

ELECTRICAL SPECIFICATION

Electrical installation shall be in accordance with the current edition of The Canadian Electrical Code, Provincial, Municipal and other codes, rules and regulations.

The contract shall include the furnishing of labor, new material, equipment and services necessary and reasonably implied and/or incidental to the complete installation of the electrical work as shown on the plans and or specified. Supply and install all devices required for the complete approved system, operating to the complete satisfaction of the responsible professional Engineer.

Prepare and submit to the proper authorities all necessary permits and pay all fees. Provide responsible professional engineer a PDF copy of all electrical permits.

Upon completion and before final payment is made, present to Engineer a Certificate of Approval for all electrical work from the inspection department having jurisdiction.

Electrical work shall be completed in conformance with, and subject to, all cautionary notes available to the reader including those available on the websites of the manufacturers and consultants.

Electrical installation including electrical equipment supplied, installed or connected shall be tested in the presence of the City of Winnipeg on completion of the work.

The Electrical Contractor shall visit the site and ascertain that all work indicated can be carried out without additional cost to the City of Winnipeg.

The Electrical Contractor shall guarantee the satisfactory operation of all work and apparatus included and installed under this section of the specification for a period of twelve (12) calendar months after the final acceptance of the complete building.

The Electrical Contractor shall be responsible for any damage caused the City of Winnipeg or their contractors by improperly carrying out this contract.

The Electrical Contractor shall carefully examine all drawings and specifications relating to the work to be certain that the work under this contract can be satisfactorily carried out and prior to the submission of his tender, report at once to the Consultant any defect, discrepancy, omission or interference affecting the work of this section or the guarantee of same.

Submit one set of "as-built" prints or PDF documents to the engineer.

Grounding shall be in accordance with the latest edition of The Canadian Electrical Code.

Panelboards, motor starters, disconnect switches, etc., shall be properly identified by means of engraved lamacoid nameplates.

Supply and install all motor controls unless noted otherwise on the drawings. Refer to Mechanical drawings for exact location of motors and mechanical equipment. Unless otherwise specified and/or shown on the drawings, supply and install the following motor control equipment:

- Manual motor starters.
- Magnetic motor starters which are not part of package equipment. Refer to Mechanical drawings and specifications.
- Pushbutton stations.
- Hand-off-auto selector switches.
- Motor disconnect switches.
- Interlock contacts as required for starters.
- Enclosures.
- Starter heater elements as required for starters.
- Contactors.
- Time clocks, time switches and photoelectric relays.
- Pilot lights for all starters, switches and pushbutton stations.

Mechanical and electrical contractors are responsible for the mutual coordination of all electrical requirements of mechanical equipment. Coordination is to include the communication of all final electrical nameplate information from the mechanical contractor to the electrical contractor, the communication of the detailed control information as well as any ancillary information required for the final systems to operate as intended by the responsible professional engineer. The coordination is to occur prior to the ordering of equipment by either trade. No extra compensation will be allowed due to failure to carry out this coordination. Report at once to the consultant any defect, discrepancy, omission or interference affecting the satisfactory completion of work.

Conduits shall be electric metallic tubing unless otherwise noted on drawings or unless prohibited by regulations. Conduits in direct contact with earth or in concrete shall be rigid PVC. PVC conduit exposed to the extremes of outdoor temperatures shall not be used without prior approval from the responsible engineer. Conduits shall be concealed unless otherwise noted on the drawings. Conduits shall not be exposed in any area where concealed work is required without prior written approval.

Outlet, junction and switch boxes shall be galvanized pressed steel of size and type to suit the requirements of each outlet. Outlet boxes shall be accessible.

All wiring shall be in conduit, except that armoured cable may be used in stud partitions and for drops to recessed luminaires (max. 4 luminaires per drop). Armoured cable drops (including any daisy chain) shall not exceed 9m in total length.

Wire and cable shall be copper of standard AWG sizes with 600V (90 Degree C) insulation. Insulation shall be X-Link Polyethylene unless otherwise noted on drawings or prohibited by regulations. Aluminum conductors will not be accepted, unless otherwise indicated. Minimum wire size shall be # 12 AWG.

Panelboards shall be factory-assembled custom made of size, type and arrangement as shown on drawing. Circuit breakers shall be bolt-in, moulded-case, thermal and magnetic trip. Trip values as shown on drawing. Two or three pole breakers shall have common trip units. Mount a typewritten directory behind a plastic shield on the inside of panelboard doors. All distribution equipment to be sprinkler-proof and c/w lockable door. All top entry of conduits or cables must utilize rain-tight wiring methods. Minimum fault rating of circuit breakers shall be 22KA S.C.I.C.

