

FILE NAME:

DATE:

DESCRIPTION:

PROJECT No.:

ADDRESS:

## PART 1 GENERAL

## 1.1 GENERAL SPECIFICATIONS

.1 It is recommended that the bidders examine the site and the existing conditions affecting the project. Examine the complete set of contract documents to ensure that the work can be carried out without significant changes to the intent of the documents. No future allowance will be made for changes unless the Contract Administrator has been notified in writing of any discrepancies or interferences, prior to the close of tenders. No allowance will be made for items which should have been noted during a pre-Bid Opportunity site inspection.

.2 The location, routing and elevations of all new and existing services and utilities as shown on the drawings are to be considered as approximations only. Verify the exact locations, routings and elevations of all services prior to commencing work, and assume responsibility for laying out all work. The contractor shall retain responsibility for any damage to existing services and utilities.

.3 All aspects of the installation must comply with the most stringent of the applicable building codes, local regulations, and by-laws. Before proceeding with the work, obtain approved drawings and specifications from the authorities having jurisdiction.

.4 Provide all necessary notices, obtain all required permits, pay all fees required by law, and arrange for all inspections related to the performance of the specified work.

.5 Provide all materials, labor and equipment required to complete the work as shown and as specified, so as to leave The City with a complete and functioning system. All equipment and materials shall be new and C.S.A. approved, unless specifically noted otherwise. All similar equipment and/or materials shall be by the same manufacturer.

.6 Request for approval of substitute material and/or equipment for that specified, shall be submitted to the Contract Administrator with a stamped self-addressed envelope or return fax number at least five working days prior to Bid Opportunity closing. Requests shall include all performance specifications, physical data and other pertinent information required for the contract administrator to make a complete comparison.

.7 All cutting and patching shall be the responsibility of the contractor. Existing exposed surfaces shall be returned to an "as-found" condition acceptable to The City.

.8 Provide all required access panels with suitable fire ratings for the wall or ceiling that they are being installed in.

.9 Each contractor shall coordinate the work with other contractors in order to avoid conflicts.

.10 Neatly store all materials, and clean up refuse on a regular basis. Protect and maintain all work until the project has been completed and turned over to The City.

.11 The installation shall be completely tested, demonstrating that the equipment and systems installed are performing in the manner intended.

.12 At the completion of the installation, provide two marked-up copy of the "as-built" drawings for record purposes. Provide three sets of Operation and Maintenance manuals. Pay all costs associated with the production of the "As-Built" drawings and the manuals. Submit the documents to the contract administrator for review, and make any requested changes before delivering them to The City.

.13 Review the Operation and Maintenance of the systems with The City's maintenance personnel and provide written and/or verbal instructions as required.

.14 Furnish certificates confirming that the work has been installed to the satisfaction of the authorities having jurisdiction.

.1 No certificate issued, payment made, or partial or entire use of the systems by The City, shall be construed as acceptance of defective work or materials.

.15 The contractor shall provide a one year labor and material warranty on all new equipment and components, commencing upon the date of acceptance by The City.

.1 Replace at no charge to The City, all items which fail or prove defective within a period of one year after the date of final acceptance by The City, provided that the failure is not due to improper usage by The City. Make good all damages incurred as a result of the failure and of the repairs.

.16 The electrical contractor shall provide and install all unit, forceflow and baseboard heaters.

.17 EC responsible to coordinate, submit and facilitate all items related to Manitoba Hydro Power Smart Program Incentives. All rebates to be forwarded to The City. MB Power Smart contact: John Moroz Ph: 480-5128 Fax: 480-5252

## 1.2 ELECTRICAL SPECIFICATIONS

.1 Refer to division 1 and architectural specifications and other general conditions.

.2 Provide for a complete and working installation as herein specified and as shown on the drawings.

.3 The electrical installation shall be in accordance with the current edition of the Canadian Electrical Code, provincial and municipal codes and regulations.

.4 Obtain all permits, approvals and pay all related fees required for this installation.

