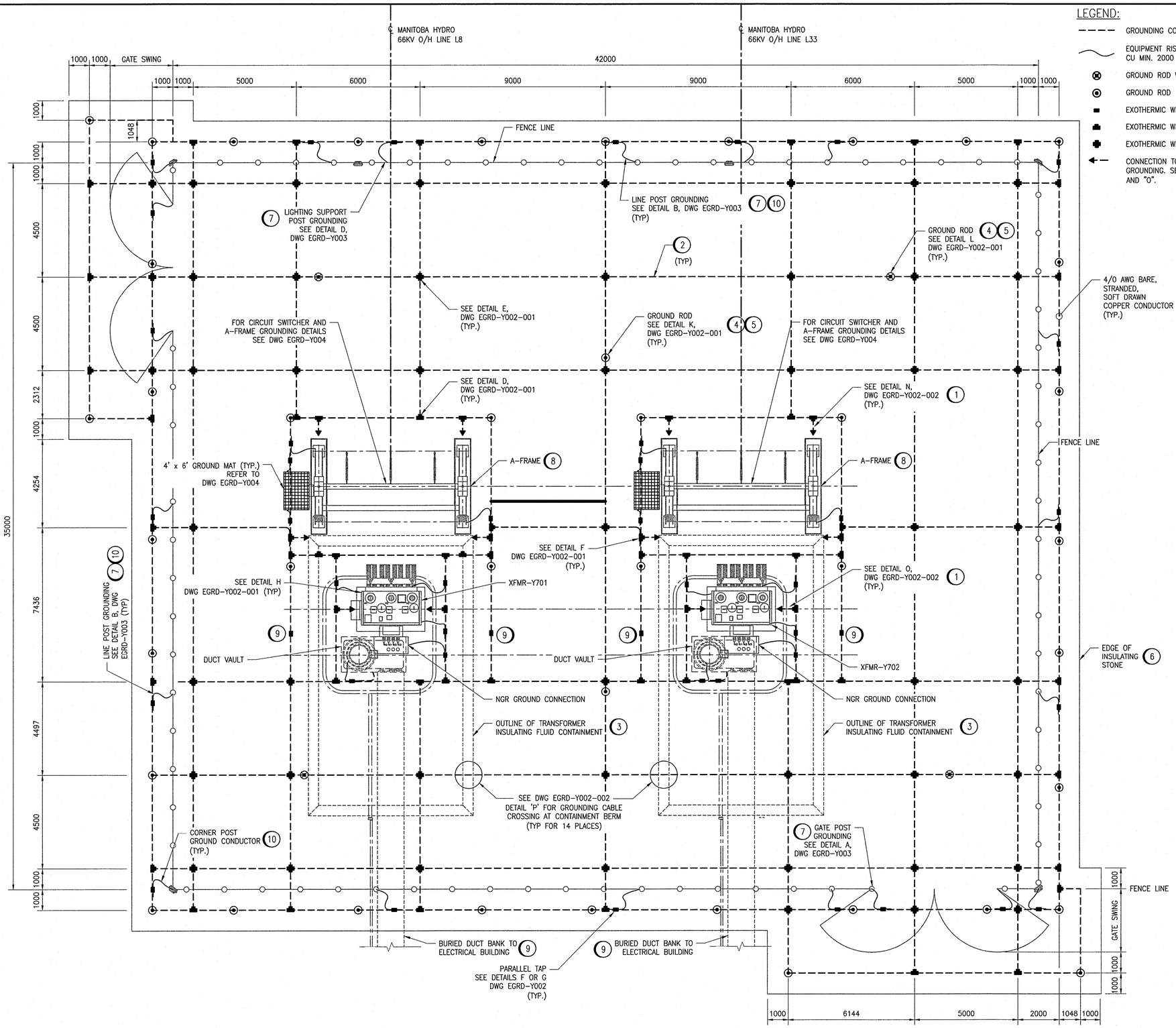
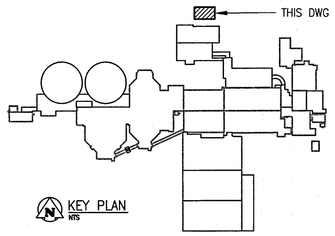
A1 SIZE – 594mm x 841mm



LEGEND:

- GROUNDING CONDUCTOR
- EQUIPMENT RISER CONDUCTOR 4/0 SOFT DRAWN CU MIN. 2000 LG.
- GROUND ROD WITH GROUND WELL
- GROUND ROD
- EXOTHERMIC WELD TAP CONNECTION
- EXOTHERMIC WELD TEE CONNECTION
- EXOTHERMIC WELD CROSS CONNECTION
- CONNECTION TO FOUNDATION REBAR ANG STEEL GROUNDING. SEE EGRD-Y002-002 DETAILS "N" AND "O".



