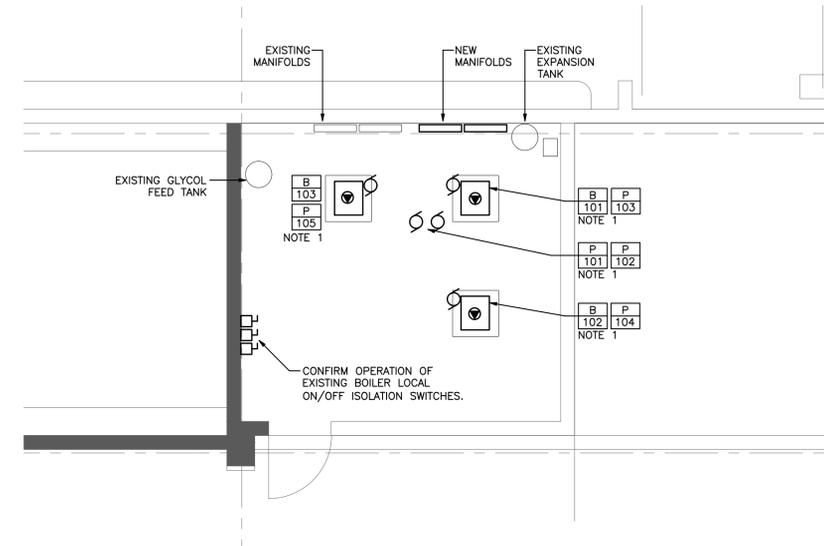


ELECTRICAL SPECIFICATIONS

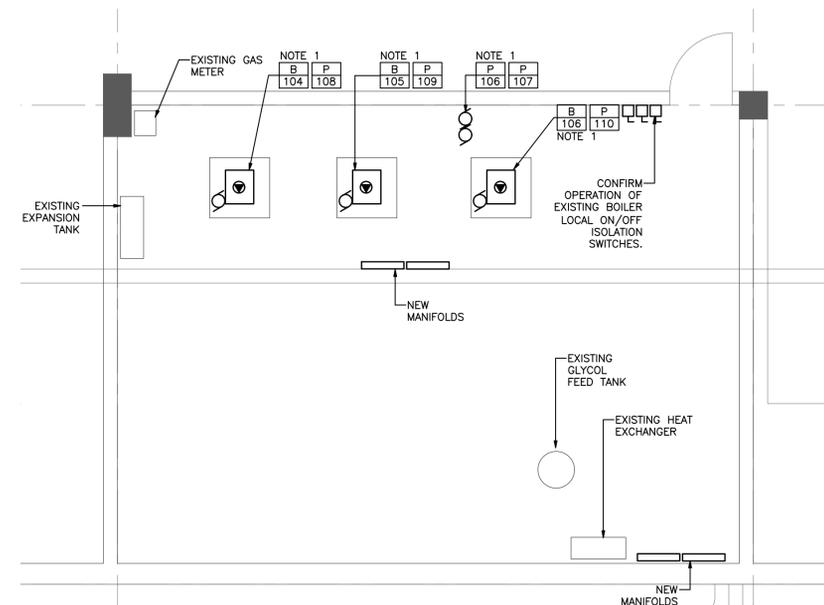
1. GENERAL CONDITIONS
- 1.1 ALL WORK SHALL BE IN ACCORDANCE WITH THE LATEST EDITION OF THE MANITOBA ELECTRICAL SAFETY CODE, THE LOCAL ELECTRICAL SAFETY AUTHORITY INSPECTION OFFICE, THE NATIONAL BUILDING CODE, THE NATIONAL FIRE CODE AND ANY OTHER LOCAL REGULATIONS HAVING JURISDICTION OVER THE WORK OF THIS TRADE.
- 1.2 BEFORE BID SUBMISSION, EXAMINE THE SITE AND ALL DRAWINGS AND SPECIFICATIONS OF ALL TRADES AND BE FAMILIAR WITH THE WORK OF THIS TRADE. NO EXTRAS WILL BE ALLOWED FOR THE FAILURE TO DO SO.
- 1.3 ALL ELECTRICAL WORK SHALL COMPLY WITH CSA ELECTRICAL BULLETIN APPLICABLE AT BID CLOSE. WHERE SPECIFIC BULLETINS ARE NOT NAMED THEY ARE STILL CONSIDERED AN INTEGRAL PART OF THIS SPECIFICATION.
- 1.4 PROVIDE ALL GROUNDING AND BONDING TO GROUND REQUIRED, REGARDLESS IF NOT SHOWN ON THE DRAWINGS. GROUNDING SHALL BE IN ACCORDANCE WITH THE REQUIREMENTS OF THE MANITOBA ELECTRICAL SAFETY CODE.
- 1.5 PROVIDE ALL NEW MATERIALS HAVING CSA, CUL, WARNOCK HERSEY OR OTHER APPROVAL AGENCY LABEL AND LISTING ALL WORKMANSHIP BY THIS TRADE SHALL BE FIRST CLASS, CONFORMING TO INDUSTRY STANDARD PRACTICES FOR SAFETY, ACCESSIBILITY, DURABILITY AND NEATNESS FOR ACCEPTANCE BY THE CITY'S REPRESENTATIVES.
- 1.6 ARRANGE AND PAY FOR ALL PERMITS AND INSPECTION FEES REQUIRED FOR THE WORK OF THIS TRADE. SUBMIT TO THE LOCAL ELECTRICAL INSPECTION DEPARTMENT AND/OR ELECTRICAL SUPPLY AUTHORITY ANY AND ALL DRAWINGS REQUIRED FOR PERMITS, FEES, APPROVALS, EXAMINATIONS AND SERVICES.
