE WORK TO BE USED WHERE CALLED FOR ON DRAWINGS OR IN SPECIFICATIONS.
- 19.4. ALL CONDUCTORS TO BE COLOR CODED THROUGHOUT IN ACCORDANCE WITH THE FOLLOWING TO MATCH EXISTING:
 - EQUIPMENT GROUNDING CONDUCTOR - GREEN
 - NEUTRAL CONDUCTOR - WHITE
 - 120/208 VOLTS PHASE WIRES - RED, BLACK, AND BLUE

20. OUTLET BOXES

- 20.1. BOXES: HOT DIP GALVANIZED, CONFORMING TO CSA REQUIREMENTS.
- 20.2. BOXES FOR CEILING: #54151 OR #72171 OR SIMILAR APPROVED.
- 20.3. BOXES FOR INDOOR SURFACE MOUNTED EQUIPMENT, USE 4 INCH SQUARE #52151, #52171, #58361 OR SIMILAR APPROVED WITH APPROVED COVERS.
- 20.4. ALL OUTLET BOXES TO BE FLUSH MOUNTED EXCEPT AS SPECIFIED.
- 20.5. NO SECTIONAL OR HANDY BOXES ALLOWED.

21. LOCATION OF OUTLETS

- 21.1. THE CONTRACT ADMINISTRATOR RESERVES THE RIGHT TO CHANGE LOCATION OF OUTLETS TO WITHIN THREE METERS OF POINTS INDICATED ON THE PLANS WITHOUT EXTRA CHARGE PROVIDING

- 21.2. CONTRACTOR IS ADVISED BEFORE INSTALLATION IS MADE. ELECTRICAL CONTRACTOR TO REFER TO ARCHITECTURAL ROOM ELEVATIONS FOR POSITION, AND MOUNTING HEIGHTS OF ALL OUTLETS, SWITCHES, INTERCOMMUNICATIONS, TELEPHONES, SPEAKERS, CLOCKS, AND THE LIKE. POSITIONS SHOWN ON ARCHITECTURAL PLANS TO TAKE PRECEDENCE OVER POSITIONS OR MOUNTING HEIGHTS SHOWN ON ELECTRICAL PLANS.

22. PULLBOXES

- 22.1. SUPPLY AND INSTALL PULLBOXES AS REQUIRED TO SUIT JOB CONDITIONS. PULLBOXES TO CONFORM TO CANADIAN ELECTRICAL CODE AND BE FINISHED IN ENAMEL OVER CORROSION-RESISTANCE PRIMER WITH SCREW-ON OR HINGED COVER. IN REMOVABLE CEILING AREAS, PULLBOXES ARE TO BE INSTALLED ABOVE THE CEILING. PULLBOXES IN FINISHED WALLS AND PLASTER OR NON-REMOVABLE CEILINGS TO HAVE OVERLAPPING TYPE TRIM WITH COVERS PRIME COATED AND PAINTED ON JOB TO MATCH WALL OR CEILING FINISH.

23. SWITCHES AND RECEPTACLES

- 23.1. LINE VOLTAGE SWITCHES TO BE RATED 15A, 125 VOLTS, OF MATCHING FINISH TO SURROUNDING, EXCEPT WHEN NOTED. TWO POLE, THREE WAY, FOUR WAY SWITCHES TO BE OF MATCHING TYPE.
- 23.2. STANDARD RECEPTACLES TO MATCH EXISTING OR EQUAL.
- 23.3. ISOLATED GROUND RECEPTACLES TO BE THREE WIRE, ORANGE FACE, STRAIGHT BLADE, IMPACT RESISTANCE OF MATCHING FINISH TO SURROUNDING, EXCEPT WHEN NOTED.
- 23.4. PLATES FOR ALL FLUSH MOUNTING DEVICES TO BE OF THERMOPLASTIC OF MATCHING FINISH TO SURROUNDING, EXCEPT WHEN NOTED.
- 23.5. PROVIDE LABELS FOR ALL RECEPTACLES.
- 23.6. FOR ALL RECEPTACLES OTHER THAN STANDARD 15A DUPLEX RECEPTACLES, PROVIDE TAGS GIVING AMP RATING, PHASE, AND VOLTAGE.

