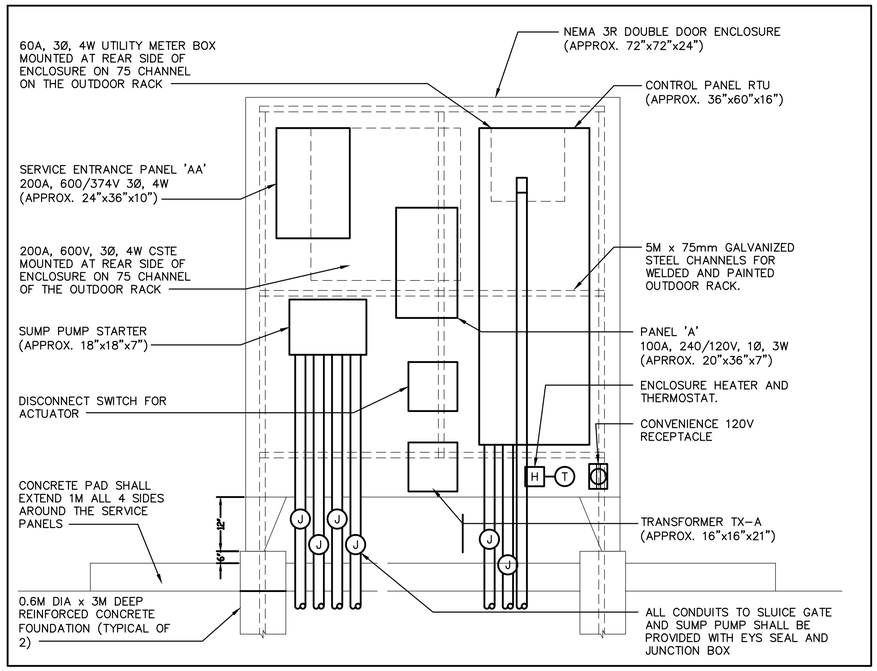
ELECTRICAL LEGEND	
SYMBOL	DISCRIPTION
$	SWITCH
	WALL MOUNTED LIGHT FIXTURE
	LIGHT FIXTURE
	FLUORESCENT FIXTURE
	SURFACE MOUNTED PANEL
	MOTOR
	DUPLEX RECEPTACLE
	POWER RECEPTACLE
	CONTROLLER
	DISCONNECTED SWITCH – FS
M	UTILITIES METERING
$M	MANUAL STARTER
	GROUND ROD



1 / E–1 SERVICE PANEL ELEVATION DETAIL
N.T.S.

ELECTRICAL & INSTRUMENTATION GENERAL NOTES

1. GENERAL
1.1 ALL WORK SHALL CONIFORM TO ESA AND LOCAL ORDINANCES HAVING JURISDICTION
1.2 OBTAIN ELECTRICAL PERMIT AND PAY ALL FEES LEVIED.
1.3 PROVIDE CERTIFICATION AT COMPLETION OF WORK.
1.4 ALL EQUIPMENT SHALL BE NEW AND BEAR CSA APPROVAL STICKER UNLESS NOTED OTHERWISE.
1.5 EXAMINE THE SITE THOROUGHLY FOR SERVICE POINT LOCATIONS.
1.6 CARRY OUT THE WORK IN ACCORDANCE WITH DRAWINGS, SPECIFICATIONS AND CONTRACTOR REQUIREMENTS
1.7 COMPLY WITH REGULATIONS AND REQUIREMENTS OF LOCAL INSPECTION AUTHORITY HAVING JURISDICTION.
1.8 COORDINATE THE WORK WITH ALL TRADES. KEEP CLEAR OFF ALL MECHANICAL, ARCHITECTURAL AND STRUCTURAL FEATURES.
1.8 REFER TO OTHER DESIGN DISCIPLINE DRAWINGS AND VERIFY ALL DIMENSIONS PRIOR TO INSTALLATION.
1.9 CONFIRM EXACT LOCATION OF ELECTRICAL EQUIPMENT AND REPORT ANY CONFLICT TO CONTRACT ADMINISTRATOR
1.10 PROVIDE SHOP DWGS OF ALL ELECTRICAL AND INSTRUMENTATION PRODUCTS FOR REVIEW BY CONTRACT ADMINISTRATOR.
1.11 THERE ARE EXISTING ELECTRICAL SERVICES AT THE PUMPING STATION, WW TREATMENT PLANT AND LAGOON SITES. THE SERVICES SHALL BE LOCATED AND PROTECTED, AS THEY WILL CONTINUE TO BE USED DURING INTERIM OPERATION OF THE PUMPING STATION.

