

FILE NAME: 2106.03.18 DATE: 2016.03.18 SHEET TITLE: ELECTRICAL SPECIFICATION PROJECT No: 2015-075 ADDRESS: 375 YORK AVENUE, WINNIPEG, MB

NOTES:

ELECTRICAL SPECIFICATION

ELECTRICAL GENERAL PROVISIONS

- 1 GENERAL
 - 1 PROVIDE ALL MATERIALS, LABOUR, PLANT AND EQUIPMENT NECESSARY TO MAKE A COMPLETE INSTALLATION AS DESCRIBED AND SHOWN. THIS INSTALLATION SHALL BE LEFT COMPLETE AND READY FOR OPERATION.
 - 2 THE ENTIRE INSTALLATION SHALL BE GUARANTEED FOR ONE YEAR FROM DATE OF FINAL ACCEPTANCE BY THE CONTRACT ADMINISTRATOR. REPLACE AT NO ADDITIONAL COST ANY WORK OR MATERIAL WHICH MAY FAIL OR PROVE DEFECTIVE DURING THE GUARANTEE PERIOD.
 - 3 THE INSTALLATION SHALL CONFORM IN EVERY RESPECT TO THE RULES AND REGULATIONS OF THE LATEST EDITION OF THE CANADIAN ELECTRICAL CODE AND ALL LOCAL CODES. ALL WORK SHALL BE UNIFORM AND HIGH QUALITY. ALL EQUIPMENT SUPPLIED UNDER THIS CONTRACT SHALL BE NEW AND BUILT IN ACCORDANCE WITH IEMAC STANDARDS. SHALL BE CSA CERTIFIED OR CERTIFIED BY AN EQUIVALENT RECOGNIZED CERTIFYING AGENCY TO MEET CANADIAN STANDARDS AND LOCALLY APPROVED. ELECTRICAL EQUIPMENT CONSISTING OF INDIVIDUAL CERTIFIED COMPONENTS MUST ALSO HAVE A CSA OR EQUIVALENT CERTIFICATION FOR THE ENTIRE ASSEMBLY. PROVIDE INSPECTION CERTIFICATE UPON COMPLETION OF THE WORK.
 - 4 CAREFULLY EXAMINE ALL PLANS AND SPECIFICATIONS PERTAINING TO THIS CONTRACT AND VISIT SITE TO DETERMINE ALL FACTORS AFFECTING COSTS AND INCLUDE SAME IN BID SUBMISSION. NOTIFY CONTRACT ADMINISTRATOR OF DISCREPANCIES OR CONFLICTS WITH ANY REGULATION BEFORE SUBMITTING PRICE. FAILING SUCH NOTIFICATION, THIS CONTRACTOR SHALL MEET ALL SUCH REQUIREMENTS WITHOUT EXTRA COST TO THE OWNER.
 - 5 OBTAIN ALL NECESSARY PERMITS, PAY ALL NECESSARY FEES, GIVE ALL NECESSARY NOTICES AND OBTAIN APPROVAL OF THE ELECTRICAL AUTHORITIES HAVING JURISDICTION.
- 2 SHOP DRAWINGS
 - 1 SUBMIT ELECTRONIC COPIES OF SHOP DRAWINGS FOR ALL EQUIPMENT.
 - 2 FOR SHOP DRAWINGS SUBMITTED ELECTRONICALLY, INCLUDE PROJECT NAME IN SUBJECT LINE OF E-MAIL TO LM ARCHITECTURAL GROUP.
 - 3 EQUIPMENT PROPOSED SHALL MEET THE SAME STANDARDS OF PERFORMANCE, QUALITY AND WORKMANSHIP AS THAT SPECIFIED.
 - 4 SHOP DRAWINGS TO BE REVIEWED AND STAMPED BY THE SUB-CONTRACTOR AND CONTRACTOR.
- 3 REQUEST FOR INTERPRETATION (RFI)
 - 1 FOR RFIS SUBMITTED ELECTRONICALLY, INCLUDE PROJECT NAME AND RFI NUMBER IN SUBJECT LINE OF E-MAIL. SEND RFIS TO LM ARCHITECTURAL GROUP.
 - 2 CONTENT OF THE RFI INCLUDE A DETAIL DESCRIPTION OF THE ITEM NEEDING INTERPRETATION AND PROPOSED SOLUTION.
- 4 RECORD DRAWINGS
 - 1 PROVIDE REDLINED "AS-BUILT" DRAWINGS IN PDF AND AUTOCAD FORMAT BURNED ON CD-ROM.
- 5 OPERATION AND MAINTENANCE MANUALS
 - 1 PROVIDE DATA FOR INCORPORATION INTO MAINTENANCE MANUAL. MANUAL SHALL INCLUDE INSTRUCTIONS FOR ALL EQUIPMENT SUPPLIED. COPY OF REVIEWED SHOP DRAWINGS AND TECHNICAL DATA SUCH AS PARTS LISTS, OPERATING INSTRUCTIONS, MAINTENANCE INSTRUCTIONS, ETC. THREE (3) HARD COVER COPIES OF MAINTENANCE MANUALS ARE TO BE SUBMITTED.