- 1.7 PROVIDE ALL CUTTING AND PATCHING REQUIRED FOR THE WORK OF THIS TRADE. ALL CUTTING AND PATCHING SHALL BE PERFORMED BY QUALIFIED TRADES PERSONS. INCLUDE ALL COSTS FOR CUTTING AND PATCHING RELATED TO THE WORK OF THIS TRADE IN THE BID PRICE.
- 1.8 TOUCH-UP ALL SHOP PAINTED EQUIPMENT DAMAGED IN TRANSIT OR DURING INSTALLATION TO MATCH ORIGINAL SHOP FINISH.
- 1.9 AVOID ACCUMULATION OF DEBRIS AS THE WORK PROGRESSES. ON COMPLETION OF THE CONSTRUCTION AND PRIOR TO THE FINAL INSPECTION AND ACCEPTANCE BY THE CITY, CLEAN UP AND REMOVE FROM THE SITE ALL SCRAP MATERIALS RESULTING FROM THE WORK OF THIS TRADE.
- 1.10 CO-ORDINATE THE WORK OF THIS TRADE WITH ALL OTHER TRADES ON THE JOB SO THAT THE WORK MAY PROGRESS WITHOUT ANY DELAY.
- 1.11 PRIOR TO THE FINAL INSPECTION, CLEAN ALL ELECTRICAL EQUIPMENT. CLEAN ALL CONSTRUCTION DUST AND DIRT FROM INSTALLED EQUIPMENT AT THE END OF THE JOB.
- 1.12 UPON COMPLETION OF THE WORK, PROVIDE THE FINAL UNCONDITIONAL CERTIFICATE OF ACCEPTANCE FROM THE LOCAL ELECTRICAL SAFETY AUTHORITY OFFICE.
- 1.13 PROVIDE A ONE YEAR GUARANTEE ON ALL MATERIALS, AND LABOUR FROM THE DATE OF ACCEPTANCE BY THE CITY. COMPLETE ALL WARRANTY REGISTRATION DOCUMENTATION ON BEHALF OF THE BUILDING THE CITY. SUBMIT COPIES OF COMPLETED DOCUMENTATION IN OPERATIONS AND MAINTENANCE MANUALS.
- 1.15 SUBMIT SHOP DRAWINGS IN ELECTRONIC PDF FORMAT FOR THE FOLLOWING EQUIPMENT: BREAKERS, FIRE ALARM DEVICES, EXIT AND EMERGENCY LIGHTING UNITS, ETC. THE SHOP DRAWINGS SHALL BEAR THE NAME OF THE MANUFACTURER, THE MANUFACTURER'S CATALOGUE NUMBER, AND THE CONTRACT ADMINISTRATOR'S DESIGNATION, ALONG WITH ALL PERTINENT INFORMATION PERTAINING TO THAT SPECIFIC PIECE OF EQUIPMENT.