2. SCOPE OF WORK
2.1 PROVIDE ALL LABOUR, MATERIAL AND TOOLS REQUIRED TO COMPLETE ELECTRICAL WORKS AS STATED HERE IN THE SPECIFICATION AND SHOWN ON THE DRAWINGS.
2.2 GENERALLY, THE EXTENT OF WORK SHALL INCLUDE BUT NOT BE LIMITED TO THE FOLLOWING:
a. THE PUMP CONTROLLER PC AND ACTUATOR CONTROLLER AC (CONTROL PANELS) WILL BE SUPPLIED WITH STARTERS, OVERLOADS, CONTROL RELAYS, PILOT SWITCHES, ETC BY MANUFACTURERS. ARRANGE WITH THE MANUFACTURERS TO PROVIDE SHOP DWG'S AND FAT RESULTS.
b. THE CONTRACTOR SHALL OBTAIN THE PC AND AC CPs.
c. INSTALL PC IN POWER & CONTROL PANEL (P&C P).
d. PROVIDE P&C PANEL C/W INTERIOR LIGHTING, HEATER/ THERMOSTAT, POWER PANELS, LV TRANSFORMER, RTU SYSTEM, ETC AS INDICATED.
e. PROVIDE AT THE BACK OF P&C PANEL 200A CSTE AND HYDRO METER & SOCKET.
f. PROVIDE OUTDOOR RACK FOR MOUNTING P&C P&C PANEL, 200A CSTE AND HYDRO METER ON CONCRETE PAD..
g. PROVIDE ALL POWER AND CONTROL WIRING IN P&C PANEL, BETWEEN P&C P AND ACTUATOR CHAMBER AND PUMP CHAMBER AND HYDRO Tx..
h. PROVIDE GROUNDING TO OESC AND ESA REQUIREMENTS.
2.3 COORDINATE, MAKE ARRANGEMENTS AND PROVIDE DISCONNECT SWITCH IN THE COOKSTOWN MALL SUBSTATION SWITCHBOARD TO FEED WTP AND WPS VIA WTP.

3. WIRING SYSTEM
3.1 ALL WIRING SHALL BE:
a. WIRES IN RIGID CONDUITS THROUGHOUT.
b. RGS CONDUITS WITH EYS SEALS, POWER AND/OR CONTROL WIRES FOR WIRING IN HAZARDOUS AREAS AND AREAS SUBJECT TO MECHANICAL DAMAGE SUACH AS ABOVE GROUND.
c. EMT CONDUITS WITH RAINTIGHT FITTINGS, POWER AND/OR CONTROL WIRES FOR WIRING IN P&C PANEL.

3.2 UNDERGROUND (UG) PORTION OF THE WIRING MAY BE PVC CONDUITS.
3.3 THE PUMP AND ACTUATOR SUPPLIER MAY PROVIDE SEALED POWER AND CONTROL CABLES THE CONTRACTOR SHALL. VERIFY AND INSTALL THESE AND REMAINING CABLES W/O ANY SPLICE IN CONDUITS AS REQUIRED.
3.4 RUN CABLES AND/ OR WIRES IN CONDUIT FOR INCOMING SERVICES, POWER AND CONTROL SERVICES, ETC CONCRETE ENCASED IN VEHICULAR AREAS AND DIRECTLY BURIED ELSEWHERE.
3.5 WHERE THERE IS VEHICULAR AREAS, THE UG WIRING SHALL BE INSTALLED IN CONCRETE ENCASED SLEEVES.
3.6 PROVIDE ALL SUPPORTS AND MOUNTING HARDWARE FOR WIRING AND EQUIPMENT TO GENERAL AND STANDARD PRACTICES.
3.7 ALL UG WIRES IN CONDUIT SHALL BE COPPER, SIZE AS INDICATED WITH RWU90 XLPE INSULATION AND COLOUR–CODED TO MATCH PHASES.
3.8 RW90 XLPE WIRES IN CONDUIT WILL BE ACCEPTED ONLY IN AG APPLICATION.
3.9 PROVIDE A SEPARATE GREEN INSULATED GROUND WIRE IN EVERY RACEWAY.
3.10 FOR CLARITY, THE SKETCHES DO NOT SHOW ANY WIRING AND THOSE SHOWN ARE DIAGRAMMATIC ONLY.
3.11 RUN WIRING IN PARALLEL OR PERPENDICULAR TO BUILDING AXIS.