- 6 REMOVALS
 - 1 REMOVE ALL UNNECESSARY EXISTING ELECTRICAL EQUIPMENT, WIRING AND FIXTURES IN THOSE PORTIONS OF THE EXISTING BUILDING WHICH ARE BEING REMODELED OR DEMOLISHED. THE EQUIPMENT MAY BE REUSED ON THIS PROJECT IF, IN THE OPINION OF THE CONTRACT ADMINISTRATOR, SUCH EQUIPMENT IS IN SATISFACTORY CONDITION AND MEETS THE STANDARDS ESTABLISHED. THE CONTRACT ADMINISTRATOR MAY SELECT FROM THE MATERIALS AND/OR EQUIPMENT REMAINING WHICH THEY WISH TO RETAIN AND THE REMAINDER SHALL BE REMOVED FROM THE SITE.
 - 2 ANY ELECTRICAL EQUIPMENT IN REMODELED SECTIONS OR IN STRUCTURES REMOVED OR ALTERED, ADJACENT TO NEW WORK, NECESSARY TO THE OPERATION OF THE EXISTING BUILDING, SHALL BE RELOCATED AS NECESSARY.
 - 3 ALL EXISTING EQUIPMENT REUSED SHALL BE MADE GOOD AND GUARANTEED.
 - 4 POWER INTERRUPTIONS SHALL BE KEPT TO A MINIMUM AND SHALL BE A TIME SUITABLE TO THE BUILDING OCCUPANTS).
- 7 WORK IN EXISTING BUILDING
 - 1 CO-ORDINATION.
 - 1 THE BUILDING SHALL REMAIN OPEN AND IN NORMAL OPERATION DURING THE CONSTRUCTION PERIOD.
 - 2 WHERE EXISTING SERVICES SUCH AS ELECTRICAL POWER, FIRE ALARM SYSTEM, SOUND SYSTEM, ETC. ARE REQUIRED TO BE INTERRUPTED AND/OR SHUT DOWN, CO-ORDINATE THE SHUTDOWNS WITH THE CONTRACT ADMINISTRATOR AND CARRY OUT THE WORK AT A TIME AND IN A MANNER ACCEPTABLE TO THEM. CAREFULLY SCHEDULE ALL DISRUPTION AND/OR SHUT-DOWNS AND ENSURE THAT THE DURATION OF SAME IS KEPT TO THE ABSOLUTE MINIMUM. SUBMIT FOR APPROVAL A WRITTEN CONSOLE SCHEDULE OF EACH DISRUPTION AT LEAST 24 HOURS IN ADVANCE OF PERFORMING WORK AND OBTAIN THE CONTRACT ADMINISTRATOR'S WRITTEN CONSENT PRIOR TO IMPLEMENTING.
 - 3 SHOULD ANY TEMPORARY CONNECTIONS BE REQUIRED TO MAINTAIN SERVICES DURING WORK IN THE EXISTING BUILDING, SUPPLY AND INSTALL ALL NECESSARY MATERIAL AND EQUIPMENT AND PROVIDE ALL LABOUR AT NO EXTRA COST. SHOULD ANY EXISTING SYSTEM BE DAMAGED, MAKE FULL REPAIRS WITHOUT EXTRA COST, AND TO THE SATISFACTION OF THE CONTRACT ADMINISTRATOR.
 - 4 IF EXISTING EQUIPMENT SHOWN ON DRAWINGS IS DEFECTIVE IT SHOULD BE BROUGHT TO THE CONTRACT ADMINISTRATOR'S ATTENTION PRIOR TO WORK COMPLETION.
 - 2 INSTALLATION
 - 1 INSTALL BOXES, CONDUIT AND WIRING THROUGH EXISTING AREAS AS REQUIRED FOR THE NEW INSTALLATION.
 - 2 ADD MODULES, SWITCHES, ETC. IN EXISTING CONTROL PANELS, AS REQUIRED, TO EXTEND EXISTING SYSTEMS TO NEW OR RENOVATED AREAS.
 - 3 PATCH AND REPAIR WALLS AND CEILINGS IN EXISTING AREAS THAT HAVE BEEN DAMAGED OR CUT OPEN DUE TO THE NEW ELECTRICAL INSTALLATION.
 - 4 WHERE NEW CABLES OR CONDUITS HAVE BEEN INSTALLED THROUGH EXISTING FIRE RATED WALLS, SEAL OPENING AROUND CABLES AND CONDUIT TO MAINTAIN FIRE RATING.
 - 3 ALL EXISTING EQUIPMENT REUSED SHALL BE MADE GOOD AND GUARANTEED.
 - 4 POWER INTERRUPTIONS SHALL BE KEPT TO A MINIMUM AND SHALL BE A TIME SUITABLE TO THE BUILDING OCCUPANTS).