24. SUPPORTS

- 24.1. ALL SURFACE CONDUITS, ELECTRICAL EQUIPMENT, AND THE LIKE TO BE SECURELY AND ADEQUATELY SUPPORTED.
- 24.2. WHERE INSERTS ARE REQUIRED IN CONCRETE, EXPANSION INSERTS, LEAD INSERTS OR PLASTIC INSERTS TO BE USED IN DRILLED HOLES. SHORT DRIVEN PINS MAY BE USED IN STRUCTURAL CONCRETE ONLY WITH THE PERMISSION OF THE CONTRACT ADMINISTRATOR.

25. GROUNDING

- 25.1. SUPPLY AND INSTALL COMPLETE GROUNDING SYSTEM AS REQUIRED BY THE CANADIAN ELECTRICAL CODE AND THE ELECTRICAL INSPECTION DEPARTMENT. ALL COMPONENTS TO BE SECURELY AND ADEQUATELY GROUNDED AND WHERE REQUIRED TO ACCOMPLISH THIS, GROUNDING JUMPERS, GROUNDING STUDS AND BUSHING TO BE USED.
- 25.2. PROVIDE AN UNINSULATED ISOLATED GROUND BUS IN NEW ELECTRICAL PANEL AND PROVIDE A #6 AWG INSULATED ISOLATED GREEN GROUND WIRE FORM ISOLATED GROUND BUS TO MAIN GROUND BUS IN BUILDING ELECTRICAL ROOM.
- 25.3. PROVIDE A #12 INSULATED ISOLATED GREEN GROUND WIRE FROM EACH ISOLATED GROUND OUTLET TO INSULATED ISOLATED GREEN GROUND BUS IN PANEL.

26. PANELS

- 26.1. NEW PANELS TO BE 120/208 VOLTS, 347/600 VOLTS, OR AS NOTED, 4 WIRE, SOLID NEUTRAL DESIGN WITH SEQUENCE STYLE BUSSING AND FULL CAPACITY NEUTRAL, COMPOSED OF AN ASSEMBLY OF BOLT IN PLACE TO ACCEPT MOLDED CASE CIRCUIT BREAKERS AS INDICATED WITH THERMAL AND MAGNETIC TRIP AND TRIP FREE POSITIONS SEPARATE FROM EITHER THE ON OR THE OFF POSITION. TWO AND THREE POLE BREAKERS TO HAVE A COMMON SIMULTANEOUS TRIP.
- 26.2. UTILIZE EXISTING PANELBOARDS AS INDICATED ON THE DRAWING. REUSE EXISTING BREAKERS WHERE IS POSSIBLE. PROVIDE NEW BREAKERS AS REQUIRED.
- 26.3. BALANCE PANEL LOAD FOR EACH PHASES, A, B, AND C. ALLOW FOR RELOCATING CIRCUITS WITHIN PANELBOARDS TO BALANCE THE LOAD.
- 26.4. PROVIDE PRINTED PANEL DIRECTORIES FOR ALL PANELS.
- 26.5. USE AFCI (ARC FAULT CIRCUIT INTERRUPTER) CIRCUIT BREAKERS FOR SLEEPING AREA CIRCUITS.