.5 All equipment supplied under this contract shall be new and be C.S.A. approved.

.6 Coordinate all telephone conduit runs with telephone utility before installation begins.

.7 Arrange for, and coordinate, rough-in and final inspections with Inspection Authorities, Contract Administrator and the building Contract Administrator's representative.

.8 Confirm all receptacle configurations, outlets and wiring for The City supplied equipment before installation of same. Visit existing site where such equipment is presently installed, and/or obtain outlets, wiring and receptacle configurations from equipment manufacturers. Exact configurations may differ from those shown on the drawings. Include all costs to provide necessary outlets wiring and receptacles.

## 1.3 EXAMINATION

.1 Examine the architectural, interior design, structural and mechanical drawings to ensure that the work under this contract can be satisfactorily carried out. Report any discrepancies to the Contract Administrator.

.2 The electrical subcontractor shall examine the site, local conditions and consider how they may affect the project.

## 1.4 SUPERVISION

.1 Supervise the work at all times through a responsible and competent journeyman electrician / supervisor.

.2 Full cooperation shall be shown with other trades to facilitate installations and to avoid delays in carrying out the work.

## 1.5 ACCURACY OF DATA

.1 Drawings are schematic; exact locations, distances, levels and other dimensions shall be governed by the building as constructed.

.2 Outlets or equipment shall be moved to any point within a 10' radius when relocation is requested by the Contract Administrator or The City before the work has been substantially completed, without additional cost.

.3 Branch circuit wiring shall be installed with circuits arranged exactly as shown on the drawings. Conduit and cable runs may be modified to suit the installation.

## 1.6 APPROVAL OF MATERIAL

.1 Request for approval of material as equals or alternates to that specified shall be submitted to the Contract Administrator.

## 1.7 SHOP DRAWINGS

.1 Provide a minimum of seven copies of shop drawings for review by the Contract Administrator. The shop drawings must be assembled into complete brochures, with no loose sheets. Unassembled submissions will be returned as incomplete.

.2 The review of the shop drawings is for the sole purpose of ascertaining conformance with the general design concept. The review shall not mean approval of the detailed design inherent in the equipment, the responsibility for which shall remain with the contractor. The review shall not relieve the contractor of the responsibility to meet the requirements of the contract documents. The contractor shall remain responsible for confirming and correlating the dimensions on the jobsite, and for information that pertains to the fabrication process, construction techniques, and installation details, and for coordinating all work of the related sub-trades.

.3 Fabrication of equipment shall not commence until shop drawings of such equipment have been reviewed by the Contract Administrator. Two sets shall be submitted with local inspection department approval where required.

.4 The electrical contractor shall review all mechanical shop drawings – requiring electrical connection – and coordinate voltage and sizes with division 15 and general contractor.

.5 Required Shop Drawings  
– Light fixtures, lamps, ballasts and lighting control systems  
– Electrical distribution (CDPs, panelboards, breakers, etc.)  
– Panelboards.  
– Electric Heating equipment and controls.  
– Emergency lighting equipment  
– Wiring Devices (receptacles, switches, etc.)  
– Disconnect switches  
– Fire Alarm System

## 1.8 AS-BUILT DRAWINGS

.1 Keep a record set of drawings on the site at all times recording any changes that may occur. Submit these drawings to the Contract Administrator upon completion of the work. As-builts shall include circuiting of new and existing equipment to remain.

.2 Submit a Certificate of Inspection from the local inspection authority upon completion of work and include with "as-built" drawings.

.3 The Contract Administrator reserves the right to recommend that a portion of the contract funds be withheld pending submission of acceptable as-built drawings.

## 1.9 TESTING

.1 The electrical installation shall be completely tested demonstrating that the equipment and systems installed perform in the manner intended.

## 1.10 GUARANTEE

.1 The satisfactory operation of all work shall be guaranteed for a period of 12 calendar months after final acceptance of the building.

## 1.11 REQUEST FOR CHANGE

.1 All quotations in response to request for change shall be submitted complete with an itemized cost breakdown of all materials and labour required in the change.