Wall-mounted flush switches shall be specification grade 15A, 125VAC. White handle, side or back wiring. Mount switches 1200mm (to top of box) above finished floor unless otherwise noted on the drawings.

Duplex receptacles shall be specification grade 15A, 125VAC, parallel slot, U-ground, white, side and back wiring. Mount receptacles 450mm above finished floor or 150mm above counter tops unless otherwise noted on the drawings.

Cover plates for flush-mounted receptacles and switches on concealed conduit system shall be stainless steel. Cover plates for voice/data and A/V outlets to be nylon.

Telephone raceway system shall be in separate and independent conduit system. Empty conduits shall be complete with #12 AWG pull wire. Install as shown on drawings. Complete entire installation to local telephone utility requirements and satisfaction.

Mount surface mounted equipment such as panelboards, telephone cabinets and other electrical equipment on fireguard mounting boards, c/w grey enamel finish.

Any cutting and patching in existing walls or floors required for the addition or relocation of electrical equipment shall be the responsibility of the Electrical Contractor.

Existing Work:
The Electrical Contractor shall take into account items which he is responsible for due to the changes and alterations to the existing building and allow for such items that may occur in his tendered price.

The Electrical Contractor is to notify the supply utility of all load increases to existing service.

Existing conduits, wire and outlets which are in good repair and sized to meet all code requirements, may be reused. All equipment to be reused must be approved by the local inspection department and the engineer.

Provide code conforming fire alarm system. Provide a verification inspection report for complete fire alarm system.

Provide code conforming emergency lighting and exit system. Min. wire size for this system as per manufacturers recommendations. Acceptable manufacturers include: Aimlite, Lumacell.

The electrical contractor shall relocate outlets at no additional charge if requested prior to roughing-in. The electrical contractor shall relocate outlets at no additional charge if requested by the local authority having jurisdiction.

Electrical installation shall be in conformance with the barrier free requirements applicable in the latest edition of the National Building Code of Canada. Electrical controls shall be mounted at 1200mm to top of box, unless otherwise specified.

Where luminaires are recessed into insulated ceilings, the electrical contractor is responsible for providing luminaires suitable for that use.

Supply and install all indicated electric heaters, standard watt density to be Ouellet, Dimplex, Stelpro or approved equal. Thermostats to be calibrated in degrees Celsius.

Equipment and material shall be installed as specified. Requests for equal status shall be submitted to Engineer 7 days prior to tender submission. No requests will be accepted past the 7 day deadline. Only one request will be considered from each supplier. If rejected for any reason, no substitutes from the same supplier will be reviewed.

Electrical contractor shall submit shop drawings to Engineer for review prior to ordering equipment. At the request of the engineer, the successful electrical contractor shall submit a completed C-1 form (form available from Engineer).

Supply and install, wire and connect all luminaires (to be complete with lamps) as indicated. All luminaires exceeding 150V shall be complete with an integral disconnecting means that will simultaneously open all circuit conductors and conductors supplying the ballast(s). All luminaires exceeding 150V shall be marked in a conspicuous, legible, and permanent manner adjacent to the disconnecting means, identifying the specific purpose. Refer to Canadian Electrical Code rule 30-308(4).

Final connection to all mechanical equipment to be flexible. Obtain and refer to mechanical shop drawings of mechanical equipment for circuit breaker and wire size. Adjust circuit breaker and wire size without additional cost to City of Winnipeg.

All existing and new City of Winnipeg equipment is to be wired and connected. Supply and install, wire and connect matching receptacle for portable equipment complete with cord and cap. Refer to equipment name plate rating for electrical characteristics prior to rough-in. All City of Winnipeg equipment which is non-portable, shall be directly connected via cable type cord matching electrical characteristics as determined by nameplate ratings of equipment. Confirm nameplate characteristics prior to rough-in.

Provide trenching and backfilling as required. Coordinate all requirements with utilities prior to tender close to ensure availability of services.

E.C. is responsible for the supply & installation of all communication wiring, unless otherwise noted.

FIRE ALARM SYSTEM SPECIFICATIONS - ADDRESSABLE SINGLE STAGE

1.0 GENERAL

The electrical subcontractor shall supply and install a complete, fully operational supervised fire alarm system as shown on the plans and detailed herein.

