1.1. REFERENCE STANDARDS

1.1.1. Publications listed below (including amendments, addenda, revisions, supplements and errata) form a part of this specification to the extent referenced. Publications are reference in the text by designation only.

1.1.2. Ontario Electrical Safety Code

1.1.3. National Fire Protection Association (NFPA):

1.1.3.1. 70-11 National Electrical Code (NEC)

1.1.4. National Electrical Manufacturers Association (NEMA):

1.1.4.1. WD 1-10 General Color Requirements for Wiring Devices
1.1.4.2. WD 6-08 Wiring Devices – Dimensional Specifications

1.1.5. Underwriter's Laboratories, Inc. (UL):

1.1.5.1. 231 Power Outlets
1.1.5.2. 467 Grounding and Bonding Equipment
1.1.5.3. 498 Attachment Plugs and Receptacles
1.1.5.4. 943 Ground-Fault Circuit-Interrupters

1.2. RECEPTACLES

1.2.1. General:

1.2.1.1. All receptacles shall comply with NEMA, NFPA, ULC.

1.2.1.2. Mounting straps shall be plated steel, with break-off plaster ears and shall include a self-grounding feature. Terminal screws shall be brass, brass plated or a copper alloy metal.

1.2.1.3. Receptacles shall have provisions for back wiring with separate metal clamp type terminals (four minimum) and side wiring from four captively held binding screws.

1.2.2. Duplex Receptacles

1.2.2.1. Service areas:

1.2.2.1.1. Heavy duty, single phase, 20 ampere, 120 volts, 2-pole, 3-wire, non-locking grounding type NEMA/CSA 5-20R, with break-off feature for two-circuit operation.

1.2.2.2. Public areas:

1.2.2.2.1. Heavy duty, single phase, 15 ampere, 120 volt duplex locking ground type (NEMA/CSA configuration L5-15R)

1.2.2.3. Bodies shall be ivory or white.

1.2.2.4. Switched duplex receptacles shall be wired so that only the top receptacle is switched. The lower receptacle shall be un-switched.

1.2.3. Duplex Receptacles on Emergency Circuit:

1.2.3.1. In rooms without emergency powered general lighting, the emergency receptacles shall be of the self illuminated type.

1.2.4. Ground Fault Interrupter and Arc-Fault Interrupter Duplex Receptacles:

1.2.4.1. Shall be an integral unit, hospital-grade, suitable for mounting in a standard outlet box, with end-of-life indication and provisions to isolate the face due to improper wiring, rated single phase, 20 ampere, 120 volts, 2-pole, 3-wire.

1.2.4.2. Ground fault interrupter shall be consist of a differential current transformer, solid state sensing circuitry and a circuit interrupter switch. Device shall have nominal sensitivity to ground leakage current of 4-6 milliamperes and shall function to interrupt the current supply for any value of ground leakage current above five milliamperes (+ or – 1 milliampere) on the load side of the device. Device shall have a minimum nominal tripping time of 0.025 second.

1.2.4.3. Arc Fault Interrupter receptacles shall recognize characteristics unique to an arcing fault and trip when an arc fault is detected. Receptacles shall have an interrupting rating of 2000 amps and shall lock out (off) when the protection system fails.

1.2.5. Safety Type Duplex Receptacles:

1.2.5.1. Bodies shall be gray in color.

1.2.5.2. Shall permit current to flow only while a standard plug is in the proper position in the receptacle.

1.2.5.3. Screws exposed while the wall plates are in place shall be the tamperproof type.

1.3. Weatherproof Receptacles:

1.3.1.1. Shall consist of a duplex receptacle, mounted in box with a gasketed, weatherproof, cast metal cover plate and cap over each receptacle opening. Rated single phase, 20 ampere, 120 volts, 2-pole, 3-wire.

1.3.1.2. The cap shall be permanently attached to the cover plate by a spring-hinged flap. The weatherproof integrity shall not be affected when heavy duty specification or hospital grade attachment plug caps are inserted.

1.3.1.3. Cover plates on outlet boxes mounted flush in the wall shall be gasketed to the wall in a watertight manner.

1.4. RECEPTACLE STRIPS – INDOOR

1.4.1. Surface mounted receptacle strips shall consist of surface wireways containing receptacles.

1.4.2. Receptacles shall be ULC heavy duty and shall be grounded by a separate green ground conductor. The receptacles shall be spaced and circuited as needed

1.5. COVER PLATES - INDOORS

1.5.1. Except where unique cover plates are required (wall box dimmers, surface raceways, occupancy sensors, etc.), cover plates for switches and receptacles shall be of high quality Type 302 stainless steel.

1.6. INSTALLATION

1.6.1. Except where necessary to match existing receptacles, install receptacles with their ground slots below, or to the left, of the line and neutral slots.

1.6.2. Provide No. 10 AWG wire to receptacles serving freezers, window air conditioners or other large appliances.

1.6.3. Provide a separate neutral conductor for each single-phase branch circuit. The neutrals of these single-phase circuits shall not be shared or daisy-chained.

1.6.4. Provide GFCI receptacles or GFCI-protected branch circuits for new and existing 120 volt duplex receptacles located outdoors, on rooftops, in washrooms rooms, in kitchens, and within 1,800mm (6 feet) of water sources including sinks, cup sinks, fume hood sinks, faucets and hose bibs. Provide GFCI receptacles for water coolers.

1.6.5. Provide AFCI receptacles or AFCI-protected branch circuits for new and existing 120 volt duplex receptacles located in closets, hallways and similar rooms or areas.

1.6.6. Provide a nametag on each cover plate of new and existing light switches and receptacles identifying the panel and circuit number feeding the device. Trace the existing circuits using an electronic circuit tracer if necessary. Nametags shall consist of black text permanently laminated to adhesive backed clear nylon or Mylar tape.

1.6.7. Receptacles shall not be wired in common with lighting circuits, and there shall be no more than six (6) receptacles per circuit in public areas, and no more than four (4) receptacles per circuit in service areas.

1.6.8. In general building areas - janitorial outlets are required for cleaning and maintenance. In public open areas, receptacles shall be spaced at 5m centres maximum, and at ceiling level for Christmas Lights as directed by GO transit. Tunnel and exterior building receptacles shall be GFI type, located at spacing to suit 15 m extension cords or as required by GO user groups during detail design review.

1.6.9. Other receptacle requirements:

1.6.9.1. Electrical/mechanical rooms - minimum 2 receptacles per room;

1.6.9.2. Station attendant room - electrical and communications outlets for computers and fare equipment, voice-links and alarms, etc., in millwork and walls and partitions.

1.6.9.3. Elevator and escalator machine room, as required by Code.

1.6.9.4. Maintenance facility, shop and garage receptacles shall suit equipment requirements.

1.6.9.5. Receptacles shall be provided for tenants and vending machines as required.

1.6.9.6. Communications room - minimum of 4 receptacles with 2 on emergency power.