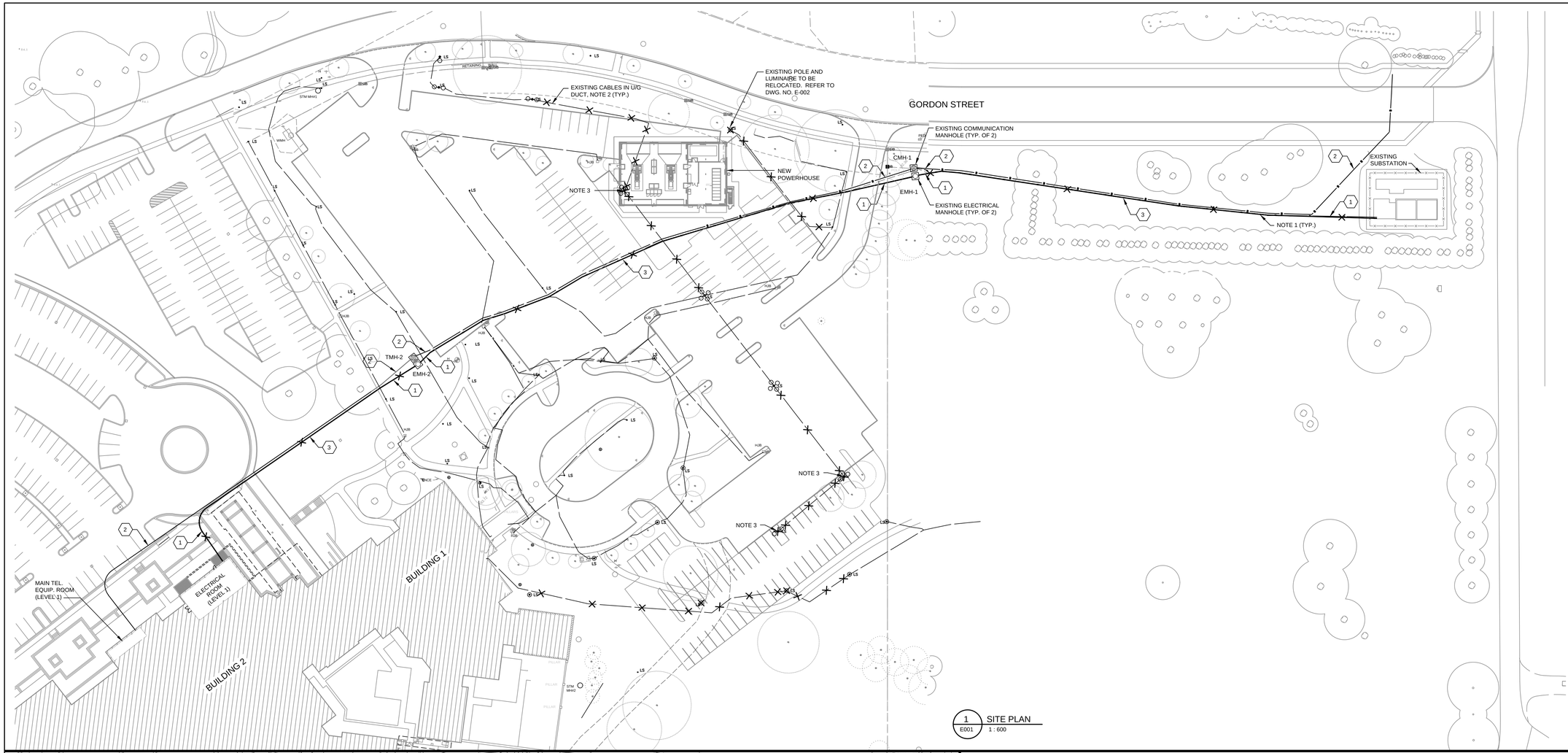

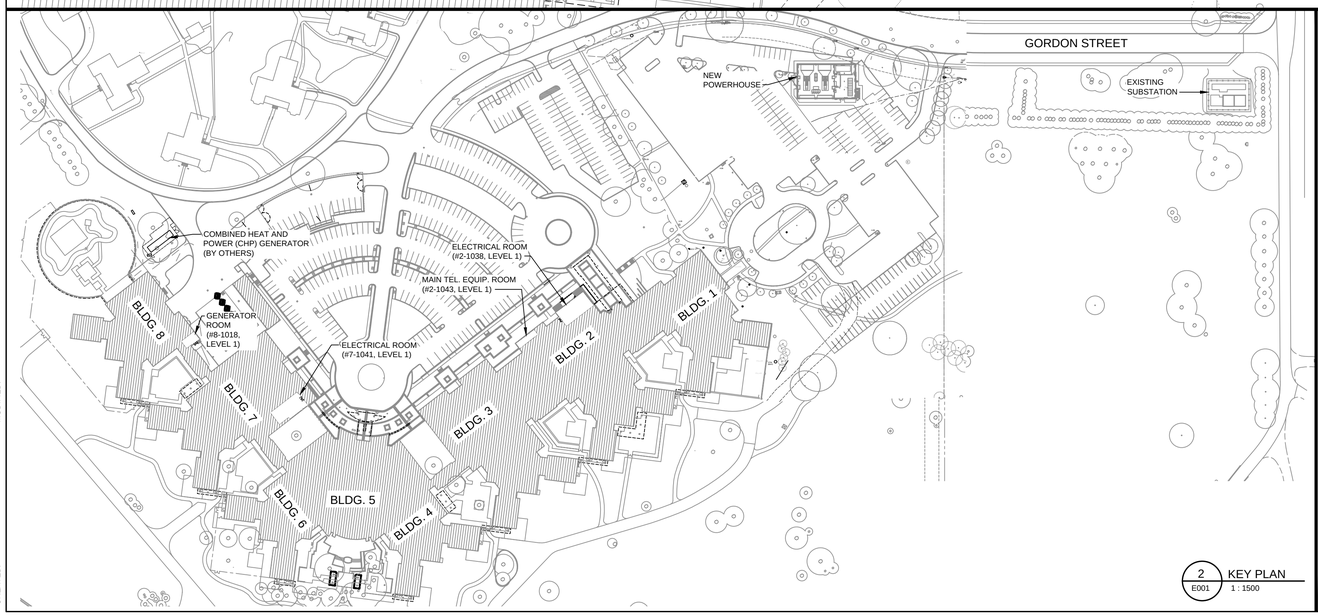

DUCT BANK SCHEDULE:

1. EXISTING CONCRETE ENCASED ELECTRICAL DUCT BANK C/W 4W x 2H, 103mm CONDUITS
2. EXISTING CONCRETE ENCASED COMMUNICATION DUCT BANK C/W 4W x 2H, 103mm CONDUITS
3. EXISTING CONCRETE ENCASED COMBINED ELECTRICAL AND COMMUNICATION DUCT BANK C/W 4W x 4H, 103mm CONDUITS

SUPPLEMENTARY LEGEND:

- POST TOP LUMINAIRE ON 3 m HIGH ROUND STEEL POLE C/W CONCRETE FOUNDATION
- TWO (2) AREA LIGHITING LUMINAIRES ON 10.5 m POLE C/W CONCRETE FOUNDATION
- FOUR (4) AREA LIGHITING LUMINAIRES ON 10.7 m POLE C/W CONCRETE FOUNDATION

GENERAL NOTES:

A. EQUIPMENT MARKED WITH AN "X" INDICATES TO BE REMOVED.

NOTES:

1. REMOVE ONLY EXISTING 15kV CABLES AND GROUND WIRES IN ELECTRICAL DUCT BANK. EXISTING ELECTRICAL DUCT BANK TO REMAIN FOR INSTALLATION OF NEW CABLES AND GROUND WIRES.
2. REMOVE EXISTING CABLES ONLY. EXISTING UNDERGROUND DUCTS SHALL REMAIN IN PLACE OR MODIFIED FOR CONNECTION TO NEW LIGHTING POLES AND INSTALLATION OF NEW LIGHTING CABLES. REFER ALSO TO DRAWING NO. E002.
3. EXISTING POLE TO BE REMOVED FOR RE-INSTALLATION ON NEW CONCRETE FOOTING. PROVIDE ADEQUATE PROTECTION TO THE POLE TO PREVENT IT FROM BEING DAMAGED DURING REMOVAL AND RE-INSTALLATION. REFER ALSO TO DRAWING NO. E002.