All components of the fire alarm system shall be of one manufacturer and shall meet all ULC codes and regulations and local authorities having jurisdiction.

The complete system shall be installed and tested in accordance with the plans and specifications and the manufacturer's recommendations. Installation shall be in accordance with CAN/ULC-S524-19 STANDARD FOR THE INSTALLATION OF FIRE ALARMS. Final testing of the complete installation shall be carried out by the system manufacturer with assistance provided by the electrical contractor in accordance with CAN/ULC-S537-19 "VERIFICATION FOR FIRE ALARM SYSTEM INSTALLATIONS". Fire alarm verification is to be sealed by a professional engineer.

The fire alarm system shall consist of a type 1, single stage, addressable fire alarm system.

The entire fire alarm system shall carry a full one-year warranty, commencing on the date of the completed verification inspection or building occupancy, whichever ever occurs first.

The entire fire alarm system shall be as manufactured and supplied by Mircom by Fire-Tech Systems Inc.

2.0 OPERATION

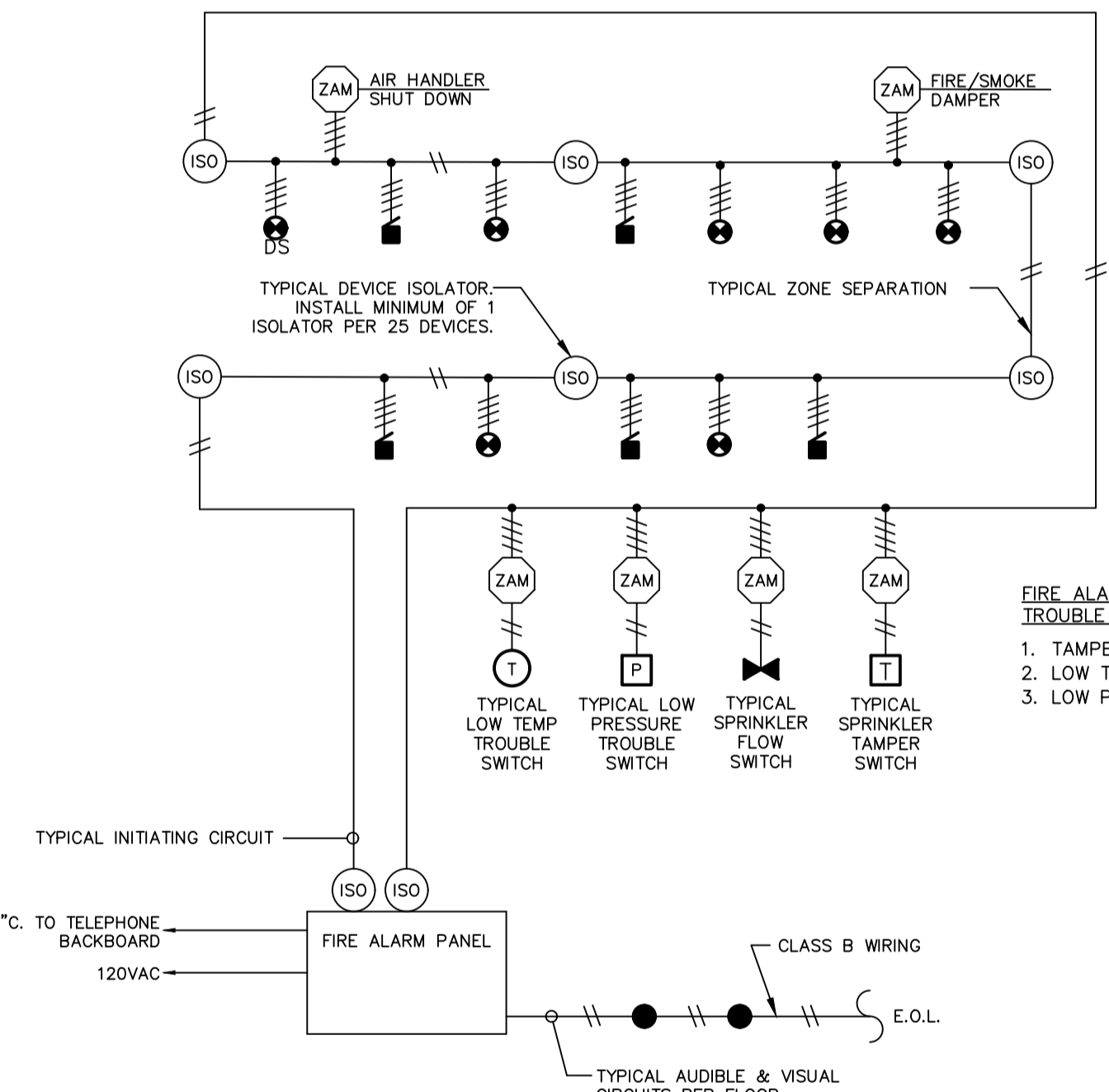
Operation of any alarm initiating device shall cause all audible signals to sound continuously throughout the building. The signals may be silenced by operating the "signal silence" pushbutton on the control panel and/or by resetting the system after the initiating device has been returned to normal.