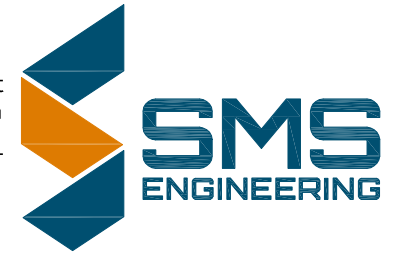
ELECTRICAL MATERIALS AND INSTALLATION

- 1 WIRING METHOD
 - 1 FOR GENERAL PURPOSE WIRING: RW90 CONDUCTORS IN EMT CONDUIT. USE AC90 FOR FIXTURE DROPS AND IN METAL STUD WALLS.
 - 2 FOR CONNECTION TO MOTORS AND MISCELLANEOUS MECHANICAL EQUIPMENT USE RAIN TIGHT FLEXIBLE CONDUIT.
 - 3 RUN ALL CONDUIT AND CABLE CONCEALED, PARALLEL AND PERPENDICULAR TO BUILDING LINES, STAPLED AND/OR CLIPPED IN A NEAT WORKMANLIKE MANNER.
 - 4 ALL CONDUCTORS SHALL BE COPPER. MINIMUM CONDUCTOR SIZE SHALL BE #12 AWG EXCEPT AS NOTED.
- 2 GROUNDING
 - 1 THE ENTIRE INSTALLATION SHALL BE GROUNDED IN CONFORMANCE TO THE LATEST EDITION OF THE CANADIAN ELECTRICAL CODE.
 - 2 ALL CONDUIT TO HAVE A SEPARATE INSULATED BONDING CONDUCTOR.
- 3 BOXES
 - 1 OUTLET, JUNCTION AND SWITCH BOXES SHALL BE GALVANIZED STEEL AND SIZED ACCORDING TO THE ELECTRICAL CODE AND TO SUIT EACH APPLICATION.
 - 2 PROVIDE MOULDED BOX VAPOUR BARRIER; FACTORY MOULDED POLYETHYLENE BOX FOR USE WITH RECESSED ELECTRIC BOXES IN EXTERIOR WALLS.
- 4 LIGHTING SYSTEM - GENERAL
 - 1 PROVIDE FIXTURES EQUAL TO THOSE SPECIFIED WITH LAMPS, SUSPENSION HARDWARE, LENSES AND ALL OTHER ACCESSORIES REQUIRED TO COMPLETE THE INSTALLATION.
 - 2 LED DRIVERS SHALL HAVE A MAXIMUM THD OF 20% AND MAXIMUM IN RUSH OF 3%, CASE TEMPERATURE OF MIN. 85DEGC. LED DRIVER MUST BE ELIGIBLE FOR MANITOBA HYDRO POWER SMART REBATE PROGRAM.
- 5 POWER DISTRIBUTION SYSTEM
 - 1 SUBMIT SHOP DRAWINGS IN ACCORDANCE WITH ELECTRICAL GENERAL PROVISIONS.
 - 2 IN ADDITION TO CSA REQUIREMENTS, MANUFACTURER'S NAMEPLATE MUST SHOW FAULT CURRENT THAT PANEL INCLUDING BREAKERS HAS BEEN BUILT TO WITHSTAND.
 - 3 250V BRANCH CIRCUIT PANELBOARDS, BUS AND BREAKERS RATED FOR 10KA (SYMMETRICAL) INTERRUPTING CAPACITY MINIMUM OR AS INDICATED.
 - 4 SEQUENCE PHASE BUSSING SUCH THAT CIRCUIT BREAKERS WILL BE NUMBERED IN CONSECUTIVE ORDER, WITH EACH BREAKER IDENTIFIED BY PERMANENT NUMBER IDENTIFICATION AS TO CIRCUIT NUMBER AND PHASE.
 - 5 PROVIDE BREAKERS AS INDICATED IN THE PANEL SCHEDULE AND AS INDICATED ON THE DRAWING.
 - 6 ALL NEW BREAKERS SHALL MATCH PANEL VOLTAGE UNLESS INDICATED OTHERWISE. CIRCUIT BREAKERS SHALL BE THERMAL MAGNETIC TYPE.