Key Plan:

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2	ISSUED FOR TENDER	OCT. 23/19	JY
1	ISSUED FOR REVIEW	OCT. 11/19	JY

Client:

Ontario Shores
Centre for Mental Health Sciences

Project:

NEW POWERHOUSE

700 GORDON STREET, WHITBY, ON L1N 5S9

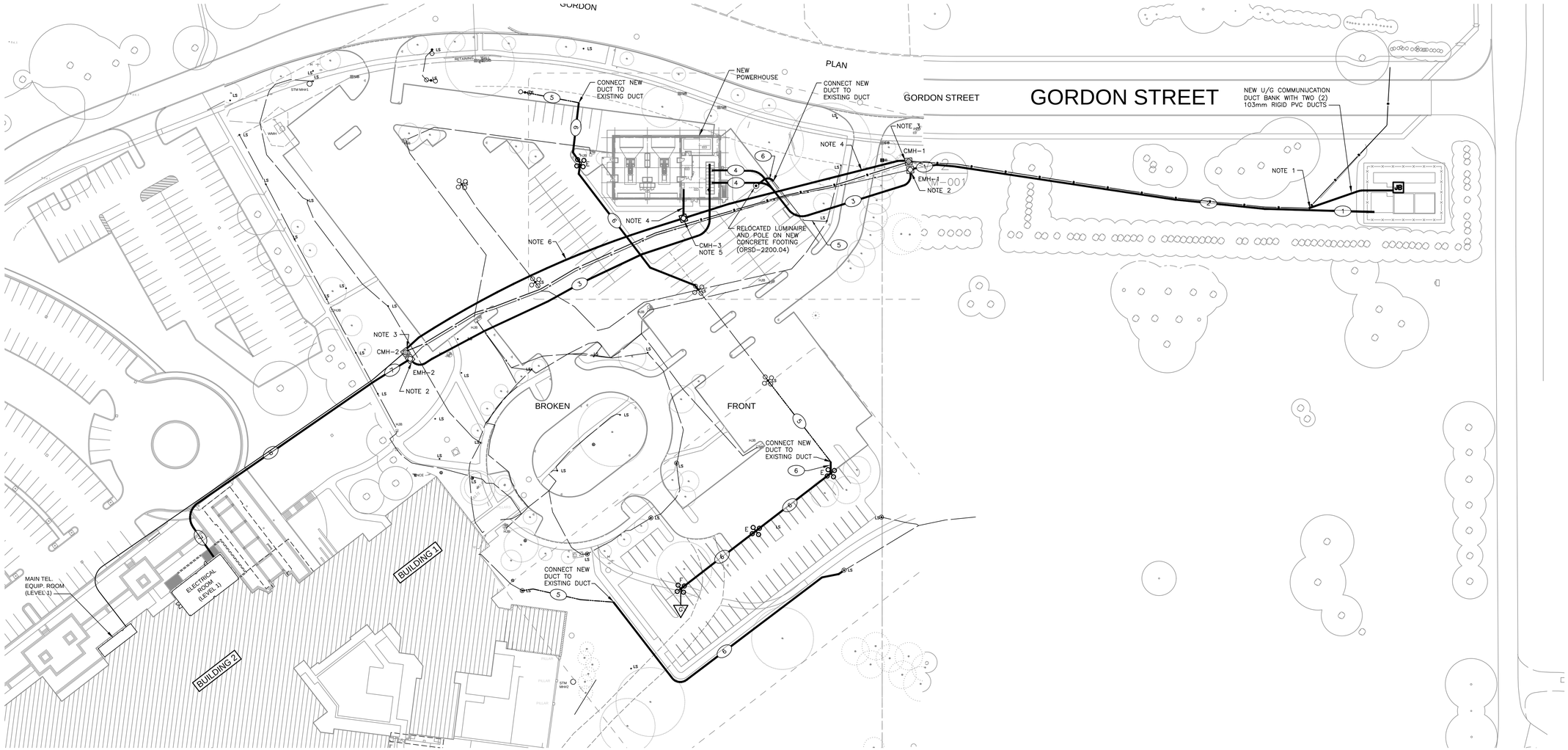
Sheet Title:

SITE PLAN
ELECTRICAL REMOVALS
AND KEY PLAN

Drawn By:	J.Y.	Date:	DEC. 6, 2018
Designed By:	J.Y.	Checked By:	T.G.
Scale:	1:600	File Path:	RM 360.IRM - 1802218 - Ontario Shores Powerhouse\1802218-Ontario Shores Powerhouse-RVT2019-ARCH.rvt

Project No:	Drawing No:
1802218	E001

DRAWING NAME: P:\2018\1802218\00-RFP Emergency Generator Package\06 Working\Re-design\Electrical\E-001_Site Plan_Removals.dwg
CREATED: MODIFIED: 2019/10/23 1:18:10 PM



1 SITE PLAN (E002) 1 : 600

FEEDER SCHEDULE		
TAG	DUCT BANK CONFIGURATION	DESCRIPTION
1		2 x (3–350MCM TRXLPE, 15 kV, 100% INSULATION LEVEL, COPPER TAPE SHIELDED + #3 GND – 103 mmC) IN EXISTING 4W x 2H, 103mmC ELECTRICAL DUCT BANK
7		2 x (3–350MCM TRXLPE, 15 kV, 133% INSULATION LEVEL, COPPER TAPE SHIELDED + #3 GND – 103 mmC) IN EXISTING 4W x 2H, 103mmC ELECTRICAL DUCT BANK
2		2 x (3–350MCM TRXLPE, 15 kV, 100% INSULATION LEVEL, COPPER TAPE SHIELDED + #3 GND – 103 mmC) IN EXISTING 4W x 4H, 103mmC COMBINED ELECTRICAL AND COMMUNICATION DUCT BANK (NOTE: LOCATIONS OF ELECTRICAL AND COMMUNICATIONN DUCTS ARE FOR ILLUSTRATION ONLY. EXACT LOCATIONS TO BE CONFIRMED AT SITE)
8		2 x (3–350MCM TRXLPE, 15 kV, 133% INSULATION LEVEL, COPPER TAPE SHIELDED + #3 GND – 103 mmC) IN EXISTING 4W x 4H, 103mmC COMBINED ELECTRICAL AND COMMUNICATION DUCT BANK (NOTE: LOCATIONS OF ELECTRICAL AND COMMUNICATIONN DUCTS ARE FOR ILLUSTRATION ONLY. EXACT LOCATIONS TO BE CONFIRMED AT SITE)
3		2 x (3–350MCM TRXLPE, 15 kV, 133% INSULATION LEVEL, COPPER TAPE SHIELDED + #3 GND – 155mmC) + 2 x 155mm SPARE CONDUITS IN NEW 2W x 2H ELECTRICAL DUCT BANK
4		3–350MCM TRXLPE, 15 kV, 100% INSULATION LEVEL, COPPER TAPE SHIELDED + #3 GND – 155mmC + 1 x 155mm SPARE CONDUIT IN NEW 1W x 2H ELECTRICAL DUCT BANK
5		NEW 4–#4 + #8G IN EXISTING UNDERGROUND DUCT FOR LIGHTING
6		NEW 4–#4 + #8G IN NEW 41mm UNDERGROUND DUCT FOR LIGHTING. DUCTS INSTALLED UNDERNEATH PAVEMENT SHALL BE CONCRETE ENCASED

NOTES FOR SITE PLAN:

1. BREAK INTO EXISTING 4W x 2H, 103mmC COMMUNICATION DUCT BANK AND CONNECT NEW COMMUNICATION DUCTS TO EXISTING SPARE DUCTS.
2. CORE OPENINGS IN EXISTING ELECTRICAL MANHOLE AND CONNECT NEW DUCTS TO MANHOLE.
3. CORE OPENINGS IN EXISTING COMMUNICATION MANHOLE AND CONNECT NEW DUCTS TO MANHOLE.
4. NEW 2W x 1H, 53mmC RIGID PVC COMMUNICATION DUCT BANK.
5. NEW COMMUNICATION MANHOLE, 1200 x 1650 mm, OPSD–2111.040 (REFER TO DRAWING E703).
6. NEW 2W x 2H, 53mmC RIGID PVC COMMUNICATION DUCT BANK.

SUPPLEMENTARY LEGEND:

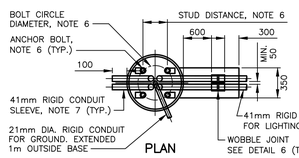
E — FOUR (4) LED AREA LIGHITING LUMINAIRES ON 10.7 m POLE C/W CONCRETE FOUNDATION. RE–USE POLE SALVAGED FROM REMOVAL. REFER ALSO TO DRAWING E001. LUMINAIRES TO BE DETERMINED BY THE OWNER; ASSUME KIM LIGHTING MODEL UR20, CLEAR LENS, 15000 LUMENS, 4000K COLOUR TEMPERATURE, 208 V SUPPLY.