4. INCOMING POWER SERVICE
4.1 PROVIDE 200A, 3P, 600V CSPE IN OUTDOOR SERVICE ENTRANCE TYPE ENCLOSURE AS MANUFACTURED BY ECH OR PRAIRIE.
4.2 PROVIDE 60A, 600V ELECTRIC METER AND SOCKET TO MANITOBA HYDRO STANDARDS.
4.3 PAY, COORDINATE AND ARRANGE WITH MANITOBA HYDRO FOR 600VAC SERVICE TO THE SITE.

5. POWER & CONTROL PANEL
5.1 THE P&C PANEL SHALL BE MAD FROM CODE GAUGE STAINLESS STEEL SHEETS WITH STIFFENERS, DOUBLE LEAF LOCKABLE DOORS.
5.2 THE P&C PANEL SHALL BE SIZED WITH ALL EQUIPMENT AS INDICATED + 20% SPARE CAPACITY. PROVIDE SHOP DWGS FOR REVIEW.

6. POWER PANELS
6.1 PROVIDE 600VAC PANEL WITH RATING AS INDICATED..
6.2 PROVIDE 240VAC PANEL WITH RATING AS INDICATED.
6.3 ALL PANELS SHALL BE FULLY RATED C/W MOLDED CASE BOLT–ON BREAKERS, COPPER BUS, NEUTRAL BAR AND GROUND LUG IN SURFACE MOUNTED, FULLY ENCLOSED CSA 1 ENCLOSURE WITH HINGED COVER AND DIRECTORY.

7. TRANSFORMER
7.1 PROVIDE LOW VOLTAGE TRANSFORMER WITH RESIN ENCAPSULATED WINDINGS AND RATING AS INDICATED IN CSA 1 ENCLOSURE TO BE MOUNTED INSIDE P&C PANEL AS INDICATED.

8. LEVEL FLOAT SWITCHES AND ISB RELAYS
8.1 PROVIDE LEVEL FLOATS WITH CABLES, JB, MOUNTING RAIL, ETC MANUFACTURED BY MILLTRONICS.
8.2 THE MECHANICAL TRADE WILL PROVIDE THE SPECIFIED FLOAT SWITCHES IN CHAMBERS.
8.3 PROVIDE INTRINSICALLY SAFE BARRIER RELAYS AS INDICATED.
8.4 IPROVIDE WIRNG FOR FLOATS IN PUMP AND ACTUATOR CHAMBERS AND ISB RELAYS IN DEDICATED JB INSIDE P&C PANEL AS INDICATED.

9. REMOTE TERMINAL UNIT
9.1 PROVIDE RTU PLC, QUICK PANEL VIEW, WIRELESS MODEM, ETHERNET SWITCH, FIBER PATCH PANEL, MULTINET, ETC AS INDICATED.
9.2 THE ELECTRICAL TRADE WILL COORDINATE SHOP DWG'S AND FAT OF AND INFORM THE OWNER OF THE SCHEDULE.
9.3 PROVIDE ALL CONTROL WIRING AND MAKE CONNECTIONS.

10. LIGHTING AND HEATER
10.1 PROVIDE LIGHTING, HEATER AND RELATED CONTROLS INSIDE P&C PANEL AND CHAMBERS AS INDICATED.
10.1 PROVIDE 70W, 120VAC HPS XP LIGHTING IN CHAMBERS WITH DOME, GLOBE, GUARD, LAMP AND BALLAST AS MANUFACTURED BY CH/ AT.
10.1 PROVIDE 26W, 120VAC, TUBE TYPE LED LIGHTING IN RTU PANEL AND P&C PANEL AS MANUFACTURED BY OMNILUMEN/ HUBBELL.