GENERAL NOTES:

1. CONNECTIONS TO SYSTEM GROUND ELECTRODES SHALL BE THERMOWELD IN ACCORDANCE WITH CEC 10-806.
2. PERIMETER BURIED GROUND WIRING SHALL BE LAID IN UNDISTURBED NATIVE SOIL OR MECHANICALLY COMPACTED SOIL. GROUND RODS SHALL BE INSTALLED IN UNDISTURBED NATIVE SOIL OR MECHANICALLY COMPACTED SOIL.
3. ALL GROUND CABLES AND CONNECTIONS SHALL BE 4/0 AWG COPPER UNLESS NOTED OTHERWISE.
4. ALL SURFACE RUN CABLING SHALL BE PHYSICALLY PROTECTED BY DIRECT BURIAL OR BY SURFACE RUN CONDUIT. EXPOSED GROUND CABLES ARE NOT ACCEPTABLE.
5. DEPTH OF GRID TO BE 300 BELOW FINISHED GRADE.
6. NO GROUND ROD OR GROUND CONDUCTOR SHALL PENETRATE THE CONTAINMENT MEMBRANE.
7. ALL ELECTRICAL ENCLOSURES, EQUIPMENT, TRANSFORMERS, ETC. SHALL BE BONDED TO THE GROUND GRID.
8. FOR GROUND GRID CONNECTION DETAILS, BOM AND STANDARDS, REFER TO DRAWING EGRD-Y002.
9. ALL BELOW GRADE COPPER TO COPPER CONNECTIONS SHALL BE EXOTHERMICALLY WELDED ONLY (COMPRESSION CONNECTIONS NOT ACCEPTABLE).
10. ALL COPPER TO STEEL CONNECTIONS SHALL BE EXOTHERMICALLY WELDED ONLY.
11. ALL CONNECTIONS MUST BE IEEE 80.2000 APPROVED AND MEET THE REQUIREMENTS OF IEEE 837-2002.
12. ALL VOLTAGE GRADIENT GROUND CONDUCTORS SURROUNDING THE PERIMETER FENCE, TRANSFORMER TANK, A-FRAME, GATE SWING ETC. SHALL BE INSTALLED APPROXIMATELY 1000MM AWAY FROM THE STRUCTURES, PERIMETER & EQUIPMENT.
13. THE EQUIPMENT LAYOUTS, DETAILS, WIRING, AND DIMENSIONS DEPICTED ON THESE DRAWINGS ARE BASED UPON SPECIFIC EQUIPMENT TYPES AND MANUFACTURERS THAT ARE DEFINED ON THE DRAWINGS AND IN THE SPECIFICATIONS. USE OF ALTERNATIVE EQUIPMENT OTHER THAN THE "STANDARD OF ACCEPTANCE" DEFINED IS PERMITTED. HOWEVER, USE OF ALTERNATIVE EQUIPMENT BY THE CONTRACTOR IS SUBJECT TO THE CONTRACTOR HAVING RECEIVED FORMAL "APPROVED EQUAL" STATUS FOR THE EQUIPMENT IN QUESTION FROM THE CONTRACT ADMINISTRATOR. THE PROCESS REQUIRED TO OBTAIN FORMAL "APPROVED EQUAL" STATUS IS DEFINED AND DETAILED IN THE SPECIFICATIONS.
14. ANY CHANGES TO LAYOUTS, DETAILS, WIRING AND DIMENSIONS INCLUDING ALL ASSOCIATED COSTS ARISING FROM THE USE OF "APPROVED EQUAL" MATERIALS AND EQUIPMENT WILL BE THE SOLE RESPONSIBILITY OF THE CONTRACTOR. USE OF "APPROVED EQUAL" EQUIPMENT SHALL RESULT IN A FULLY FUNCTIONAL INSTALLATION IN ACCORDANCE WITH THE REQUIREMENTS AND INTENT OF THE DESIGN DOCUMENTS.
15. DESIGN CHANGES NECESSITATED BY THE USE OF "APPROVED EQUAL" MATERIALS OR EQUIPMENT SHALL BE DETAILED BY THE CONTRACTOR VIA THE SHOP DRAWING SUBMITTAL PROCESS AS DESCRIBED IN THE SPECIFICATIONS AND CONSTRUCTION DOCUMENTS. ALL SUCH DRAWINGS SHALL BE PREPARED UNDER THE SUPERVISION OF A PROFESSIONAL ENGINEER REGISTERED OR LICENSED IN THE PROVINCE OF MANITOBA AND SHALL BE SEALED BY THE SAME ENGINEER.