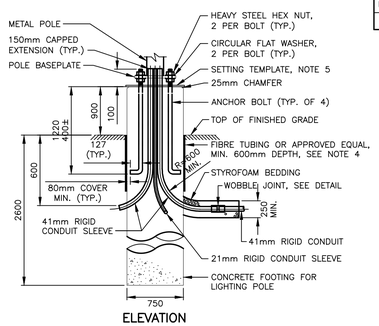
F — FOUR (4) LED AREA LIGHITING LUMINAIRES ON NEW 10.7 m POLE C/W CONCRETE FOUNDATION. REFER TO TYPE E FOR LUMINAIRES.

GROUND ROD, COPPER CLAD, 19mm DIA. x 3m LONG

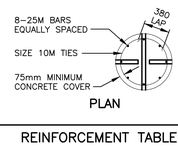
NOTES FOR LIGHTING POLE CONCRETE FOOTING:

1. CONCRETE IN FOUNDATION SHALL BE PLACED AGAINST UNDISTURBED GROUND.
2. TOP OF FOUNDATION SHALL BE TRULY LEVEL.
3. CONCRETE COMPRESSIVE STRENGTH SHALL BE 30 MPa AT 28 DAYS. PROVIDE 6% AIR ENTRAINMENT.
4. FIBRE TUBING TO BE PEELED OFF 900mm FROM THE TOP OF P1 POLE FOOTING AFTER CONCRETE HARDENS.
5. REMOVE SETTING TEMPLATE TO FINISH CONCRETE AFTER INITIAL SET.
6. ANCHOR BOLT DIAMETER, BOLT CIRCLE DIAMETER AND STUD DISTANCE TO BE AS RECOMMENDED BY POLE MANUFACTURER AND TO SUIT POLE TEMPLATE.
7. FOR ORIENTATION OF SLEEVES, REFER TO ELECTRICAL LAYOUT DRAWINGS.

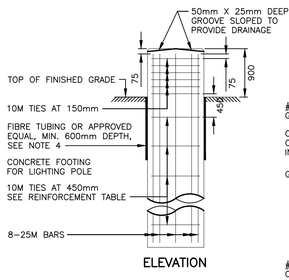




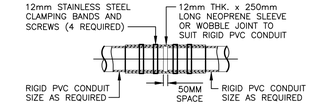
2 CONCRETE FOOTING DETAIL (E002) N.T.S.



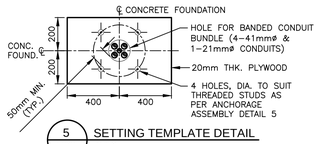
REINFORCEMENT TABLE					
POLE LENGTH	BURIAL DEPTH	LENGTH OF VERT. REINF.	NO. OF TIES 150mm c/c	NO. OF TIES 450mm c/c	FOUNDATION HEIGHT ABOVE GRADE
10.7m	2.60m	3.30m	6	5	900



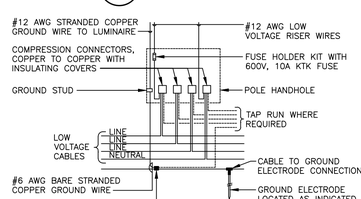
3 CONCRETE REINFORCING DETAIL (E002) N.T.S.



4 WOBBLE JOINT DETAIL (E002) N.T.S.



5 SETTING TEMPLATE DETAIL (E002) N.T.S.



6 POLE WIRING DIAGRAM (E002) N.T.S.

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Client:

Ontario Shores
Centre for Mental Health Sciences

Project:

NEW POWERHOUSE

700 GORDON STREET, WHITBY, ON L1N 5S9

Sheet Title:

SITE PLAN
ELECTRICAL - NEW WORK

Drawn By:	J.Y.	Date:	DEC. 6, 2018
Designed By:	J.Y.	Checked By:	T.G.
Scale:	AS SHOWN	File Path:	RM 360.rRM - 1802218 - Ontario Shores Powerhouse\1802218-Ontario Shores Powerhouse-RVT2018-ARCH.rvt
Project No:	1802218	Drawing No:	E002

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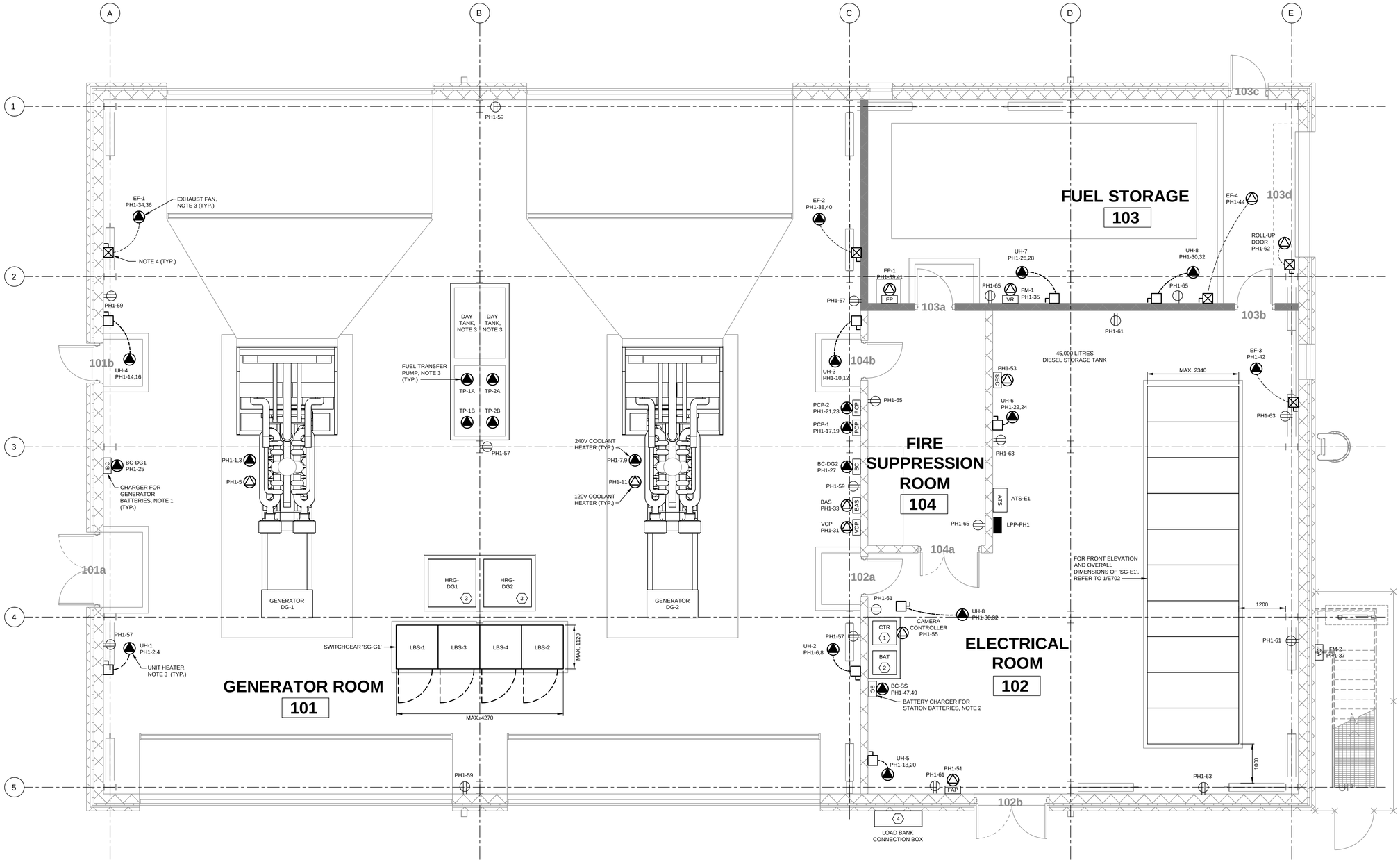

LEGEND:

- 120V WALL-MOUNTED RECEPTACLE
- 120V DIRECT CONNECTION OUTLET FOR USE AS NOTED
- 240V, SINGLE PHASE DIRECT CONNECTION OUTLET FOR USE AS NOTED
- UNFUSED DISCONNECT SWITCH, SIZE AS INDICATED
- COMBINATION STARTER C/W MOTOR CIRCUIT PROTECTOR
- ENCLOSED CIRCUIT BREAKER, SIZE AS INDICATED
- PANELBOAD
- JB — JUNCTION BOX
- ATS — AUTOMATIC TRANSFER SWITCH

LEGEND:

- BAS — BUILDING AUTOMATION SYSTEM PANEL (REFER ALSO TO MECHANICAL DRAWINGS)
- BC — BATTERY CHARGER
- FAP — FIRE ALARM CONTROL PANEL
- FP — FUEL POLISHER (REFER ALSO TO MECHANICAL DRAWINGS)
- OA — FUEL TANK OVERFILL ALARM (REFER ALSO TO MECHANICAL DRAWINGS)
- PCP — FUEL TRANSFER PUMP CONTROL PANEL (REFER ALSO TO MECHANICAL DRAWINGS)
- SEC — SECURITY ACCESS CONTROL PANEL
- VCP — VENTILATION CONTROL PANEL (REFER ALSO TO MECHANICAL DRAWINGS)
- VR — VEEDER-ROOT FUEL MONITORING CONSOLE (REFER ALSO TO MECHANICAL DRAWINGS)

EQUIPMENT LIST:

1. LOCKABLE ENCLOSED RACK WITH GLASS FRONT DOORS FOR CAMERA CONTROLLER AND NETWORK SWITCH
2. STATION BATTERIES CONSISTING OF TWO (2) SETS OF THREE (3) 48V LITHIUM ION BATTERIES C/W BATTERY MONITORING FOR DUAL REDUNDANT DC SUPPLIES TO SWITCHGEAR SG-G1 AND SG-E1, AND GENERATOR SYNCHRONIZATION AND TRANSFER CONTROLS PANEL. PROVIDE RACK FOR MOUNTING OF THE BATTERIES. INCLUDE INTEGRATION OF BATTERY MONITORING INTO BAS.
3. HIGH RESISTANCE GROUNDING FOR GENERATOR C/W ENCLOSURE.
4. LOAD BANK CONNECTION BOX SHALL BE STAINLESS STEEL, WEATHERPROOF AND TAMPER-PROOF, C/W COPPER BUS BARS FOR EACH PHASE AND GROUND, 3-POINT LATCH, LOCKABLE HANDLE, AND SLIDING DOOR OR OTHER APPROVED MEANS AT THE BOTTOM FOR ENTRY OF CABLES.

NOTES:

1. PROVIDE 2-#2-35mmC FROM CHARGER TO BATTEREIS AT GENERATOR.
2. PROVIDE 2-#1-41mmC FROM CHARGER TO STATION BATTERIES.
3. FOR MECHANICAL EQUIPMENT SUCH AS UNIT HEATERS, EXHAUST FANS, PUMPS AND FUEL TANKS, REFER ALSO TO MECHANICAL DRAWINGS.
4. COMBINATION STARTERS FOR FANS SHALL BE SUPPLIED BY MECHANICAL TRADE TO MATCH ASSOCIATED FAN MOTORS. COORDINATE WITH MECHANICAL TRADE ON THE REQUIREMENTS OF THE STARTERS.

DRAWING NAME: P:\2018\18022\18900-RFP Emergency Generator Package\08. Working\Re-design\Electrical\E-101_Elec Layout.dwg
CREATED: MODIFIED: 2019/10/23 1:19:31 PM

Key Plan:

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1	ISSUED FOR REVIEW	OCT. 11/19	JY

Client:

Ontario Shores
Centre for Mental Health Sciences

Project:

NEW POWERHOUSE

700 GORDON STREET, WHITBY, ON L1N 5S9

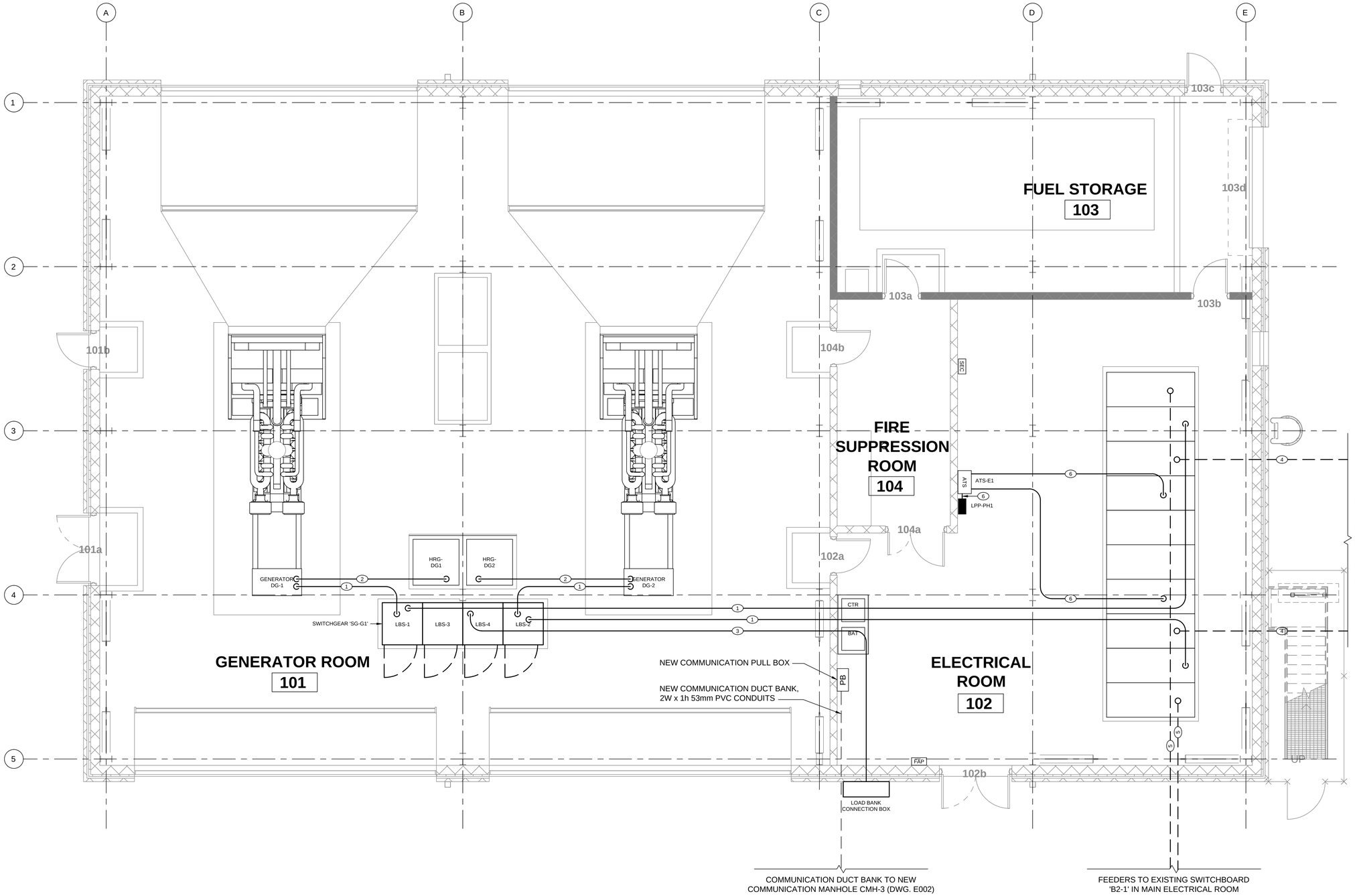
Sheet Title:

ELECTRICAL POWER EQUIPMENT LAYOUT

Drawn By:	J.Y.	Date:	DEC. 6, 2018
Designed By:	J.Y.	Checked By:	T.G.
Scale:	1:50	File Path:	RM 360 (MM - 1802218 - Ontario Shores Powerhouse\1802218-Ontario Shores Powerhouse-RVT2018-ARCH.rvt

Project No: 1802218

Drawing No: E101



FEEDER SCHEDULE:

1. 3/C #2 + #6 GND, 15 kV, 133% INSULATION, COPPER TAPE SHIELDED TECK CABLE IN CABLE TRAY
2. 1/C #2 + #6 GND, 8 kV, 133% INSULATION, COPPER TAPE SHIELDED CABLE IN 75mm CONDUIT
3. 3-#2, 15 kV, 133% INSULATION LEVEL, COPPER TAPE SHIELDED CABLE + #6 GND IN 91mmC
4. 3-350MCM TRXLPE, 15 kV, 100% INSULATION LEVEL, COPPER TAPE SHIELDED + #3 GND IN 155 mm UNDERGROUND DUCT BANK
5. 3-350MCM TRXLPE, 15 kV, 133% INSULATION LEVEL, COPPER TAPE SHIELDED CABLE + #3 GND IN 155 mm UNDERGROUND DUCT BANK
6. 3-600MCM + #2 GND IN 78mm CONDUIT