- 1.16 ALL ELECTRICAL EQUIPMENT SHALL BE MOUNTED PLUMBED TRUE.
- 1.17 OBTAIN ONE SET OF PRINTS FOR AS-BUILT PURPOSES AND RECORD ON THESE PRINTS ALL CHANGES TO THE DESIGN DRAWINGS TO REFLECT THE ACTUAL CONSTRUCTION CONDITIONS, EQUIPMENT LOCATIONS AND EQUIPMENT SPECIFICATIONS. AT THE END OF CONSTRUCTION, AND PRIOR TO THE FINAL INSPECTION BY THE CONTRACT ADMINISTRATOR, TRANSFER AS-BUILT MARK-UPS TO AUTOCAD/REVIT AND SUBMIT AUTOCAD AND PDF FILES TO THE CONTRACT ADMINISTRATOR SUBMIT FOR REVIEW. SUBMIT FINAL CAD FILES OF THE AS-BUILT DRAWINGS ON CD/USB KEY. NO FINAL INSPECTION WILL BE PERFORMED UNTIL THESE DRAWINGS ARE SUBMITTED.
- 1.18 PREPARE [THREE SETS] OF OPERATIONS AND MAINTENANCE MANUALS FOR PRESENTATION TO THE CITY. PROVIDE COPIES OF ALL REVIEWED SHOP DRAWINGS FOR THE PROJECT, MANUFACTURER'S INSTALLATION INSTRUCTIONS, MANUFACTURER'S MAINTENANCE INSTRUCTIONS, AND COPIES OF ALL TEST DATA, VERIFICATION CERTIFICATES, MANUFACTURER'S WARRANTIES AND GUARANTEES, THE GUARANTEE OF THIS TRADE INDICATING START DATE AND END DATE AS WELL AS CONTRACT NUMBERS.
- 1.19 WHERE THE WORD PROVIDE IS USED IN THESE SPECIFICATIONS OR ON THE DRAWINGS, IT HAS THE MEANING "PROVIDE AND INSTALL COMPLETE WITH ALL ASSOCIATED MOUNTING HARDWARE AND CONNECTIONS".
2. CONDUCTORS AND RACEWAYS
- 2.1 USE TW75 OR RW90 COPPER CONDUCTORS CSA APPROVED FOR THE APPLICATION. SIZE THE CONDUCTORS SO THAT THE MAXIMUM BRANCH CIRCUIT VOLTAGE DROP DOES NOT EXCEED 3%. MINIMUM CONDUCTOR SIZE IS #12 AWG UNLESS OTHERWISE INDICATED.
- 2.2 DESIGN IS BASED ON COPPER CONDUCTORS EXCEPT WHERE SHOWN ON THE DRAWINGS.
- 2.4 ALL CONDUCTORS ARE TO BE INSTALLED IN RACEWAYS AS DESCRIBED BELOW:

- (A) INTERIOR SURFACE RACEWAYS, BRANCH CIRCUIT WIRING FROM PANELS, CONCEALED IN ACCESSIBLE CEILINGS AND INTERIOR WALLS OR IN INTERIOR CONCRETE BLOCK CONSTRUCTION: EMT RACEWAYS
- (B) IN WOOD STUD CONSTRUCTION: NMD-7 COPPER CONDUCTORS ARE PERMITTED FOR BRANCH CIRCUIT WIRING AS DIRECTED BY THE ENGINEER.
- 2.6 ALL CONDUIT AND WIRING IS TO BE CONCEALED IN ALL FINISHED AREAS.
3. DEVICES
- 3.1 EQUIPMENT ISOLATING DISCONNECTS: SIZE DISCONNECTING DEVICES FOR THE CURRENT CARRYING CAPACITIES OF THE EQUIPMENT TO BE ISOLATED. PROVIDE NUMBER OF ISOLATING POLES AS REQUIRED BY EQUIPMENT TO BE ISOLATED. TYPE OF ENCLOSURE AS INDICATED BELOW:
.1 DUST FREE OR STANDARD - EEMAC TYPE 1.
.2 OUTDOOR OR DAMP LOCATION - EEMAC TYPE 3R.
MANUFACTURERS: CUTTLER HAMMER - EATON, SCHNEIDER CANADA, SIEMENS
- 3.12 ALL DEVICES OF THE SAME TYPE, SIZE AND RATING ARE TO BE OF THE SAME MANUFACTURER THROUGHOUT THE PROJECT.
26. WIRING FOR OTHER TRADES
- 26.1 PROVIDE POWER WIRING FOR ELECTRICALLY OPERATED EQUIPMENT OF OTHER TRADES AS NOTED ON THE DRAWINGS OR DEFINED IN THIS SPECIFICATION. PROVIDE ALL STARTERS AND DISCONNECT SWITCHES FOR A COMPLETE AND OPERATING SYSTEM.
- 26.2 PROVIDE POWER AND WIRING TO THE ELECTRICALLY OPERATED EQUIPMENT AS DETAILED BELOW. THIS LIST DOES NOT DETAIL THE SCOPE OF WORK FOR EACH PIECE OF EQUIPMENT. CO-ORDINATE WITH DIVISION 15 FOR THE EXACT POWER REQUIREMENTS OF THE EQUIPMENT TO BE SUPPLIED TO THE PROJECT. DO NOT PROCEED WITH THE INSTALLATION OF ANY OF THE ELECTRICAL ROUGH-IN UNTIL THE POWER SUPPLY REQUIREMENTS AND THE POINTS OF CONNECTION HAVE BEEN ESTABLISHED FROM THE SHOP DRAWINGS FOR THE EQUIPMENT OF DIVISION 15.
- PUMPS
BOILERS
- 26.3 PROVIDE POWER WIRING TO ALL CONTROL DEVICES SUPPLIED BY DIVISION 15 AND OPERATING AT 100 VAC OR GREATER.
- 26.4 PROVIDE CONTROL WIRING FOR ALL CONTROL DEVICES WITH OPERATING VOLTAGES OF THE CONTROLS GREATER THAN 100VAC.
- 26.5 PROVIDE RACEWAYS/CONDUITS FOR ALL CONTROL WIRING AS IDENTIFIED ON THE DRAWINGS FOR USE BY DIVISION 15. PROVIDE OUTLET BOXES AS DIRECTED BY DIVISION 15 FOR ALL TERMINAL POINTS IN THE CONTROL SYSTEM. CO-ORDINATE WITH DIVISION 15.
27. RENOVATIONS ON EXISTING BUILDING
- 27.1 RENOVATIONS SHALL BE MADE ON THE EXISTING BUILDING AS INDICATED ON THE DRAWINGS AND SPECIFIED HEREIN. MAINTAIN ALL EXISTING LUMINARIES, OUTLET BOXES, SWITCHES, RECEPTACLES, ETC. IN RENOVATED AREAS UNLESS OTHERWISE NOTED. ALL EQUIPMENT REMOVED AND NOT REUSED SHALL REMAIN THE PROPERTY OF THE CITY UNLESS SPECIFICALLY NOTED OTHERWISE. ALL EQUIPMENT INSTALLED IN RENOVATED AREAS SHALL BE NEW. ELECTRICAL TRADE WILL BE RESPONSIBLE FOR ALL CUTTING AND PATCHING REQUIRED FOR ELECTRICAL INSTALLATION. ALL CONDUIT SHALL BE INSTALLED CONCEALED IN FINISHED AREAS UNLESS SPECIFICALLY NOTED OTHERWISE.
- 27.2 NEW CONDUCTORS SHALL BE INSTALLED TO THE NEAREST OUTLET AS REQUIRED FOR EQUIPMENT THAT IS RELOCATED. INSTALLATION OF JUNCTION BOXES FOR SPLICING PURPOSES SHALL NOT BE PERMITTED UNLESS SPECIFICALLY CALLED FOR.
- 27.3 PROVIDE ALL CONDUCTORS REQUIRED TO RECONNECT EXISTING CIRCUITS WHERE REQUIRED THAT MAY BE DISRUPTED DUE TO RENOVATIONS ON THE EXISTING FLOOR.
- 27.4 PROVIDE NEW BREAKERS WHERE REQUIRED IN EXISTING PANELS TO PICK-UP ADDITIONAL CIRCUITS INDICATED ON THE DRAWINGS.
- 27.5 ALL EXISTING LUMINARIES THAT ARE RELOCATED SHALL BE REMOVED, CHECKED, SERVICED, CLEANED, AND RE-LAMPED PRIOR TO RE-INSTALLATION. ALL UNITS NOT REUSED SHALL BE TURNED OVER TO THE CITY, COMPLETE WITH LAMPS.
- 27.6 COORDINATE WITH MECHANICAL DRAWINGS AND SAFELY DISCONNECT AND REMOVE ALL MOTOR/MECHANICAL EQUIPMENT BEING DEMOLISHED. REMOVE UNUSED WIRING/CONNECTION BACK TO SOURCE PANEL. EXTEND WIRING/CONNECTION OF ALL MOTOR/MECHANICAL EQUIPMENT BEING RELOCATED. PROVIDE PROPER JUNCTION BOX AT EACH POINT OF EXTENSION.