11. GROUNDING
11.1 PROVIDE A SEPARATE AND CONTINUOUS GROUND WIRE SYSTEM THROUGHOUT.
11.2 BOND ALL NON–CURRENT CARRYING EQUIPMENT ADEQUATELY TO SATISFACTION OF INSPECTION AUTHORITY AND MANUFACTURER.
11.3 PROVIDE 3 x 20mm x 3M GROUND RODS OUTSIDE P&C PANEL AND INTERCONNECTING GROUND WIRE.

12. AS BUILT
12.1 RECORD ACCURATELY ALL AS–BUILT REVISIONS TO ELECTRICAL SYSTEMS AS JOB PROGRESS.
12.2 HAND OVER A SET TO CONTRACTOR AT THE COMPLETION OF PROJECT.

13. COMMISSIONING AND HANDOVER
13.1 IDENTIFY ALL EQUIPMENT USING LAMICOID NAMEPLATE WITH NAME, NUMBER, VOLTAGE, AMPS, SOURCE (FED FROM), ETC
13.2 AT THE END OF THE CONSTRUCTION AND IN COOPERATION WITH THE MECHANICAL TRADE, COMMISSION THE TREATMENT PLANT IN ACCORDANCE WITH SPEC#1500 AND AS FOLLOWS:
a. JOG EVERY EQUIPMENT THAT HAS MOTOR, ONE AT A TIME, FOR CORRECT ROTATION AND OPERATION.
b. START–UP THE PUMP AND ACTUATOR MANUALLY FROM FROM THE CONTROLLERS AND RTU; ENSURE THAT THEY OPERATE PER MANUFACTURER'S REQUIREMENTS.
c. SIMULATE THE OPERATION OF LEVEL FLOATS AND CHECK IF THE PUMPS START CORRECTLY.
d. SIMULATE THE OPERATION OF CONTROLLING DEVICE AND CHECK IF THEY SEND/ RECEIVE SIGNALS SATISFACTORY.
e. ENSURE THAT REMOTE ALARMS AND STATUS ARE WELL RECEIVED AT THE RTU AND AT REMOTE LOCATION.
f. FINALLY STARTUP THE ENTIRE ELECTRICAL AND INSTRUMENTAION SYSTEMS.
13.3 CLEAN THE AREA AND REMOVE DEBRIS OFF SITE.

APEGM
Certificate of Authorization
MMM Group Limited
No. 4531 Date: 13.01.04

No.	REVISIONS	DATE	BY
B	ISUUED FOR TENDER	13 11 12	DC
A	ISSUED FOR CLIENT REVIEW	13 11 04	DC

MMM GROUP
MMM Group Limited
Suite 111 - 93 Lombard Ave.
Winnipeg, MB R3B 3B1
t. 204.943.3178 | f. 204.943.4948
www.mmm.ca

DESIGNED BY	M.P.	CHECKED BY	D.C.
DRAWN BY	R.D.	APPROVED BY	K.H.
HOR. SCALE	AS NOTED	RELEASED FOR CONSTRUCTION	
VERT. SCALE	AS NOTED		
DATE	13.10.16	DATE	13.10.16

ENGINEER'S SEAL
PROVINCE OF MANITOBA
K. HUSKOVIC
Member
35257
REGISTERED PROFESSIONAL ENGINEER

BID OPPORTUNITY: 912-2013
PLOT DATE: 13.10.16

Winnipeg
THE CITY OF WINNIPEG
WASTE AND WATER DEPARTMENT

OUTFALL GATE CHAMBER UPGRADES
McDERMOT
SRS OUTFALL GATE CHAMBER
ELECTRICAL SYMBOL LEGEND AND GENERAL NOTES

CONSULTANT DRAWING No.: E1
SHEET 10 OF 22
CITY DRAWING No.: LD-7255

Plotted: November 12, 2013 at 3:40:06 PM | Last Saved By: GotP
File: O:\13055\3198-000 McDermot Ave Outfall Gate Chamber\40 - electrical\Sheets\E1.dwg | Layout: Site Plan