

1.1 GENERAL CONDITIONS

1 SUPPLY ALL LABOUR, EQUIPMENT, AND MATERIALS NECESSARY TO INSTALL, COMPLETE AND OPERATIONAL, THE ELECTRICAL SYSTEMS DESCRIBED HEREIN AND SHOWN ON THE DRAWINGS. THE REQUIREMENTS OF THIS SECTION ARE IN ADDITION TO THOSE CONTAINED IN THE GENERAL CONDITIONS AND OTHER PORTIONS OF THE CONTRACT DOCUMENTS.

1.2 DRAWINGS & SPECIFICATIONS

1 IT IS THE INTENT OF THESE DRAWINGS AND SPECIFICATIONS TO PROVIDE FOR AN ELECTRICAL INSTALLATION COMPLETE AND IN OPERATING CONDITION. THE RESPONSIBILITY FOR SUPPLYING AND INSTALLING ALL MATERIAL NECESSARY TO ACCOMPLISH THIS, EXCEPT WHERE SPECIFICALLY NOTED THAT SUCH WORK OR MATERIALS IS NOT INCLUDED, SHALL BE PART OF THIS SECTION.

1.3 LOCAL RULES AND COSTS

1 THE COMPLETE INSTALLATION SHALL BE IN ACCORDANCE WITH THE CURRENT EDITION OF THE CANADIAN ELECTRICAL CODE AND THE BY-LAWS OF THE PROVINCE AND MUNICIPAL ELECTRICAL ENERGY INSPECTION DEPARTMENT WHOSE AUTHORITY COVERS THE AREA IN WHICH THE WORK IS BEING DONE.

2 OBTAIN AND PAY FOR ALL PERMITS AND LICENSES REQUIRED TO EXECUTE THE WORK.

1.4 EQUIVALENT PRODUCTS

1 REFER TO FRONT END GENERAL SECTIONS FOR DETAILS.

1.5 CO-ORDINATION OF WORK

1 CO-ORDINATE WITH OTHER TRADES ON THE LOCATION OF EQUIPMENT SUPPLIED BY OTHERS PRIOR TO THE INSTALLATION OF CONDUIT, OUTLETS, ETC. WHERE ELECTRICAL EQUIPMENT IS BEING BUILT-IN, SUPPLY THE EQUIPMENT OR NECESSARY DIMENSION TO THE OTHER TRADES.

1.6 MATERIALS

1 ALL MATERIALS SUPPLIED SHALL BE NEW (OR AS NOTED) AND OF THE QUALITY INDICATED IN THE SPECIFICATIONS AND SHALL CONFORM TO THE STANDARDS OF THE C.S.A. AND THE U.L.C. AND APPROVED BY THESE AGENCIES WHERE APPLICABLE.

2 IN THE EVENT THAT A MATERIAL SPECIFIED DOES INDICATE C.S.A./U.L.C. OR EQUAL APPROVAL, CONTRACTOR IS TO OBTAIN THE APPROVAL OF THE LOCAL INSPECTION AUTHORITY. PAY ALL CHARGES LEVIED BY THE INSPECTION AUTHORITY AND MAKE ANY MODIFICATIONS REQUIRED, AT NO ADDITIONAL EXPENSE TO THE CITY.

1.7 LOCATING EQUIPMENT

1 MATERIALS AND LABOUR SHALL BE ADDED TO THE CONTRACT FOR OUTLETS MOVED WITHIN 10' OR 3.0m FROM THE LOCATION SHOWN ON THE PLANS PRIOR TO ROUGH-IN AT NO EXTRA CHARGE.

2 PUSHBUTTONS SHALL BE MOUNTED 9" OR 225mm OR 36" OR 900mm TO CENTER ABOVE FINISHED FLOOR.

1.8 WARRANTY

1 WARRANTY ALL WORK FOR ONE YEAR, FOLLOWING FINAL ACCEPTANCE. THIS WARRANTY SHALL INCLUDE ALL PROBLEMS CAUSED BY IMPROPER INSTALLATION OR EQUIPMENT FAILURE.