DRAWING NAME: P:\2018\1802218\00-RFP Emergency Generator Package\08. Working\Re-design\Electrical\E-102_Wiring Layout.dwg
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Key Plan:

Consultant:

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Client:

Ontario Shores
Centre for Mental Health Sciences

Project:

NEW POWERHOUSE

700 GORDON STREET, WHITBY, ON L1N 5S9

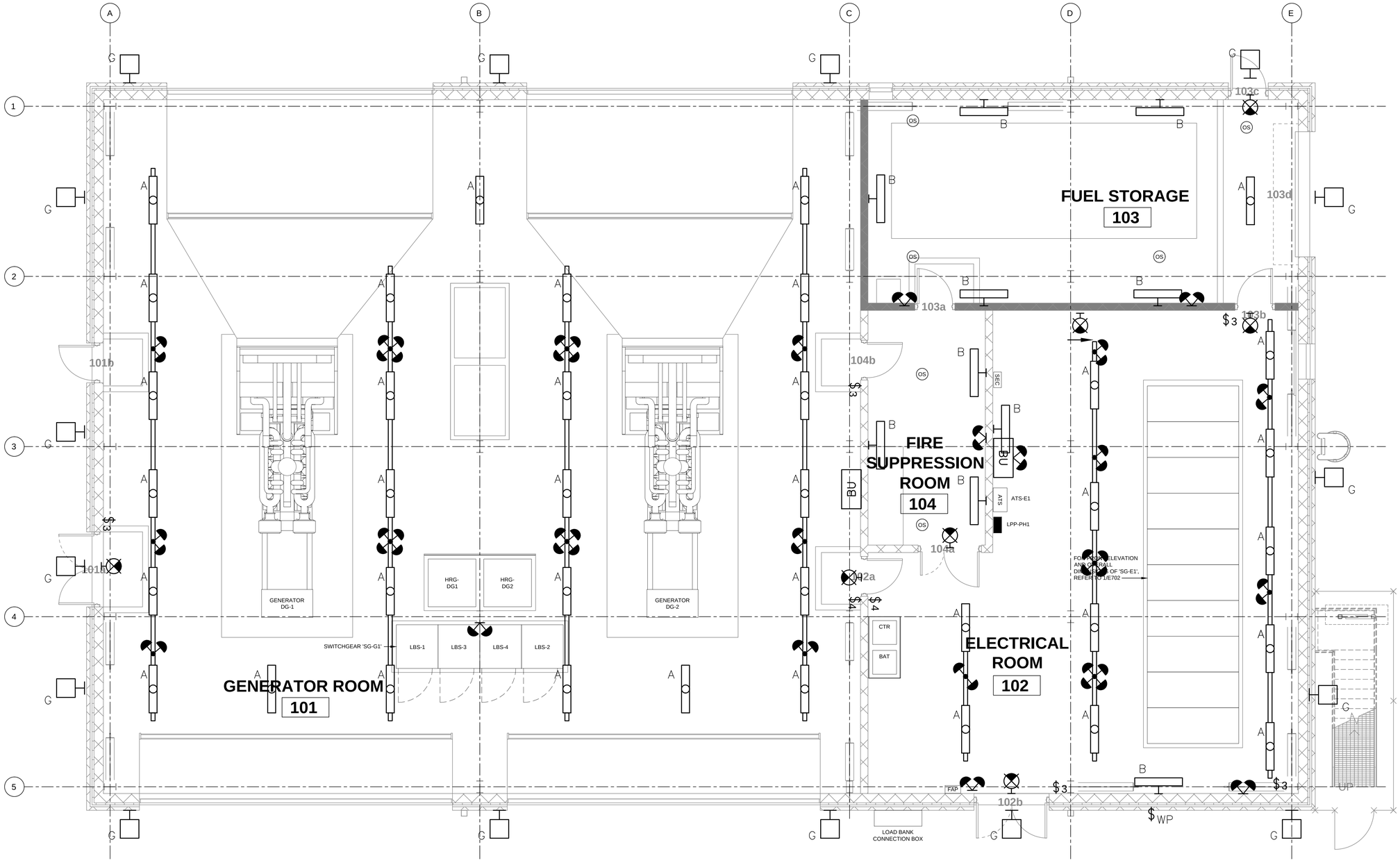
Sheet Title:

ELECTRICAL POWER WIRING LAYOUT

Drawn By:	J.Y.	Date:	DEC. 6, 2018
Designed By:	J.Y.	Checked By:	T.G.
Scale:	1:50	File Path:	RM 360.rMH - 1802218 - Ontario Shores Powerhouse\1802218-Ontario Shores Powerhouse-RVT2018-ARCH.rvt

Project No: 1802218

Drawing No: E102



SUPPLEMENTARY LEGEND:

A	LED STRIP LIGHT LUMINAIRE, 1200mm LONG, 36W, 120V, 5000 LUMENS AT 4000K COLOUR TEMPERATURE AND 80+ COLOUR RENDERING INDEX, SUITABLE FOR USE IN UP TO 40°C AMBIENT TEMPERATURE, C/W DIFFUSE PLOYCARBONATE LENS, PENDANT OR CHANNEL MOUNTED
B	SAME AS LUMINARE TYPE A BUT WALL MOUNTED
G	LED WALL MOUNTED OUTDOOR LUMINARE, 6358 TOTAL LUMENS, 4000K, 68W LEDs AND 120V LED DRIVER, SUITABLE FOR LOW TEMPERATURE START (-40°C), C/W PHOTOELECTRIC CONTROLLER
	EXIT SIGN, SINGLE FACE, WALL MOUNTED
	BATTERY UNIT, 24V, 350W, WALL MOUNTED C/W TWO (2) 24V, 4W LED EMERGENCY REMOTE HEADS
	LED EMERGENCY REMOTE HEADS, TWO (2) 24V, 4W, WALL MOUNTED
	LED EMERGENCY REMOTE HEADS, TWO (2) 24V, 4W, CHANNEL MOUNTED
BU	BATTERY UNIT FOR EMERGENCY LIGHTING, 24V, 350W
$	LIGHT SWITCH, SINGLE POLE, 120V, 20A
$3	LIGHT SWITCH, 3-WAY, 120V, 20A
$4	LIGHT SWITCH, 4-WAY, 120V, 20A

SUPPLEMENTARY LEGEND:

OS	OCCUPANCY SENSOR, DUAL TECHNOLOGY (PASSIVE INFRARED AND ULTRASONIC) TYPE, PENDANT MOUNTED C/W POWER SUPPLY UNIT. LOCATIONS SHOWN ARE TENTATIVE ONLY. EXACT LOCATIONS TO BE DETERMINED ON SITE TO AVOID OBSRUCTIONS.

GENERAL NOTES:

A. FOR LIGHTING CIRCUITS, REFER TO PANEL SCHEDULE IN DRAWING NO. E701.

DRAWING NAME: P:\2018\1802218\00-RFP Emergency Generator Package\08. Working\Re-design\Electrical\E-201_Lighting.dwg
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Key Plan:

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Client:

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Centre for Mental Health Sciences

Project:

NEW POWERHOUSE

700 GORDON STREET, WHITBY, ON L1N 5S9

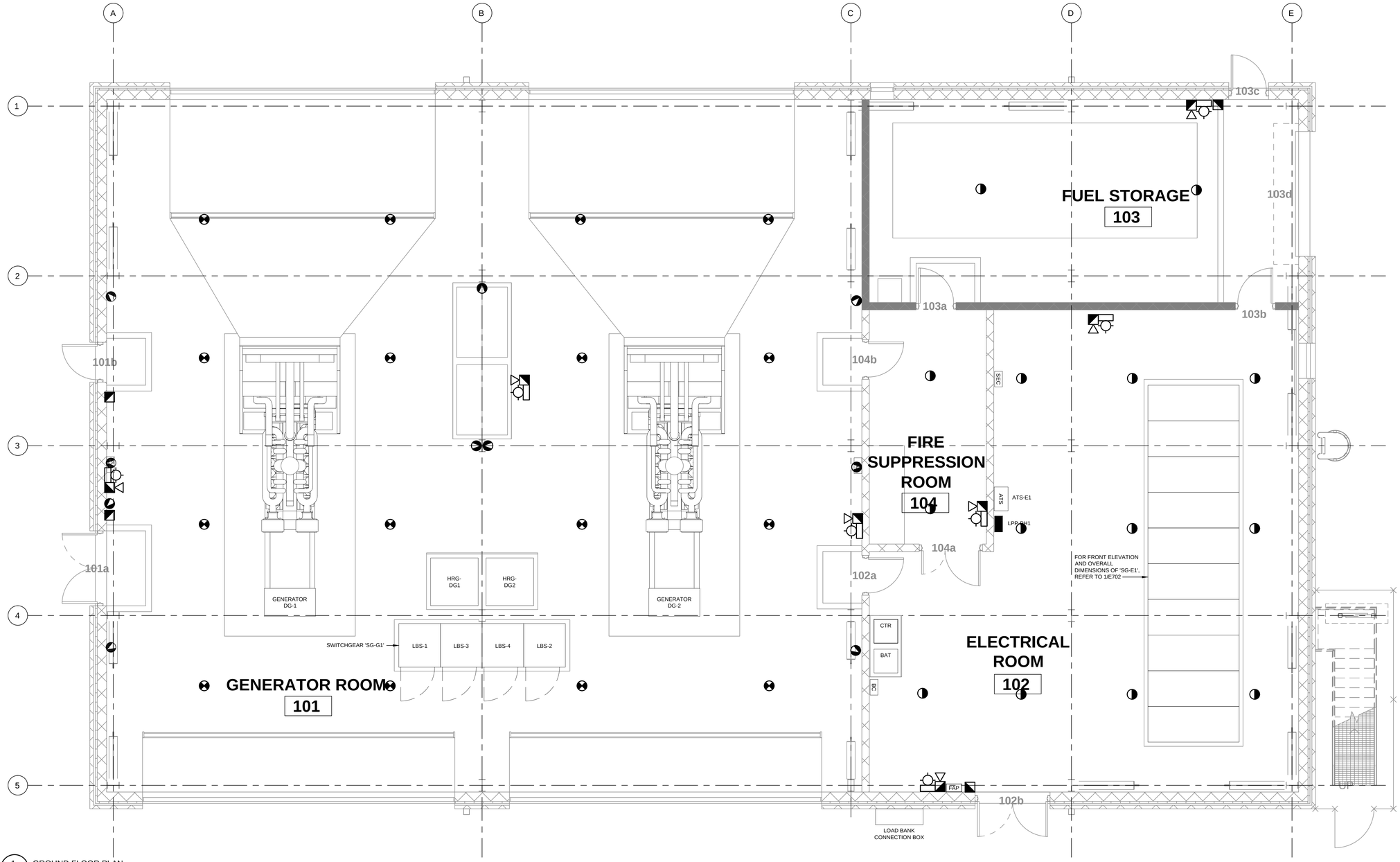
Sheet Title:

LIGHTING LAYOUT
NEW

Drawn By:	J.Y.	Date:	DEC. 6, 2018
Designed By:	J.Y.	Checked By:	T.G.
Scale:	1:50	File Path:	BIM 360 (IMH - 1802218 - Ontario Shores Powerhouse\1802218-Ontario Shores Powerhouse-RVT2018-ARCH.rvt

Project No: 1802218

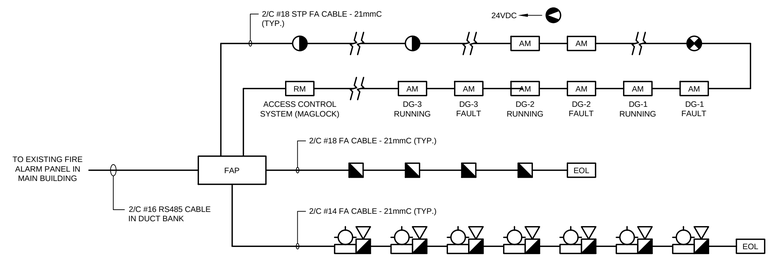
Drawing No: E201



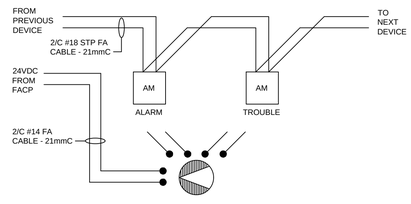
1 E301 GROUND FLOOR PLAN
1 : 50

SUPPLEMENTARY LEGEND:

- FIRE ALARM MANUAL PULL STATION
- FIRE ALARM PHOTOELECTRIC (LASER) SMOKE DETECTOR
- FIRE ALARM 190°F (88°C) FIXED TEMPERATURE THERMAL DETECTOR
- FIRE ALARM DUAL ULTRAVIOLET-INFRARED (UV-IR) FLAME DETECTOR
- FIRE ALARM WALL MOUNTED STROBE LIGHT AND HORN
- FAP — FIRE ALARM CONTROL PANEL
- AM — ALARM MONITORING MODULE C/W ENCLOSURE PAINTED RED
- RM — FIRE ALARM RELAY MODULE C/W ENCLOSURE PAINTED RED



2 E301 SECURITY SYSTEM SCHEMATIC
N.T.S.



3 E301 TYPICAL FLAME DETECTOR DETAIL
N.T.S.

Key Plan:

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Client:

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Centre for Mental Health Sciences

Project:

NEW POWERHOUSE

700 GORDON STREET, WHITBY, ON L1N 5S9

Sheet Title:

FIRE ALARM SYSTEM NEW

Drawn By:	J.Y.	Date:	DEC. 6, 2018
Designed By:	J.Y.	Checked By:	T.G.
Scale:	1:50	File Path:	BIM 360://MH - 1802218 - Ontario Shores Powerhouse/1802218-Ontario Shores Powerhouse-RVT2018-ARCH.rvt
Project No:	1802218	Drawing No:	E301

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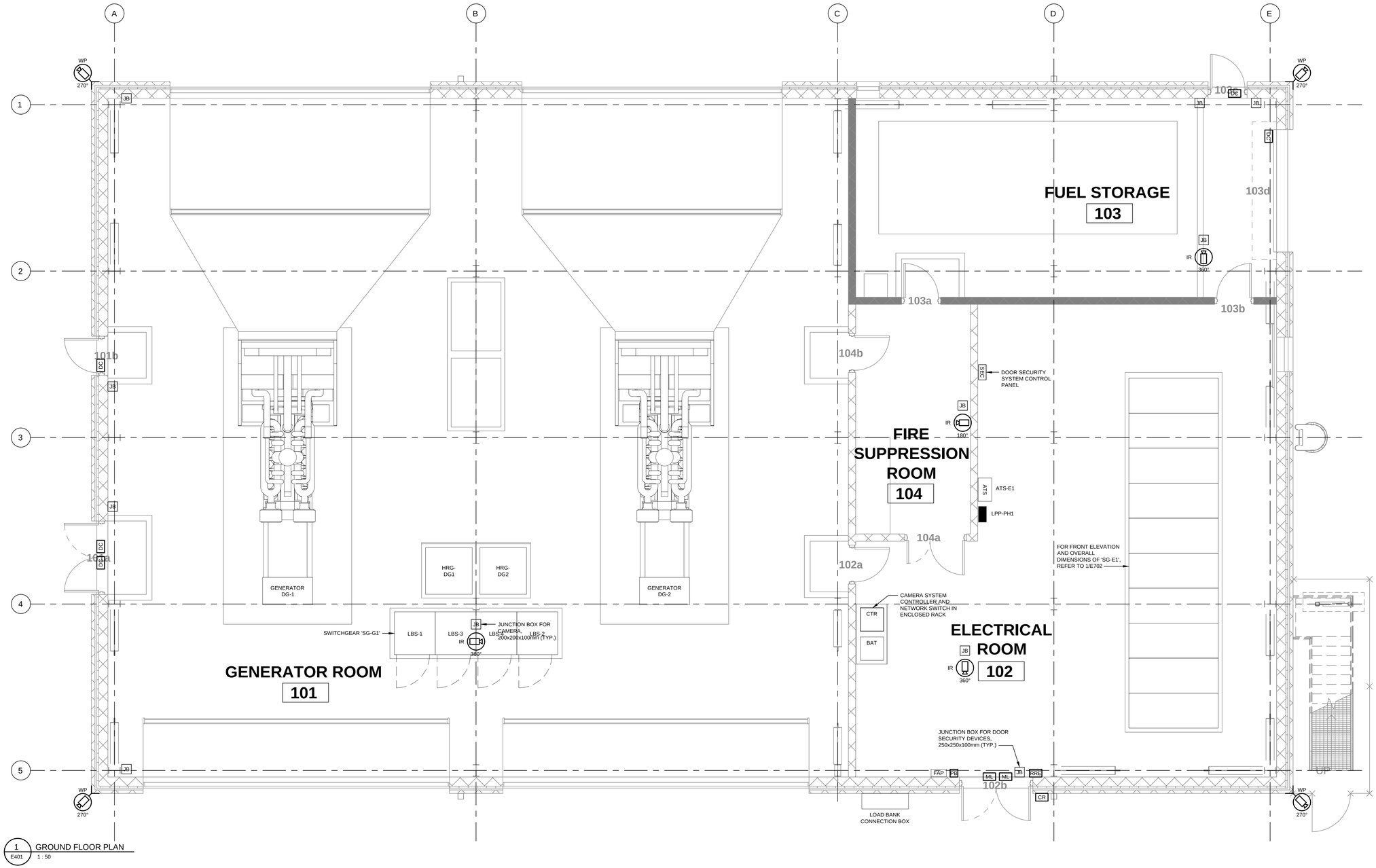