SMITH ST. BOILER ROOM

SCALE: 1/4" = 1'-0"



DONALD ST. BOILER ROOM

SCALE: 1/4" = 1'-0"

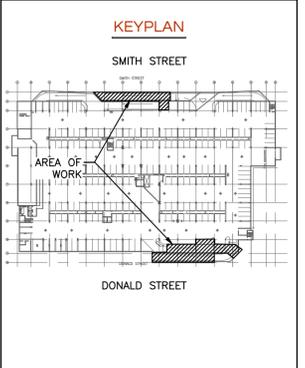
ELECTRICAL DEMOLITION NOTES:

1. DISCONNECT POWER SUPPLY TO EXISTING MECHANICAL EQUIPMENT (BOILERS, PUMPS, AND CONTROLS). MARK CIRCUITS FOR RECONNECTION TO NEW EQUIPMENT.
2. UPDATE EACH PANEL DIRECTORY WITH NEW EQUIPMENT DESIGNATION.
3. PROVIDE 120V/15A POWER TO NEW SNOW MELT CONTROLLER IN EACH BOILER ROOM. LOCATE PANEL ON SITE WITH MECHANICAL TRADE.
4. EXISTING LIGHTING F/A AND SECURITY TO REMAIN.

ELECTRICAL DESIGN NOTES:

5. RECONNECT EXISTING CIRCUITS TO NEW MECHANICAL DEVICE. MODIFY AND EXTEND WIRING AND CONDUIT AS REQUIRED. COORDINATE EXACT LOCATION OF MECHANICAL EQUIPMENT ON SITE AND WITH MECHANICAL TRADE.

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REVISIONS

NO.	REVISIONS	DATE	BY
00	ISSUED FOR CLIENT REVIEW	17.10.11	IOH
01	ISSUED FOR BID SUBMISSION	18.02.27	IOH
02	REVISED FOR BID SUBMISSION	18.04.06	IOH

NORTH

PROFESSIONAL ENGINEER
S. G.
HALL
18.04.06
MEMBER
37420

DESIGN	IOH	DRAWN	IOH
CHECKED	RAS	REVIEWED	SGH

PROJECT

MILLENNIUM LIBRARY
SNOW MELT DESIGN

ADDRESS

251 DONALD STREET
WINNIPEG MANITOBA

PROJECT NO.

CE-3749

DRAWING TITLE

ELECTRICAL LAYOUT
AND
SPECIFICATION

DRAWING NUMBER

E1 OF 1