1.9 AS BUILT DRAWINGS

1 REFER TO FRONT END GENERAL SECTIONS FOR DETAILS.

1.10 PANELS AND EQUIPMENT

1 PROVIDE ACCURATE MACHINE PRINTED DIRECTORIES FOR ALL EQUIPMENT.

2 EQUIPMENT TO BE OF SAME MANUFACTURER THROUGHOUT. PROVIDE ALL NECESSARY HARDWARE AND COVER PLATES FOR COMPLETE INSTALLATION. FULL SIZE BREAKERS, BOLT ON ONLY. BUSS TO BE FULL RATED COPPER WITH ANTI OXIDE COATING. PROVIDE A S.C./COORDINATION STUDY TO ENSURE ALL EQUIPMENT IS RATED AND SUPPLIED TO COORDINATE WITH ALL POSSIBLE FAULT CONDITIONS PRESENT AT SITE WITH UTILITY AND STANDBY POWER GENERATION SUPPLY.

1.11 GROUNDING SYSTEM

1 GROUNDING SYSTEM SHALL BE IN ACCORDANCE WITH THE LATEST EDITION OF CANADIAN ELECTRICAL CODE. ENSURE GROUND RESISTANCE IS SUITABLE FOR GRID LOCATION.

2 PROVIDE GROUNDING TO ALL RACEWAYS, AND EQUIPMENT TO C.E.C.

1.12 DISCONNECT SWITCHES

1 SUPPLY AND INSTALL DISCONNECT SWITCHES AS INDICATED AND AS REQUIRED BY CODE. INCLUDE W/P FOR EXTERIOR LOCATIONS.

1.13 AUXILIARY EQUIPMENT

1 PROVIDE WIRING, CONTROL TRANSFORMERS AND AUXILIARY CONTACTS AS REQUIRED FOR CONTROL CONNECTIONS. CO-ORDINATE ALL INTERLOCKS AND CONNECTIONS WITH EQUIPMENT.

1.14 WIRING METHODS

1 ALL WIRING SHALL BE COPPER IN EMT UNLESS INDICATED OTHERWISE.

2 CIRCUIT WIRING TO BE MINIMUM #12 AWG RW90 UNLESS OTHERWISE INDICATED. WHERE WIRE SIZE IS NOT SHOWN, AMPACITY MUST MATCH OR EXCEED THAT OF PROTECTIVE DEVICE AND ANY ALLOWANCE FOR VOLTAGE DROP IS TO BE APPLIED. CABLE TO BE UPSIZED AS NECESSARY.

1.15 INSTALLATION

1 INSTALL WIRING CONTINUOUSLY WITHIN RACEWAYS. SPLICES WILL BE PERMITTED ONLY AT OUTLETS AND JUNCTION BOXES. ADEQUATE CABLE SHALL BE PROVIDED TO PERMIT PROPER CONNECTION OF ALL EQUIPMENT.

2 ALL WIRING TO RUN CONCEALED IN CEILING, WALLS OR FLOORS WHEREVER POSSIBLE. ANY EXPOSED CONDUITS OR CABLES SHALL BE RUN PARALLEL TO OR AT RIGHT ANGLES TO BUILDING LINES AND IN A NEAT MANNER.

3 INSTALL PULL BOXES AS REQUIRED BY THE CANADIAN ELECTRICAL CODE. PULL BOXES SHALL BE LOCATED IN INCONSPICUOUS SPACES. PROVIDE RATED ACCESS DOORS AS REQUIRED.

4 PROVIDE ALL MOUNTING BRACKETS, STRAPS AND SUPPORTS TO SECURE ELECTRICAL DEVICES IN ACCORDANCE TO SPECIFICATIONS AND C.E.C. REQUIREMENTS.

1.16 WIRING DEVICES

1 LIGHT SWITCHES TO BE SPEC COMMERCIAL GRADE, NYLON FACE, 15A, PROVIDE 20A SWITCHES WHERE INDICATED. ALL SWITCHES SHALL BE WHITE UNLESS OTHERWISE NOTED.

2 RECEPTACLES SHALL BE SPEC COMMERCIAL GRADE, NYLON FACE, 15A, FINISH TO BE WHITE UNLESS OTHERWISE NOTED.

3 WIRING DEVICES AND COVER PLATES SHALL BE ONE MANUFACTURER. ALL COVER PLATES SHALL BE WHITE UNLESS OTHERWISE NOTED.

4 GROUND FAULT CIRCUIT INTERRUPTING (GFI) DUPLEX RECEPTACLE SHALL BE EQUAL TO COOPER # VGF-15W.

1.17 LIGHTING

1 SUPPLY AND INSTALL ALL LUMINARIES AND LAMPS AS INDICATED ON THE LUMINARIE SCHEDULE EXCEPT AS NOTED OTHERWISE. ALL SUPPORTS AND WIRING TO MAKE THE LIGHTING SYSTEM OPERATIONAL IS TO BE SUPPLIED AND INSTALLED. FIXTURES ARE TO BE INDEPENDANTLY SUPPORTED FROM THE CEILING BY FASTENING TO THE BUILDING STRUCTURE.