3.0 SYSTEM EQUIPMENT

- The control panel shall be a Mircom FX-2000 intelligent series to accommodate zones as shown on plans, complete with appropriate signal circuits, standby battery and alarm/trouble contacts, complete with monitoring feature. Standby battery shall have minimum 1 hour alarm capacity after 24 hours of supervisory mode.
- Manual pull stations shall be Mircom 401AD.
- System smoke detectors shall be photoelectric type Mircom 2251BA, 2 wire type.
- Alarm bells shall be Mircom BL-6B - 150mm or BL-10B - 250mm where shown. Strobes to be model SWA. Horn/strobes shall be model P2WA.
- Duct mount smoke detectors shall be Mircom DNRA c/w Mircom MIX-2251BA photoelectric detector and sampling tubes to suit duct width. Connect fan control via auxiliary contacts in control panel to shut down on an alarm condition.
- Booster power supplies shall be Mircom BPS-1100 and be 11AMP and 12 circuit capacity with MDL3RA sync module(s) to suit application.
- Install appropriate devices to suit application.

4.0 APPROVED EQUAL MANUFACTURERS

Simplex, Notifier, Siemens



FIRE ALARM RISER DIAGRAM N.T.S.

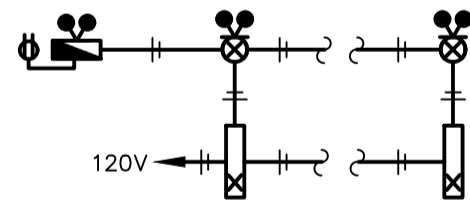
- FIRE ALARM SYSTEM NOTES:
- FIRE ALARM SYSTEM SUPPLIER SHALL PREPARE SYSTEM CIRCUIT WIRING DIAGRAMS AFTER AWARD OF CONTRACT. DRAWINGS ARE TO INCLUDE LAYOUT OF EQUIPMENT, ZONING/ADDRESSING, COMPLETE WIRING DIAGRAM WITH LOOP & ISOLATOR LAYOUTS. DIAGRAMS TO BE APPROVED BY ENGINEER PRIOR TO ROUGHING.
 - SHIELD (ANY RUN) TO BE CONTINUOUS, ISOLATED FROM GROUND AND TERMINATED AT FIRE ALARM PANEL GROUND ONLY.
 - COMPLETE FIRE ALARM INSTALLATION TO CAN/ULC-S524-06.
 - COMPLETE FIRE ALARM MONITORING INSTALLATION TO CAN/ULC-S561. INSTALLATION BY FIRE ALARM/SECURITY CONTRACTOR.

DATA CABLING GENERAL REQUIREMENTS

- Acceptable voice/data manufacturers: Belden, CommScope and Panduit.
- Data contractor to have a certified RCDD on staff, be certified with the manufacturer and provide the manufacturer's 25-year warranty.
- E.C. to provide a 10ft and 7ft Cat6 patch cord per jack/Cat6 cable installed.
- Patch panels provided to be in either 24 or 48 port. For every 24 port patch panel provide a 1U horizontal cable management. For every 48 port patch panel provide a 2U horizontal cable management.
- Each patch panel should have rear cable bar(s) to support the cable(s) exiting behind the patch panel.
- All cables to have mechanically printed labels at each end of the cable.
- Fiber optic link to be single-mode fiber optic cable. Provide compatible equipment, terminations and patch cords as required.