- 7 NAMEPLATE FOR EACH PANELBOARD 20 X 90mm ENGRAVED AS INDICATED.
- 8 COMPLETE CIRCUIT DIRECTORY WITH TYPEWRITTEN LEGEND SHOWING LOCATION AND LOAD OF EACH CIRCUIT.
- 9 WIRING IN PANELBOARDS SHALL BE NEAT AND SET IN AS IF LACED. ALL NEUTRAL CONDUCTORS SHALL BE IDENTIFIED IN THE PANEL WITH THEIR ASSOCIATED CIRCUIT NUMBERS BY MEANS OF BRADY MARKERS.
- 10 INTERRUPTING CAPACITY OF NEW BREAKERS IN EXISTING PANELS SHALL MATCH EXISTING.
- 6 MOUNTING HEIGHTS
 - 1 MOUNTING HEIGHT IS CENTERLINE OF EQUIPMENT ABOVE FINISHED FLOOR. IF MOUNTING HEIGHT IS NOT INDICATED VERIFY BEFORE PROCEEDING WITH INSTALLATION. MOUNT SAME HEIGHT AS EXISTING IF DIFFERENT FROM THAT SHOWN HERE UNLESS INDICATED OTHERWISE ON DRAWINGS.
 - 2 MOUNTING HEIGHTS:
 - 1 MOUNTING HEIGHT OF EQUIPMENT IS FROM FINISHED FLOOR TO CENTRE LINE OF EQUIPMENT UNLESS SPECIFIED OR INDICATED OTHERWISE.
 - 2 IF MOUNTING HEIGHT OF EQUIPMENT IS NOT SPECIFIED OR INDICATED, VERIFY BEFORE PROCEEDING WITH INSTALLATION.
 - 3 INSTALL ELECTRICAL EQUIPMENT AT FOLLOWING HEIGHTS UNLESS INDICATED OTHERWISE.
 - 1 LOCAL SWITCHES, DIMMERS, TIMERS, OCCUPANCY SENSORS WITH MANUAL OVER-RIDE: 1200mm.
 - 2 WALL RECEPTACLES:
 - 1 GENERAL: 400mm.
 - 3 FIRE ALARM MANUAL STATIONS: 1200mm.
 - 4 WALL MOUNTED FIRE ALARM BELLS AND SPEAKERS: WHERE CEILING HEIGHTS ALLOW TOP OF THE DEVICE SHALL NOT BE LESS THAN 2300MM ABOVE FINISHED FLOOR, AT LEAST 150mm BELOW THE CEILING.
 - 5 END-OF-LINE RESISTORS: LESS THAN 1800mm.
 - 6 AS PER ARCHITECTURAL ELEVATIONS.
- 7 CONDUITS AND CABLE
 - 1 DRAWINGS DO NOT INDICATE ALL CONDUIT AND CABLE RUNS. THOSE INDICATED ARE IN DIAGRAMMATIC FORM ONLY.
 - 2 MINIMUM CONDUIT SIZE SHALL BE 3/4" UNLESS INDICATED OTHERWISE.
 - 3 ALL CONDUITS SHALL HAVE A SEPARATE INSULATED GREEN GROUND CONDUCTOR.
- 8 CONDUIT AND CABLE IDENTIFICATION
 - 1 COLOUR CODE CONDUITS, BOXES AND METALLIC SHEATHED CABLE.
 - 2 COLOUR CODING TO MATCH EXISTING WHERE APPLICABLE.
 - 3 CONFIRM COLOUR CODING WITH CONTRACT ADMINISTRATOR PRIOR TO START OF WORK.
 - 4 CODE WITH PLASTIC TAPE OR PAINT AT POINTS WHERE CONDUIT OR VALE ENTERS WALL, CEILING OR FLOOR AND AT 15M INTERVALS.
 - 5 COLOURS: 25mm WIDE PRIME COLOUR AND 20mm WIDE AUXILIARY COLOUR.