1.18 EXIT AND EMERGENCY LIGHTING

1 SUPPLY AND INSTALL EXIT LIGHTING AS INDICATED WITH WIRING RUN IN DEDICATED CONDUIT SYSTEM. WIRING SHALL BE MINIMUM #12 AWG WITH TYPE RW-90 INSULATION. EXIT LIGHTS TO COMPLY WITH C860, NBC AND LOCAL BYLAWS. PROVIDE BATTERY UNITS AS SHOWN AND CONNECT TO ACTIVATE UPON LOSS OF AREA LIGHTING. PRODUCT SHALL BE EMERGI-LITE: EXIT SIGN: LPEX50 SERIES BATTERY UNIT: 12ESL144 REMOTE HEADS: EF9-D12V20W,12W IN WASHROOMS.

1.19 LABELS

1 PROVIDE AND INSTALL ADHESIVE LAMACOID LABELS TO IDENTIFY CIRCUITING AND MAJOR EQUIPMENT.

1.20 MISCELLANEOUS EQUIPMENT

1 PROVIDE WIRING, CONNECTIONS, STARTERS, DISCONNECTS AND CONTROLS FOR ANY EQUIPMENT SUPPLIED AND INSTALLED BY OTHERS.

2 ALL CONTROL WIRING WILL BE BY THE ELECTRICAL SUBCONTRACTOR UNLESS OTHERWISE NOTED. WHERE 120V POWER IS REQUIRED FOR MECHANICAL EQUIPMENT, WIRING AND CONNECTIONS ARE TO BE PROVIDED BY THE ELECTRICAL SUBCONTRACTOR.

1.21 COORDINATION AND SUPPLY OF WORK ON EXISTING EQUIPMENT

1 WHERE EXISTING SERVICES SUCH AS ELECTRICAL POWER, ETC. ARE REQUIRED TO BE DISRUPTED AND/OR SHUT DOWN, CO-ORDINATE THE SHUTDOWNS AND CARRY OUT THE WORK AT AN ACCEPTABLE TIME TO THE CITY. 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, CONCISE SCHEDULE OF EACH DISRUPTION AT LEAST 120 HOURS IN ADVANCE OF PERFORMING WORK AND OBTAIN CITY'S WRITTEN CONSENT PRIOR TO IMPLEMENTING.

2 SHOULD ANY TEMPORARY CONNECTIONS BE REQUIRED, 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 CITY AND CONTRACT ADMINISTRATOR.

1.22 SITE REVIEW

1 CONTACT THE CONTRACT ADMINISTRATOR FOR SITE REVIEW AT THE FOLLOWING STAGES OF CONSTRUCTION:  
- ROUGH-IN OF WALLS AND FEEDERS  
- SUBSTANTIAL PERFORMANCE  
- COMPLETION OF DEFICIENCIES (IF REQUIRED)  
NOTE: ALL REVIEWS ARE AT THE DISCRETION OF THE CONTRACT ADMINISTRATOR.

2 PROVIDE FIVE (5) WORKING DAYS NOTICE FOR ALL REVIEWS.

1.23 SUBSTANTIAL PERFORMANCE

1 BEFORE REQUESTING A SUBSTANTIAL PERFORMANCE REVIEW, THE FOLLOWING ARE AMONG ITEMS THAT MUST BE COMPLETE:  
- EMERGENCY LIGHTING SYSTEM MUST BE FULLY OPERATIONAL AND TESTED BY THE ELECTRICAL CONTRACTOR.  
- ALL EXIT LIGHTS MUST BE INSTALLED AND FULLY OPERATIONAL.  
- ANY DEVICES NOT INSTALLED MUST HAVE THE WIRING MADE SAFE AND TERMINATED IN AN OUTLET BOX COMPLETE WITH COVER.  
- ALL OUTLETS MUST HAVE COVER PLATES INSTALLED.  
- ALL ELECTRICAL EQUIPMENT MUST HAVE COVERS AND/OR DOORS INSTALLED COMPLETE.  
- THE UPS AND GENERATOR MUST BE COMMISSIONED AND FULLY OPERATIONAL.  
- THE FIRE ALARM MUST BE VERIFIED AND FREE OF DEFICIENCIES  
- PROVIDE CERTIFICATE OF ACCEPTANCE FROM ELECTRICAL INSPECTION DEPARTMENT.