SPECIFIC NOTES:

1. CONNECTIONS TO THE FOUNDATIONS AND THE STEEL IN THE PILES MUST BE MADE BEFORE CONCRETE IS POURED. SEE DRAWING EGRD-Y002-002.
2. THE GROUND GRID OUTSIDE THE OIL CONTAINMENT AREA SHALL BE INSTALLED APPROXIMATELY 450 BELOW THE FINISHED GRADE. THE GROUND GRID SHALL BE TRENCHED INTO THE COMPACTED FILL MATERIAL BEFORE THE INSTALLATION OF THE SURFACE COVERING CRUSHED STONE. ONCE THE GROUND SYSTEM IS INSTALLED, THE TRENCH SHALL BE BACKFILLED AND COMPACTED.
3. THE TRANSFORMER LOOP CONDUCTOR AND BONDING RISERS SHALL NOT PENETRATE THE CONTAINMENT AREA. THE GROUND GRID CONDUCTORS SHALL BE INSTALLED DURING THE CONSTRUCTION OF THE TRANSFORMER OIL CONTAINMENT AND MUST BE COORDINATED WITH THE CONTAINMENT CONTRACTOR.
4. ALL GROUND RODS SHALL BE COPPERWELD, 6000mm LONG, (2 X 3000mm LONG SECTIONS JOINED TOGETHER BY A COUPLER), AND 19mmø. THE TOP OF THE GROUND RODS SHALL BE AT THE SAME LEVEL AS THE HORIZONTAL GROUND GRID. SEE DRAWING EGRD-Y002.
5. THE CONDUCTOR CONNECTING THE GROUND ROD TO THE GROUND GRID SHALL HAVE SUFFICIENT SLACK TO ALLOW FOR SHIFTING IN FROZEN SOIL CONDITIONS.
6. A SURFACE LAYER OF INSULATING STONE SHALL BE INSTALLED THROUGHOUT THE SUBSTATION. REFER TO DRAWING 1-0102-SGAD-Y001-001 FOR DETAILED SPECIFICATIONS FOR THE INSULATING STONE.
7. REFER TO DRAWING 1-0102-SFNC-Y001 FOR FENCE CONSTRUCTION DETAILS.
8. FOR THE A-FRAME BONDING DETAILS, SEE DRAWING EGRD-Y004.
9. CONNECTION LOCATIONS FOR CABLES C-Y701-2 (2x4/0 GREEN RW90) AND C-Y702-2 (2x4/0 GREEN RW90). SEE ALSO EGAD-Y003 FOR FURTHER DETAILS.
10. THE FENCE SHALL BE BONDED TO THE GROUND GRID AT EVERY CORNER POST, GATE POST, AND AT INTERVALS NOT EXCEEDING 12000 ALONG THE FENCE LENGTH. SEE DRAWING EGRD-Y003-001 FOR FENCE GROUNDING DETAILS.

1:100

APEGM Certificate of Authorization SNC-Lavalin Inc. No. 4489

REFERENCE DRAWINGS	DESCRIPTION
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NO.	REVISIONS	DATE	DESIGN	CHECK
00	ISSUED FOR CONSTRUCTION – 976-2016	2017/04/05	CWB	CWB

CH2MHILL. SNC·LAVALIN KGS GROUP

DESIGNED BY: D. BUTTERWORTH	CHECKED BY: C. WEISS-BUNDY
DRAWN BY: J. GRAGASIN	APPROVED BY: E. RYCZKOWSKI
SCALE: 1:100	ISSUED FOR CONSTRUCTION BY: J. SHUMKA
DATE: 2016/01/29	DATE: 2017/04/05
CONSULTANT NO.: 474248	

ENGINEER'S SEAL: PROVINCE OF MANITOBA, C.L. WEISS-BUNDY Member 5001, REGISTERED PROFESSIONAL ENGINEER, 2017/04/05

Winnipeg — THE CITY OF WINNIPEG, WATER AND WASTE DEPARTMENT

SOUTH END WATER POLLUTION CONTROL CENTRE
SEWPCC UPGRADING/EXPANSION PROJECT
ELECTRICAL – GROUNDING LAYOUT
66 kV SUBSTATION
GENERAL ARRANGEMENT

CITY DRAWING NUMBER	SHEET	REV.	SIZE
1-0102-EGRD-Y001	001	00	A1

LAST SAVE: 2017/03/30 – 10:16am
PATH: P:\y AREA DRAWINGS\1-0102-EGRD-Y001.dwg

PLOT DATE: Mar 30, 2017 – 10:16am

FILE NAME:1-0102-EGRD-Y001.dwg