## 1.12 GROUNDING

.1 The entire installation shall be grounded in accordance with the Canadian Electrical Code and as shown on drawings.

## 1.13 WORKMANSHIP

.1 Install equipment, conduit and cables in a workmanlike manner to present a neat appearance to the satisfaction of the Contract Administrator. Install conduit and cable runs parallel and perpendicular in chases, behind furring or above ceilings. In areas where systems are to be exposed, install neatly and group to present a tidy appearance.

.2 Install equipment and apparatus requiring maintenance, adjustment or eventual replacement with adequate clearances and accessibility for same.

.3 Include, in the work, all requirements shown on the shop drawings or manufacturers' installation instructions.

.4 Replace work unsatisfactory to the Contract Administrator without extra cost.

.5 Use of clips for securing AC90 to ceiling system is prohibited.

.6 All conduits must be clipped to structural concrete by means of anchors or supported by unistrut hangers as close to underside as possible. Tie wraps for wire hanging and fastening is not acceptable. Perforated strapping is also unacceptable. All electrical components must be supported independently.

.7 All electrical supports and hanger are to co-ordinated and acceptable to the pre-engineered manufacture prior to installation.

## PART 2 MATERIALS AND INSTALLATION

## 2.1 OUTLET BOXES

.1 Outlet, junction and switch boxes shall be galvanized pressed steel of size and type to suit each individual application.

.2 Outlets shall not be located anywhere on the outside curtain wall. Outlets shown thus shall be mounted on the nearest dividing wall 2' from outside wall, or nearest furred out column.

.3 Provide all required access panels with suitable fire ratings for the wall or ceiling that they are being installed in.

## 2.2 WIRING METHODS

.1 Unless otherwise shown on the drawings, all wire shall be copper, minimum #12 awg with 90 degrees celsius X-Link insulation. Wiring to be installed in conduit (including wiring on roof deck flutes where approved).

.2 Wiring in concrete or masonry construction shall be installed in steel electrical metallic tubing (EMT). Provide a separate grounding conductor in EMT conduit runs embedded in concrete slabs. Conduits installed in areas exposed to moisture shall have watertight fittings.

.3 All wiring in finished areas shall be concealed. All conductors and conduits shall be run perpendicular or parallel to the building core walls.

.4 Conduit and wiring shall be grouped where possible and clipped in a neat and workmanlike manner.

.5 AC-90 cable to be used for drops from conduit systems to recessed lighting fixtures in accessible ceilings or outlet boxes in steel stud walls only. Home runs shall be in conduit. Maximum run of AC-90 in accessible ceiling space shall be 5'-0".

.6 Each circuit for computer equipment, printers and copiers shall have a separate neutral conductor.

.7 Provide one isolated ground conductor per three 2 wire isolated ground circuits.

.8 Conduit runs shall be installed and inspected before AC-90 runs are installed to ensure conformance with item .5 herein.

.9 Three wire AC-90 shall not be used for isolated ground wiring, unless it includes a green insulated conductor for this purpose.

.10 All AC-90 used for drops shall be run tight to deck and follow lines of breams and building.

.11 All wiring in service areas to be in surface mounted EMT. Do not run conduit horizontally on walls, vertical drops only.

## 2.3 IDENTIFICATION OF EQUIPMENT

.1 All equipment shall be identified with 3/8" x 1 1/2" (1/8" letters) engraved lomacoid nameplates indicating panel and circuit number or fire alarm horn designation. Lomacoids shall be either screwed or riveted in place. With exception to receptacles and lighting switches, self adhesive type is not acceptable. Lomacoids shall be white lettering on red face for emergency and fire alarm devices and white lettering on black face to normal power devices and communication panels.

.2 Provide 1" x 3" lomacoids for each new CDP breaker, indicating panel or feed being fed.

## 2.4 MECHANICAL EQUIPMENT WIRING

.1 Provide starters (minimum size NEMA 1 ) and wiring for all heating, ventilating and plumbing equipment unless specified otherwise.