1.24 PORTABLE STANDBY GENERATOR

1 PROVIDE A COMPLETE ENGINEERED PORTABLE STANDBY GENERATOR TO BE STORED AT A SITE REMOTE FROM THE PROJECT SITE. UNIT IS TO BE A COMPLETE OPERATIONAL STANDBY POWER SYSTEM.

2 THE AUTOMATIC TRANSFER SWITCH CONSISTS OF THE FOLLOWING:

- RATED AT 225A, 3 POLE CONSTRUCTION.

- OPERATING AT 60 HZ, 600 VOLTS, 3 PHASE, WITH 2-WIRE START CIRCUIT

- UTILITY VOLTAGE SENSING CONTROLS. (DROP-OUT AND PICK-UP) UTILITY INTERRUPT DELAY

- ADJUSTABLE LOGIC CONTROLS: (MINIMUM STANDBY VOLTAGE) MINIMUM STANDBY FREQUENCY (ENGINE WARMUP) IN PHASE MONITOR (TIME DELAY NEUTRAL) RETURN TO UTILITY (ENGINE COOL DOWN) TRANSFER ON EXERCISE.

- NEMA 3 ENCLOSURE

- STANDARD SET OF 3 MANUALS

- UL 1008

- CSA CERTIFIED

- STANDARD 2 YEAR WARRANTY

3 GENERAC INDUSTRIAL DIESEL ENGINE DRIVEN GENERATOR. 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 CITY AND CONTRACT ADMINISTRATOR.

-130 KW RATING, SYNCHRONOUS ALTERNATOR, WIRED FOR 600 VAC 3 PHASE, 60 HZ

- PERMANENT MAGNET EXCITATION

- 0.25% VOLTAGE REGULATION

- H-100 CONTROL PANEL

- MEETS NFPA 99 AND 110 REQUIREMENTS

- TEMP RANGE -40 TO 70 DEGREES C

- DIGITAL MICROPROCESSOR:

- TWO 4 LINE X 20 DISPLAYS, FULL SYSTEM STATUS

- 3 PHASE SENSING, +/- 0.25% DIGITAL VOLTAGE REGULATION

- RS232, RS485 AND CANBUS REMOTE PORTS

- WATERPROOF CONNECTIONS

- ALL ENGINE SENSORS ARE 4-20 MA FOR MINIMAL INTERFERENCE

- PROGRAMMABLE I/O

- BUILT-IN PLC FOR SPECIAL APPLICATIONS

-ENGINE FUNCTION MONITORING AND CONTROL:

-FULL RANGE STANDBY OPERATION; PROGRAMMABLE AUTO CRANK, EMERGENCY STOP, AUTO-OFF-MANUAL SWITCH

- ISOCRONOUS GOVERNOR, +/-0.25% FREQUENCY REGULATION

- FULL SYSTEM STATUS ON ALL AC OUTPUT AND ENGINE FUNCTION PARAMETERS

-SERVICE REMINDERS TRENDING, FAULT HISTORY (ALARM LOG)