	PRIME	AUXILIARY
UP TO 250V (NORMAL POWER)	YELLOW	GREEN
UP TO 500V (NORMAL POWER)	YELLOW	GREEN
UP TO 250V (EMERGENCY POWER)	YELLOW & RED	GREEN
UP TO 600V (EMERGENCY POWER)	YELLOW & RED	GREEN
VOICE/DATA	GREEN	GREEN
OTHER COMMUNICATION SYSTEMS	GREEN	BLUE
FIRE ALARM	RED	BLUE
EMERGENCY VOICE	RED	YELLOW
OTHER SECURITY SYSTEMS	RED	YELLOW
CONTROL	BLUE	
FIBRE OPTIC	ORANGE	
 - 6 OTHER CONDUIT SYSTEMS AS DIRECTED ON SITE. ALL CONDUIT SYSTEMS SHALL BE IDENTIFIED.
 - 7 COLOR OUTLET BOX COVERS TO COLOR DESIGNATED AND SHOW CIRCUIT NUMBERS IN BLACK FELT MARKER ON INSIDE OF COVERS.
- 9 CONDUITS, FASTENINGS AND FITTINGS
 - 1 ONE HOLE STEEL STRAPS TO SECURE SURFACE CONDUITS 50mm AND SMALLER.
 - 2 FITTINGS FOR RACEWAYS: TO CSA C22.2 NO. 18
 - 3 FITTINGS: MANUFACTURED FOR USE WITH CONDUIT SPECIFIED COATING SAME AS CONDUIT.
 - 4 FACTORY "ELLS" WHERE 90° BENDS ARE REQUIRED FOR 25MM AND LARGER CONDUITS.
 - 5 STEEL SET SCREW CONNECTORS AND COUPLINGS. INSULATED THROAT LINERS ON CONNECTORS.
- 10 DISCONNECT SWITCHES
 - 1 FUSIBLE AND NON-FUSIBLE DISCONNECT SWITCH IN METAL ENCLOSURE, CSA RATED.
 - 2 PROVISION FOR PADLOCKING "ON-OFF" SWITCH POSITION BY THREE LOCKS.
 - 3 MECHANICAL INTERLOCKED DOOR TO PREVENT OPENING WHEN HANDLE IS IN "ON" POSITION.
 - 4 QUICK-MAKE, QUICK-BREAK ACTION.
 - 5 "ON-OFF" SWITCH POSITION INDICATION ON SWITCH ENCLOSURE COVER.
 - 6 DISCONNECTS USED FOR SERVICE ENTRANCES SHALL BE APPROVED SERVICE ENTRANCE SWITCHES.
 - 7 DISCONNECTS FOR TWO SPEED MOTORS TO BE SIX POLE. REFER TO MOTOR SCHEDULE AND DRAWINGS FOR TWO SPEED MOTORS AND PROVIDE A SIX POLE DISCONNECT SWITCH FOR EACH TWO SPEED MOTOR.
 - 8 DISCONNECT SWITCHES LOCATED AT MOTORS CONNECTED TO VARIABLE FREQUENCY DRIVES ARE TO BE PROVIDED WITH ONE FORM "C" ELECTRICAL CONTACT TO INTERLOCK FROM THE DISCONNECT TO THE VFD. THE INTERLOCK IS TO OPERATE PRIOR TO THE MAIN POWER CONTACTS OPENING TO THE MOTOR.
 - 9 INSTALL DISCONNECT SWITCHES AS INDICATED ON DRAWINGS.
 - 10 WEATHERPROOF WHERE REQUIRED.
- 11 FIRE ALARM
 - 1 NEW DETECTORS AND OTHER EQUIPMENT SHALL MATCH EXISTING EQUIPMENT. THE INSTALLATION SHALL BE IN CONFORMANCE WITH CANULC-5524-1. STANDARD FOR INSTALLATION OF FIRE ALARM SYSTEMS. PROVIDE A COMPLETE VERIFICATION REPORT FOR ZONES AFFECTED IN CONFORMANCE WITH CANULC-5537. A MANITOBA FIRE ALARM TECHNICIAN "M" LICENSE IS REQUIRED TO PERFORM FIRE ALARM VERIFICATIONS.
