

**ELECTRICAL SPECIFICATION**

**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 THE WORK 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 [100mm] 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 TEN FEET [3M] OF POINTS INDICATED ON THE PLANS WITHOUT EXTRA CHARGE PROVIDING CONTRACTOR IS ADVISED BEFORE INSTALLATION IS MADE.

**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 CORRISION-RESISTANT 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 RESISTANT OF MATCHING FINISH TO SURROUNDING, EXCEPT WHEN NOTED OTHERWISE.
- 23.4. PLATES FOR ALL FLUSH MOUNTING DEVICES TO BE OF THERMOPLASTIC OF MATCHING FINISH TO SURROUNDING, EXCEPT WHEN NOTED OTHERWISE.
- 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 FROM 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 VOLT, 3 PHASE, 4 WIRE, SOLID NEUTRAL DESIGN WITH SEQUENCE STYLE BUSSING AND FULL CAPACITY NEUTRAL, COMPOSED OF AN ASSEMBLY OF BOLT-IN-PLACE 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 POSSIBLE. PROVIDE NEW BREAKERS AS REQUIRED.
- 26.3. BALANCE PANEL LOAD FOR EACH PHASES, A, B, AND C. ALLOW FOR RELOCATING CIRCUITS WITHIN PANELBOARD TO BALANCE THE LOAD.
- 26.4. PROVIDE TYPEWRITTEN PANEL DIRECTORIES FOR ALL PANELS.
- 26.5. USE AFCI (ARC FAULT CIRCUIT INTERRUPTER) CIRCUIT BREAKERS FOR SLEEPING AREA CIRCUITS.

**27. LIGHTING LUMINAIRES AND LIGHTING CONTROLS**

- 27.1. ELECTRICAL CONTRACTOR TO SUPPLY AND INSTALL ALL LIGHTING LUMINAIRES COMPLETE WITH LAMPS, MOUNTING BRACKETS, BALLASTS AND ALL NECESSARY ACCESSORIES IN ACCORDANCE WITH THE LUMINAIRE TYPES SHOWN.
- 27.2. ALL FLUORESCENT AND PL LAMPS COLOR SHALL BE CONSISTENT. PROVIDE NEW LAMPS FOR NEW AND EXISTING LUMINAIRES 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 CONTROLS SHALL HAVE THE CAPABILITY TO TURN ON AND OFF ALL LIGHTING (120 AND 347 VOLTS) WITH THE EXCEPTION OF LUMINAIRES ON EMERGENCY LIGHTING CIRCUITS OR UNSWITCHED, NIGHT LIGHT CIRCUITS.
- 27.5. COORDINATE LIGHTING CONTROL PROGRAMMING WITH THE OWNER'S REPRESENTATIVE.
- 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 LUMINAIRES SHALL BE COMPLETED WITH DISCONNECT SWITCH AS PER CANADIAN ELECTRIC CODE. DISCONNECT SWITCHES SHALL BE FACTORY-INSTALLED AND APPROVED.
- 27.8. INSTALL OUTDOOR LIGHTING LUMINAIRES 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 LUMINAIRES TO EMERGENCY LIGHTING CIRCUIT.
- 28.2. EMERGENCY BATTERY SHALL HAVE A FULL LOAD CAPACITY OF A PERIOD OF AT LEAST 30 MINUTES UNLESS IT IS SPECIFIED OTHERWISE.
- 28.3. CHECK CIRCUIT LOADING OF ALL LIGHTING CIRCUITS AND EXIT LIGHTING CIRCUITS PRIOR TO CONNECTION. PROVIDE NEW CIRCUITS IF REQUIRED.

**29. FIRE ALARM SYSTEM**

- 29.1. PROVIDE NEW DEVICES OR RELOCATE EXISTING DEVICES AS SPECIFIED FOR A COMPLETE OPERATING FIRE ALARM SYSTEM AS REQUIRED BY MUNICIPAL AND PROVINCIAL CODES.
- 29.2. PROVIDE RED DOT ON FIRE ALARM SPEAKER COVER PLATES.
- 29.3. UPON COMPLETION OF SYSTEM INSTALLATION, CONTRACTOR TO HIRE FIRE ALARM CONTRACTOR TO PERFORM SYSTEM VERICATION, ENCOMPASSING ALL ASPECTS OF THE FIRE ALARM SYSTEM. CONTRACTOR TO CARRY ALL COSTS OF FIRE ALARM SUPPLIER AND ENGINEER TO PERFORM / WITNESS THE VERIFICATION PROCEDURE. ENGINEER TO ISSUE STAMPED VERIFICATION REPORT UPON COMPLETION.

**30. COMMUNICATION**

- 30.1. PROVIDE OUTLET BOXES AND EMPTY CONDUITS WITH PULL STRING FOR COMMUNICATION OUTLETS AS SHOWN ON THE DRAWINGS.
- 30.2. INSTALL 1 INCH [25mm] EMT CONDUIT FROM EACH WALL MOUNTED COMMUNICATION OUTLET TO CEILING SPACE WITH BUSHING AT BOTH ENDS.
- 30.3. COMMUNICATION WIRING BY OTHERS.

**31. GENERAL**

- 31.1. 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. X-RAY MUST BE COMPLETED AND REVIEWED BY BASE BUILDING STRUCTURAL ENGINEER PRIOR TO ANY PENETRATIONS. PAY ALL ASSOCIATED FEES.
- 31.2. CLEAN UP AND REMOVE ALL UNUSED WIRING AND CONDUITS.
- 31.3. REWIRE EXISTING LIGHTING AND POWER THAT ARE AFFECTED BY THIS CONSTRUCTION.
- 31.4. ALLOW AFTER HOUR WORK AND PROVIDE TEMPORARY POWER AND LIGHTING AS REQUIRED TO SUIT CONSTRUCTION SCHEDULES AND PHASES.
- 31.5. CONFIRM OUTLET LOCATIONS AND MOUNTING HEIGHTS WITH CONTRACT ADMINISTRATOR ON SITE PRIOR TO INSTALLATION.
- 31.6. FIRE PROOF ALL FIRE-RATED PENETRATIONS AFTER INSTALLATION TO COMPLY WITH APPLICABLE CODES AND TO MAINTAIN THE PRESCRIBED FIRE SEPARATION RATING.