-12 FUNCTION FOR FULL GENERATOR PROTECTION

- SELECTABLE LOW-SPEED EXERCISE

- HTS TRANSFER SWITCH FUNCTION MONITORING AND CONTROL

-2-WIRE START CONTROLS FOR ANY 2-WIRE TRANSFER SWITCH

-ELECTRONIC GOVERNOR FREQUENCY REGULATION, ISOCRONOUS STEADY STATE REGULATION +/- 0.25

-100A ULC MAINLINE CIRCUIT BREAKER

- SOUND ATTENUATED, LEVEL IIA WEATHER PROTECTIVE ENCLOSURE

- INDUSTRIAL GREY ENCLOSURE, POWDER PAINT FINISH

- INTEGRAL CRITICAL GRADE MUFFLER

-110AH, GRP 31, 925 CCA BATTERY

- W/RACK INSTALLED

- 10A BATTERY CHARGER- INSTALLED

- BATTERY HEATING BLANKET

- BATTERY CHARGING ALTERNATOR

- BATTERY CABLES

- BATTERY TRAY

- FUEL SHUT-OFF SOLENOID VALVE

- SOLENOID ACTIVATED STARTER MOTOR

- FUEL FILTER

- AIR CLEANER AND OIL FILTER WITH INTERNAL BYPASS

- OIL AND ANTI-FREEZE

- OIL AND RADIATOR DRAIN EXTENSIONS

- VIBRATION ISOLATORS BETWEEN ENGINE/ALTERNATOR AND BASE FRAME

- STANDARD FLEX EXHAUST

- BLOCK HEATER 1500W

- LOAD DISTRIBUTION PANEL

- 125 AMP, 120/240 VOLT SINGLE PHASE, 3 WIRE

- UL LISTED

- COMPLETE WITH CIRCUIT BREAKERS FOR CONFIGURED ACCESSORY LOADS (FIELD WIRING TO UTILITY BY OTHERS)

- ENGINE RUN RELAY

- 12V DC ONLY INTERIOR LIGHTS

- STANDARD SET OF 3 MANUALS

- TRAILER PACKAGE

- DUAL AXLES WITH 5 BOLT HUB OR SIMILAR TRAILER IS RATED AT 8,500 POUNDS

- LEAF SPRING SUSPENSION

- DECK HEIGHT: 24"

- COMBO 2-5/16" BALL & PIN TIE (LUNETTE EYE)

- ELECTRIC BRAKES

- (1)-FIXED POSITION COMBO WHEEL & SANDPAD FRONT JACK

- (2)-ROTABLE REAR JACKS WITH SANDPAD ONLY

- MOUNTED SPARE TIRE

- ENCLOSED FENDERS

- SAFETY CHAINS WITH HOOKS

- I.C.C. LIGHTING

- 7 - WIRE ROUND PLUG CONNECTOR

- LICENSE PLATE BRACKET W/LIGHT

- ALL BLACK FINISH

- SHIPPING FOOT

- 12"-90 GAL. SUB-BASE FUEL TANK

- TWO (2) YEAR STANDARD WARRANTY

4 PORTABLE POWER CONNECTIONS

- 2/0 ENTERTAINMENT CABLE, EXTRA FLEX, WITH CAMLOCKS

- 1320 STRAND, 600V, 300A RATED

- 70 FT LONG EACH, WITH CAMLOCK ENDS

- 5 CABLES

- 3 PHASE POWER CABLES

- NEUTRAL CABLE

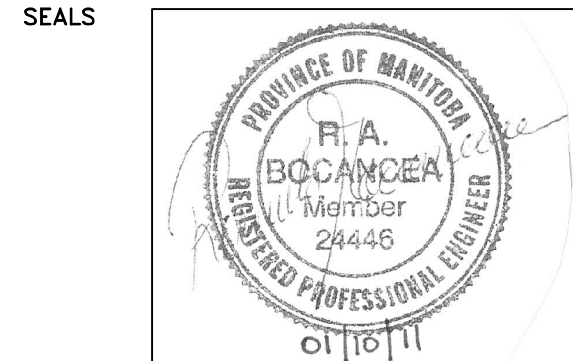
- GROUDING CABLE

- CSA APPROVED



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|---|---------------------|----------|
| 1 | ISSUED FOR ADDENDUM | KO 1/11  |
| 0 | ISSUED FOR TENDER   | KO 12/10 |

| NO.   | REVISION/DESCRIPTION | BY | DATE |
|-------|----------------------|----|------|
| SEALS |                      |    |      |



| DRAWN BY | CHECKED BY    | APPROVED |
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| KOLO     | USER APPROVAL |          |
| DATE     | 2010.12.09    |          |

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

PROJECT  
MANDARIN BUILDING  
ALTERNATE EMERGENCY COMMUNICATION CENTRE DESIGN  
185 KING STREET

SHEET TITLE  
ELECTRICAL SPECIFICATIONS

|                   |                            |                  |
|-------------------|----------------------------|------------------|
| SCALE<br>AS SHOWN | PROJECT NO.<br>2008-095-02 | SHEET NO.<br>E-6 |
|-------------------|----------------------------|------------------|