WORK IN EXISTING AREA

- Refer to electrical, architectural, and mechanical drawings for work involved in existing building.
- Examine the site and local conditions affecting the work to establish all information necessary for the installation. No extra compensation will be allowed due to failure to make this examination.
- Install, wire and connect all new mechanical equipment as shown or noted on the drawing as specified.
- Rewire, alter, modify, divert and extend existing wiring as herein specified and as may be required to provide a complete, approved, and fully operative installation to the satisfaction of the Engineer.
- In all areas where existing walls, ceilings, etc. are required to be cut into or removed, or other similar construction or alterations are required, existing wiring in the areas required to remain in use for any reason, this contractor shall reroute, alter, and/or divert all such wiring in these areas in an approved manner, concealed in the building structure where required in such a manner that the original electrical capacity or characteristics of the existing wiring is maintained to the complete satisfaction of the engineer.
- Conduits and boxes shall be installed exposed (surface mount) only in areas specified.
- Cutting and patching necessary for conduit work, etc., shall be as specified in another section of this contract. Routes of conduits, etc. shall be coordinated with the owner and engineer in order to keep such cutting and patching to a minimum. All existing wiring that is required to remain in use and required to be diverted and extended to appropriate existing panelboards, etc., shall be installed in conformance with this specification.
- Existing branch circuit wiring within the areas of the renovations which are substandard or do not meet normal requirements, shall be noted and owner advised. All existing circuits which are required to be reconnected shall be free from interconnection (cross connected circuits, i.e. accidentally connected to the conductors of another circuit) and shall conform to the installation tests described elsewhere in this section of the specification. The responsibility for existing wiring which is not required to be altered in any way is beyond the area of this contract and is not included in this scope of work unless such wiring is specifically affected due to work carried out in this contract.
- Existing branch circuit wiring and outlets, etc. for any electrical systems no longer required to remain in use shall be removed, or if this is not possible, rendered permanently inaccessible and completely disconnected from the electrical distribution system. Existing branch circuit wiring which unnecessarily extends into the construction area shall be terminated (dedenated) in an approved manner.
- Disconnect and remove all existing lighting fixtures as specified and noted on drawings. All fixtures shall be neatly stored on the premises or disposed of as directed by the owners. Provide all mounting hardware as required.



EMERGENCY LIGHTING AND SIGNAGE N.T.S.

- CONDUCTORS SIZED TO MANUFACTURERS RECOMMENDATIONS. MAXIMUM 5% VOLTAGE DROP.
- WIRE AND CONNECT DC TO ALL COMPONENTS.
- PROVIDE 30 MINUTE CAPACITY UNDER FULL LOAD.
- INTERLOCK WITH NORMAL LIGHTING CIRCUIT TO ACTIVATE EMERGENCY LIGHTING UPON LOSS OF NORMAL LIGHTING IN THE AREA. FOR EACH EMERGENCY LIGHTING HEAD, PROVIDE ZONE SENSING RELAYS AS REQUIRED.