.2 Power wiring for the mechanical equipment shall be performed by the electrical contractor. Obtain a wiring diagram from the mechanical subcontractor.

.3 Provide control wiring for all mechanical equipment as indicated. Refer to motor schedule for control wiring requirements.

.4 Refer to the mechanical drawings for the exact location of mechanical equipment requiring an electrical connection.

.5 Where conduit is to be installed in designated exposed areas (open beam ceiling, etc), E.C. coordinate exact installation location with G.C. and architect. Where conduit is installed without coordinate and is not to be the satisfaction of the Contract Administrator.

## 2.5 LUMINAIRES

.1 Supply and install fluorescent fixtures complete with electronic ballasts, and T8 lamps.

.2 Install luminaires supplied by The City, as indicated.

.3 All fluorescent lamps shall be 3500 K and 82 CRI minimum, unless noted otherwise.

.4 All metal halide lamps shall have a 82 CRI minimum, unless noted otherwise.

.5 All high pressure sodium lamps shall have a 21 CRI minimum, unless noted otherwise.

.6 All switching shall be run in conduit.

## 2.6 PANELBOARDS

.1 Load centres are not acceptable. Panels shall be complete with panel trim having concealed hinges and trim mounting screws, locking door with flush catch. Provide two keys for each panel. Provide sprinkler hood on all panelboards.

.2 Branch circuit breakers shall be bolt-on moulded case with thermal breakers rated at 10,000a symmetrical or as indicated on single line drawing.

.3 Affix typewritten directory to the inside of the panelboard indicating loads controlled by each circuit include copy in operation and maintenance manuals.

.4 Panelboards to be surface or recessed mounted as indicated.

.5 Provide breaker lock on device for night lights and fire alarm circuits, and point breaker color red.

## 2.7 CUTTING AND PATCHING

.1 Arrange and pay for all cutting and patching as required for the electrical installation.

.2 Provide appropriate fire stop at all fire wall penetrations. Acceptable manufacturers: Dow Corning, fire-stop systems (elasta-seal) or G.E. silicone.

.3 Refer to architectural specifications for product and installation details.

## 2.8 DISTRIBUTION

.1 General arrangement and size of components shall be as shown on the drawings.

.2 All distribution equipment is to be complete with locking door and sprinkler hoods.

.3 Provide short circuit and co-ordination study sealed by a professional Contract Administrator licenced to practice in the province in which the work is being performed with distribution shop drawings.

## 2.9 DEVICES

.1 Colors of receptacles, switches, outlets and coverplates shall be white in office areas and brown in all other areas, unless noted otherwise. Provide stainless steel cover plates in kitchen and service areas.

.2 Switches shall be Hubbell, Arrow Hart, Bryant, Leviton, Woodhead, Pass & Seymour, 15 amps, 125 / 347 vac. mount switches 54" a.f.f. unless otherwise noted.

.3 Acceptable manufacturers for receptacles shall be Hubbell, Arrow Hart, Bryant, Leviton, Woodhead, Pass & Seymour. Catalogue no.5252 for all manufacturers. Isolated ground receptacles to be orange face. Mount receptacles 12" a.f.f. unless otherwise noted.

.4 Incandescent lighting dimmer controls shall be Lutron nova t\* rated at 1500, 1000 or 600 watts as indicated on drawing. Colour of dimmer snap-on cover to be as selected by architect, interior designer, or as indicated on the drawing. Mount dimmers 54" a.f.f. unless otherwise noted.

.5 Provide stainless steel coverplates for recessed devices.

## 2.10 EMERGENCY AND EXIT LIGHTING

.1 Design intent is to provide new 24 volt battery banks to serve new emergency lighting and new exit lighting fixtures. Provide battery banks and remove fixtures as indicated on the drawings. Lamps shall be 20 watt Quartz Halogen equal to Lumacell RSQB-2, single or double heads as noted on drawings.