27. LIGHTING LUMINARIES AND LIGHTING CONTROLS

- 27.1. ELECTRICAL CONTRACTOR TO SUPPLY AND INSTALL ALL LIGHTING LUMINARIES COMPLETE WITH LAMPS, MOUNTING BRACKETS, BALLASTS AND ALL NECESSARY ACCESSORIES IN ACCORDANCE WITH THE LUMINARIES TYPES SHOWN.
- 27.2. ALL FLUORESCENT AND PL LAMPS COLOR SHALL BE CONSISTENT. PROVIDE NEW LAMPS FOR NEW AND EXISTING LUMINARIES AS REQUIRED. CONFIRM EXACT COLOR ON SITE.
- 27.3. ELECTRICAL CONTRACTOR TO SUPPLY AND INSTALL ALL LIGHTING CONTROLS WITH LINE VOLTAGE SWITCHES, DIMMER SWITCHES (RATED 1500 WATT), LOW VOLTAGE SWITCHES, LIGHTING RELAYS, BARRIER AND ALL CONTROL WIRING AND COMPONENTS TO SUIT THE LAYOUT. ALL MATERIAL AND INSTALLATION SHALL BE IN ACCORDANCE WITH THE RECOMMENDATION OF THE MANUFACTURER AND COMPLY WITH CODES.
- 27.4. LOW VOLTAGE MASTER SWITCHES AND BUILDING LIGHTING CONTROL SHALL HAVE THE CAPABILITY TO TURN ON AND OFF ALL LIGHTING (120 AND 347 VOLTS) WITH THE EXCEPTION OF LUMINARIES ON EMERGENCY LIGHTING CIRCUITS OR UNSWITCHED NIGHT LIGHT CIRCUITS.
- 27.5. COORDINATE LIGHTING CONTROL PROGRAMMING WITH THE BUILDING SUPERVISOR.
- 27.6. ALL LIGHTING RELAYS SHALL BE LOCATED IN THE ELECTRICAL ROOM. PROVIDE NEW RELAY CABINET MATCHING EXISTING AS REQUIRED TO SUIT NEW LAYOUT.
- 27.7. ALL NEW FLUORESCENT LUMINARIES SHALL BE COMPLETED WITH DISCONNECT SWITCH AS PER CANADIAN ELECTRIC CODE. DISCONNECT SWITCHES SHALL BE FACTORY INSTALLED AND APPROVED.
- 27.8. INSTALL OUTDOOR LIGHTING LUMINARIES TO BE CONTROLLED BY PHOTO SWITCH.

28. EXIT LIGHTING AND EMERGENCY LIGHTING

- 28.1. PROVIDE NEW EXIT LIGHTS TO MATCH BUILDING STANDARD, EMERGENCY BATTERY UNITS, EMERGENCY REMOTE HEADS AND CONNECT LUMINARIES TO EMERGENCY LIGHTING CIRCUIT AS SHOWN ON THE DRAWINGS.
- 28.2. EMERGENCY BATTERY SHALL HAVE A FULL LOAD CAPACITY OF A PERIOD OF MINIMUM 30 MINUTES UNLESS IT IS SPECIFIED OTHERWISE ON THE DRAWINGS.
- 28.3. CHECK CIRCUIT LOADING OF ALL LIGHTING CIRCUITS AND EXIT LIGHTING CIRCUITS PRIOR TO CONNECTION. PROVIDE NEW CIRCUITS IF REQUIRED.

29. COMMUNICATION

- 29.1. PROVIDE OUTLET BOXES AND EMPTY CONDUITS WITH PULL STRING FOR COMMUNICATION OUTLETS AS SHOWN ON THE DRAWINGS.
- 29.2. INSTALL 1 INCH CONDUIT FROM EACH WALL MOUNTED COMMUNICATION OUTLET TO CEILING SPACE WITH BUSHING AT BOTH ENDS.

30. GENERAL

- 30.1. COORDINATE AND GET APPROVAL FROM CITY OF WINNIPEG FOR ALL CORING AND CUTTING OF BUILDING STRUCTURE. X-RAY AND COORDINATE LOCATION ON SITE PRIOR TO CORING.
- 30.2. CLEAN UP AND REMOVE ALL UNUSED WIRING AND CONDUITS.
- 30.3. REWIRE EXISTING LIGHTING AND POWER THAT ARE AFFECTED BY THIS CONSTRUCTION.
- 30.4. ALLOW AFTER HOUR WORK AND PROVIDE TEMPORARY POWER AND LIGHTING TO SUIT CONSTRUCTIONS SCHEDULE AND PHASES.
- 30.5. CONFIRM OUTLET LOCATIONS AND MOUNTING HEIGHT WITH PROJECT COORDINATOR ON SITE PRIOR TO INSTALLATION.
- 30.6. FIRE PROOF ALL FIRE RATED PENETRATIONS AFTER INSTALLATION TO COMPLY WITH CODES AND TO PROVIDE EQUAL FIRE SEPARATION RATING.



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Project: 490 KEENLEYSIDE
EAST ELMWOOD STORAGE
SHED

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