SYMBOL SCHEDULE

- Linear luminaire, 'B1-a' denotes panel circuit # and switch.
- Night light luminaire.
- Ceiling mounted luminaire.
- Wall mounted luminaire. 'A' denotes type.
- Single pole switch.
- Single pole switches in multiple.
- Three way switch.
- Single pole switch c/w occupancy sensor control. Auto on/off unless otherwise indicated. Sensorswitch.
- Dimmer switch c/w separate neutral. Wattage and type to match circuit.
- Ceiling mounted occupancy sensor. 'W' indicates wall mounted. Auto on/off unless otherwise indicated. Sensorswitch. Electrical Contractor to adjust quantity, location & mounting for optimal performance to suit room layout.
- Photocell by electrical contractor. Photocells shall be mounted on roof where possible. If photocells are to be mounted on side of building, coordinate final locations with Architect prior to rough-in. All associated junction boxes are to be recessed and exposed metal plates are to be painted to match exterior facade.
- Duplex receptacle.
- Quadplex receptacle.
- Duplex receptacle mounted above counter level. (See architectural elevations.)
- Duplex receptacle on separate circuit. Provide lamacoid label indicating "SC".
- 20A T-slot receptacle for microwave mounted above counter. Verify location before installation.
- Duplex receptacle weather proof.
- Crouse Hinds FSE box c/w IPLC unit (duplex receptacle) and weatherproof cast while-in-use cover. Program to limit current draw to block heater only. Provide additional programming to owner's satisfaction.
- Duplex receptacle flush floor mounted. Confirm exact location on site.
- 30A-2P dryer receptacle, verify location.
- Ground fault duplex receptacle.
- 20A T-slot duplex receptacle.
- 50A-2P range receptacle, verify location.
- Combination voice/data outlet c/w jacks and cover plate and two(2) Cat6 UTP plenum rated cables back to server room (without splice). Provide J-hooks as required to support cabling, unless otherwise noted. 'J' indicates number of cables if more than two. Terminate both ends and provide test report. Patch panels by E.C.
- Telephone outlet location. Run one(1) Cat6 UTP plenum rated cable back to LAN rack. Provide J-hooks as required to support cabling, unless otherwise noted. Terminate both ends and provide test report. Provide an additional voice patch panel to extend all incoming communication lines from demarcation point to LAN rack as required. Note: Coordinate exact cabling requirements with telephone services prior to ordering and rough-in.
- Wireless access point. Provide two(2) CAT6 UTP plenum rated cable back to server room (without splice). Provide J-hooks as required to support cabling, unless otherwise noted. Terminate both ends and provide test report.
- Fireguard backboard c/w power supply and #6 AWG green ground wire to building ground and c/w one(1) 2" entrance conduit as required by the telephone utility and one(1) 3" entrance conduit as required by the CATV utility.
- Motor. Refer to mechanical for exact location. For roof mounted equipment, supply and install wire and connect a separate circuit GFI receptacle in accordance with C.E.C. rule 26-708 and 26-710.
- Fusible disconnect switch to suit application. By electrical contractor.
- Motorized damper control wiring by mechanical contractor, 120V power supply by electrical contractor.
- Junction box.
- Electric hand dryer by electrical contractor. Surface mounted, high flow. Model: Toto Clean Dry - HDR101#WH (120V-1Ph, 3.3A) Refer to Architectural interior elevations for mounting heights.
- Electric force flow heater c/w built in thermostat unless otherwise indicated. 'FF-4' denotes type. '4K' denotes wattage. See heating schedule for details.
- Electric heater. 'C' denotes type, see electric heating schedule. '1000' denotes watts. '•' denotes heater c/w built in thermostat. 'o' denotes heater controlled by remote thermostat. Provide low voltage relays if required. Refer to mechanical for details.
- Electric unit heater c/w built in thermostat unless otherwise indicated. 'UH-1' denotes type. See heating schedule for details.
- Ceiling fan speed controller. Supplied and installed by mechanical, wire and connected by electrical.
- Fire alarm pull station. Mount at 1200mm A.F.F. to centre of station.
- Fire alarm audible device, c/w strobe light.
- Fire alarm strobe light.
- Fire alarm smoke detector.
- Fire alarm duct smoke detector complete with sampling tube. Install in accordance with manufacturer's instructions.
- Smoke/Fire damper. Supplied and installed by mechanical contractor, wired & connected by electrical contractor. Coordinate location & requirements with mechanical contractor. Tie to fire alarm panel to close on alarm condition. Provide smoke detection for closure in accordance with NBC and ULC.
- Emergency battery bank c/w two(2) 6W (540 lumen) LED heads. 12V, backup battery capacity to suit. Lumacell.
- LED emergency double head fixture c/w two(2) 6W (540 lumen) LED heads. Wire to battery bank. Lumacell.
- LED pictogram exit sign. Provide AC and DC power supply. Refer to emergency lighting riser diagram for details. Lumacell.
- Combination LED pictogram exit sign/emergency double head fixture c/w two(2) 6W (540 lumen) LED lamps and integral battery backup (minimum 30 minutes). Lumacell.
- Pushbutton to activate power door operator. (by power door operator supplier)
- Emergency call pushbutton. red mushroom push button. Push to activate, pull to reset.
- Emergency call visual/audible alarm.
- Thermostat by electrical contractor.

NOTES:

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R1 No.	ADDENDUM #1 REVISION/DESCRIPTION	AM BY	DATE
			2025.01.31

DATE	USER	APPROVAL
2025.01.31		

THE CITY OF WINNIPEG
ASSETS and PROJECT MANAGEMENT
DEPARTMENT
MUNICIPAL ACCOMMODATIONS DIVISION
3-65 GARRY STREET, R3C 4K4

PROJECT
REDEVELOPMENT OF THE OLD
EXHIBITION ARENA

80 SINCLAIR STREET
SHEET TITLE

ELECTRICAL
SPECIFICATIONS

SCALE	PROJECT No:	SHEET No:
AS SHOWN	2020-136	E1.0