.2 New Exit light fixtures shall be low wattage, LED type, white, steel or cast metal equal to Lumacell LER 770. Units to be one or two sided as indicated Units to be provided with full panel (high brightness) LED's, with minimum 100,000 hour life rating and be complete with directional arrows, as shown on the drawing. Provide AC and DC power.

.3 Wiring shall be minimum #12 awg. Provide #10 awg where required to attain 2% (or less) voltage drop, unless otherwise noted. All wiring in EMT.

.4 Contractor shall be responsible for verifying battery bank size and capacity to provide a minimum of 30 minute back-up.

.5 Acceptable manufacturers are Emergi-Lite, Lumacell, Read-Lite and Dual-Lite.

.6 Provide a written guarantee, stating that the battery for emergency lighting is guaranteed against defects in material and workmanship for period of ten years, with a no-charge replacement during the first five years and a pro-rate charge on the second five years from the date of the final acceptance from The City.

.7 All exit signs to be CSA C860 approved.

## 2.11 THE CITY SUPPLIED EQUIPMENT

.1 Wire and connect all The City supplied equipment as shown on the drawings. Verify nameplate ratings with power provisions. Any discrepancies shall be reported to the Contract Administrator.

.2 All The City supplied equipment, with the exception of plug-in types, shall be hard-wired at locations shown on the drawings.

## 2.12 VOICE/DATA COMMUNICATIONS CONDUITS (INCLUDING POS)

.1 Conduit shall be completely independent from other conduit. Installation shall be made in strict accordance with the local telephone system regulations with regard to pullboxes, bends, etc. minimum conduit size to be 3/4".

.2 Empty conduit to be provided with a nylon pull cord.

.3 Conduits shall be provided from each communications outlet to accessible ceiling space.

.4 Where outlets are shown pedestal mounted, one continuous 1" c from each pedestal shall be run to the ceiling space of the floor containing the pedestal.

## 2.13 SECURITY CONDUIT

.1 Security conduit shall be completely independent from other conduit.

## 2.14 FIRE ALARM SYSTEM

.1 System shall be single stage addressable system.

.2 Provide output relays for central reporting and fan shutdown of all roof top units.

.3 Determine exact location of fire alarm annunciator on site prior to installation.

.4 Make all provisions for central reporting, including 4#12 in conduit to telephone backboard.

.5 All fire alarm wiring, including wiring to steel stud partitions, shall be in EMT conduit.

.6 All work regarding fire alarm system will require a ULC approved fire alarm verification. Include all costs for same in contract

.7 The verification inspection report shall accompany the "As-Built" drawings.

.8 Test the complete systems is the presence of the Contract Administrator and submit test sheet before requesting fire inspection.

.9 Make all provisions to wire and connect Fire Alarm suppression control panel. Coordinate with systems installer.


.10 Provide labels on Fire Alarm panel per City of Winnipeg Fire Dept. requirements.

ORIGINAL STAMPED BY: T. TONTHAT, P. ENG.  
DATE: 2006.11.30

NO.	REVISION/DESCRIPTION	DATE	BY
1	ISSUED FOR Bid Opportunity	11/30/06	TT
0	ISSUED FOR REVIEW	11/28/06	TT

DRAWN BY **LUN** CHECKED BY **TT** APPROVED BY **TT**

DATE: **2006-11-28** USER APPROVAL

 **CITY OF WINNIPEG**  
**PLANNING, PROPERTY & DEVELOPMENT DEPARTMENT**  
**CIVIC ACCOMMODATIONS DIVISION**  
**300 - 65 GARRY ST. R3C 4K4**

PROJECT  
**City of Winnipeg Surplus Storage Facility**

311 ROSS AVENUE



SHEET TITLE

**ELECTRICAL - SPECIFICATIONS**

SCALE PROJECT NO. SHEET NO.

**AS SHOWN** **E-5.0**

DRAWING SHEET SIZE: A1 (841mm x 594mm) PLOT 1:1

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		<p>DATE</p>