- 12 EQUIPMENT IDENTIFICATION
 - 1 IDENTIFY ELECTRICAL EQUIPMENT WITH NAMEPLATES AND LABELS AS FOLLOWS:
 - 2 NAMEPLATES: LAMACOD 3MM THICK PLASTIC ENGRAVING SHEET. BLACK FACE WITH WHITE CORE (BLACK WITH WHITE LETTERS) FOR NORMAL POWER AND LAMACOD 3MM THICK PLASTIC ENGRAVING SHEET. RED FACE WITH WHITE CORE (RED WITH WHITE LETTERS) FOR EMERGENCY POWER. LETTERING ACCURATELY ALIGNED AND ENGRAVED INTO CORE MECHANICALLY ATTACHED WITH SELF TAPPING SCREWS. LETTERS TO BE MINIMUM 5MM HIGH.
 - 3 WORDING ON NAMEPLATES AND LABELS TO BE APPROVED BY CONTRACT ADMINISTRATOR PRIOR TO MANUFACTURE.
 - 4 ALLOW FOR MINIMUM OF TWENTY-FIVE (25) LETTERS PER NAMEPLATE AND LABEL.
 - 5 NAMEPLATES FOR TERMINAL CABINETS, STARTERS AND CONTACTORS: INDICATE EQUIPMENT BEING CONTROLLED AND VOLTAGE.
 - 6 ROOM NAMES AND NUMBERS USED SHALL BE ACTUAL ROOM NAMES AND NUMBERS THAT WILL BE USED ON THE PROJECT. COORDINATE AND CONFIRM WITH TRADES INVOLVED.
 - 7 COORDINATE NAMES OF EQUIPMENT AND SYSTEMS WITH MECHANICAL SECTION TO ENSURE THAT IDENTICAL NAMES ARE USED.
 - 8 NAMEPLATES FOR CONTROL DEVICES: INDICATE EQUIPMENT CONTROLLED.
 - 9 TO MATCH EXISTING WHERE APPLICABLE.
 - 10 ALL RECEPTACLES SHALL HAVE A LAMACOD ON WHICH THE PANEL AND CIRCUIT NUMBER FROM WHICH IT IS FED, IS INDICATED. THE IDENTIFICATION SHALL BE MECHANICALLY SECURED TO THE COVERPLATE ON THE APPROPRIATE OUTLET. PRESSURE INDENTED ADHESIVE STRIP NAMEPLATES ARE NOT ACCEPTABLE AND SHALL NOT BE USED.

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16-034-01



3	ISSUED FOR CONSTRUCTION	ALG	2016.03.29
2	ISSUED FOR 95% REVIEW SUBMISSION	ALG	2016.03.18
1	ISSUED FOR 66% REVIEW SUBMISSION	ALG	2016.03.10

No.	REVISION/DESCRIPTION	BY	DATE
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DRAWN	IN	CHECKED	ALG	DESIGNED	ALG	APPROVED	TY
DATE	2016.03.18	USER		APPROVAL			

THE CITY OF WINNIPEG
PLANNING, PROPERTY AND
DEVELOPMENT DEPARTMENT
MUNICIPAL ACCOMMODATIONS DIVISION
3-65 GARRY STREET, R3C 4K4

PROJECT
RBC CONVENTION CENTRE
ARCHITECTURAL RESTORATION OF THE
NORTH RBC CONVENTION CENTRE SKYWALK
375 YORK AVENUE

SHEET
TITLE
ELECTRICAL SPECIFICATION

SCALE	PROJECT No: 2015-075	SHEET No:	E2
AS SHOWN			

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