1 E401 GROUND FLOOR PLAN
1 : 50

SUPPLEMENTARY LEGEND FOR SECURITY SYSTEM:

WP 270°	OUTDOOR WEATHERPROOF 270° PANORAMIC IP DOME CAMERA C/W CORNER MOUNTING BRACKET
IR 360°	INDOOR 360° PANORAMIC IP DOME CAMERA, PENDANT MOUNTED, C/W INFRARED (IR) ILLUMINATOR
ML	ELECTROMAGNETIC LOCK (MAGLOCK)
CR	PROXIMITY CARD READER
DC	RECESSED DOOR CONTACT
PB	EXIT PUSHBUTTON FOR MAGLOCK, MUSHROOM TYPE, WITH "EXIT" ENGRAVED ON PUSHBUTTON
RRE	REMOTE READER ELECTRONICS
SEC	ACCESS CONTROL SYSTEM PANEL, WALL MOUNTED
JB	JUNCTION BOX
STP	SHIELDED TWISTED PAIR CABLE
WP	WEATHERPROOF

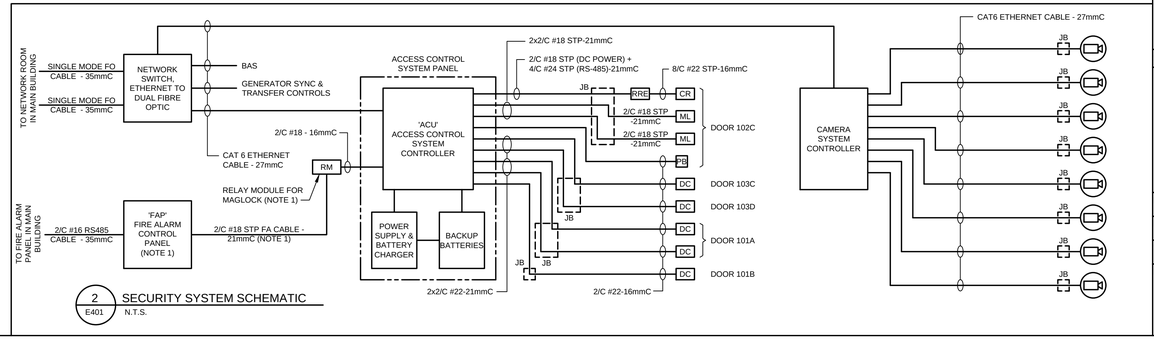
GENERAL NOTES:

A. EQUIPMENT FOR ACCESS CONTROL SYSTEM CONTROLLER, CCTV CONTROLLER, AND TYPES AND SIZES OF CABLES ARE FOR ILLUSTRATION ONLY. PROVIDE EQUIPMENT AND CABLES AS RECOMMENDED BY ACCESS SYSTEM AND CAMERA SYSTEM MANUFACTURERS/SUPPLIERS FOR COMPLETE FUNCTIONAL SYSTEMS.

B. LOCATIONS OF INDOOR CAMERAS ARE TENTATIVE ONLY. EXACT LOCATIONS TO BE DETERMINED ON SITE TO AVOID OBSTRUCTIONS.

NOTES FOR SECURITY SYSTEM SCHEMATIC:

1. FOR FIRE ALARM CONTROL PANEL, RELAY MODULE AND ASSOCIATED WIRING, REFER ALSO TO FIRE ALARM SYSTEM DRAWING.



2 E401 SECURITY SYSTEM SCHEMATIC
N.T.S.

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Key Plan:

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Client:

Ontario Shores
Centre for Mental Health Sciences

Project:

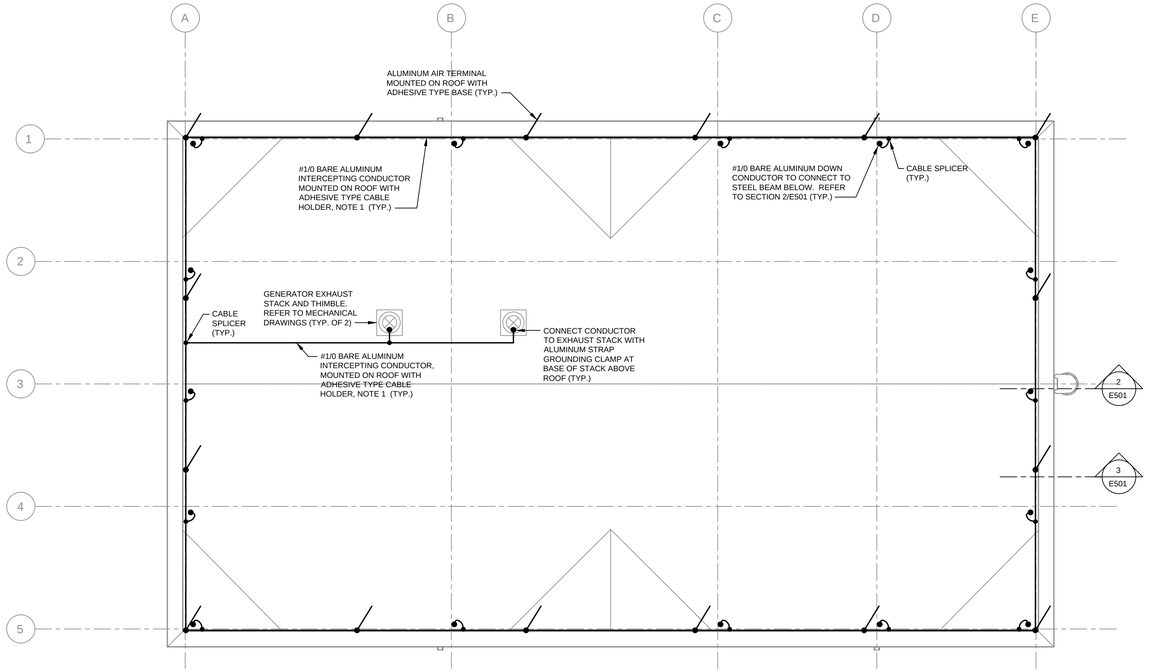
NEW POWERHOUSE

700 GORDON STREET, WHITBY, ON L1N 5S9

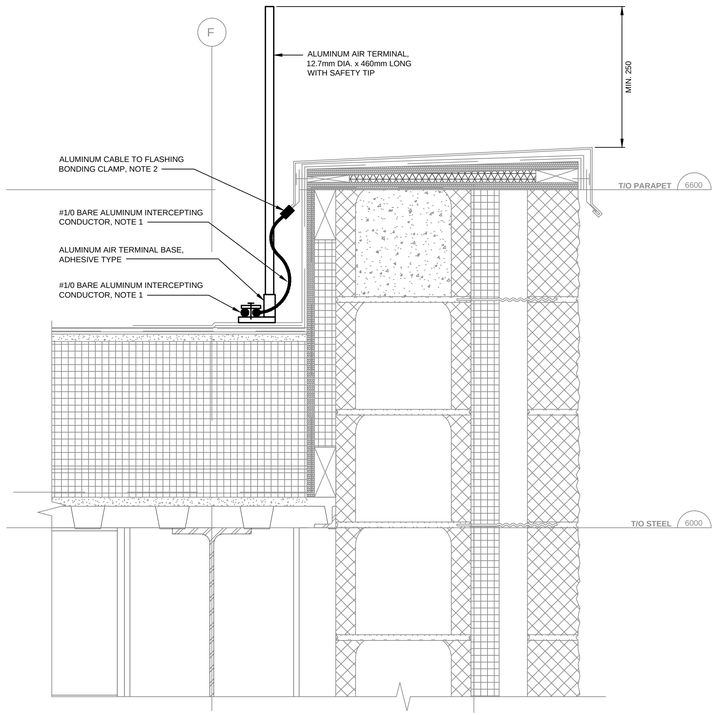
Sheet Title:

SECURITY SYSTEM NEW

Drawn By:	J.Y.	Date:	APRIL 26, 2019
Designed By:	J.Y.	Checked By:	T.G.
Scale:	1:50	File Path:	RM 360 i5MH - 1802218 - Ontario Shores Powerhouse\1802218-Ontario Shores Powerhouse-RVT2018-ARCH.rvt
Project No:	1802218	Drawing No:	E401



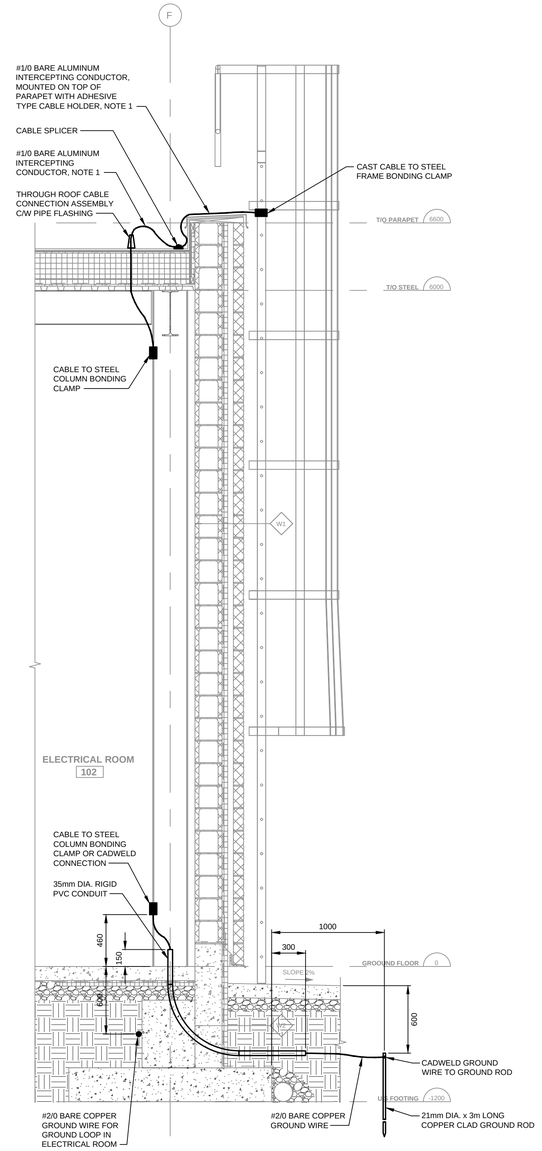
1 / E501 ROOF PLAN
1 : 100



3 / E501 SECTION - TYPICAL AIR TERMINAL INSTALLATION
1 : 5

NOTES:

1. ALUMINUM INTERCEPTING CONDUCTOR SHALL BE OF THE SMOOTH WEAVE TYPE.
2. BOND ALUMINUM FLASHING AT ONE (1) LOCATION AT MID-POINT OF EACH SIDE OF ROOF.



2 / E501 SECTION - TYPICAL DOWN CONDUCTOR AND GROUNDING
1:25

Key Plan:

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700 GORDON STREET, WHITBY, ON L1N 5S9

Sheet Title:

ROOF PLAN AND SECTIONS
LIGHTNING PROTECTION

Drawn By:	J.Y.	Date:	APRIL 26, 2019
Designed By:	J.Y.	Checked By:	T.G.
Scale:	AS SHOWN	File Path:	BIM 360:\IMH - 1802218 - Ontario Shores Powerhouse\1802218-Ontario Shores Powerhouse-RVT2018-ARCH.rvt

Project No: 1802218

Drawing No: E501

DRAWING NAME: P:\2018\18022\1800-RFP Emergency Generator Package\08. Working\Re-design\Electrical\E-501_Roof Lightning.dwg
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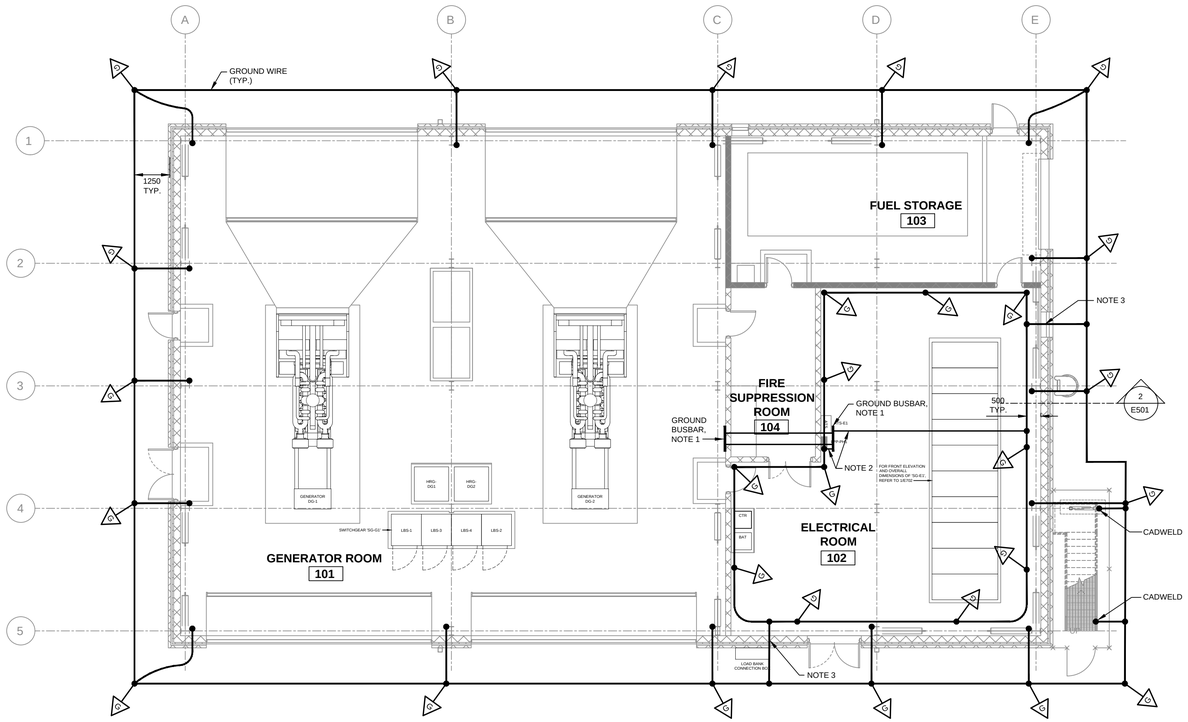
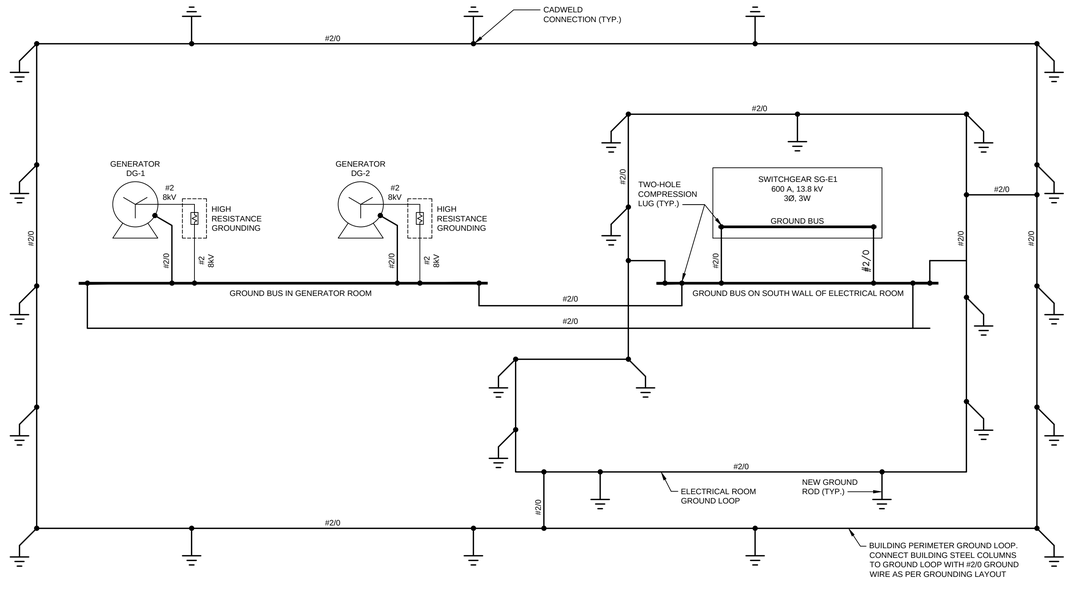


1 E502 GROUND FLOOR PLAN - GROUNDING LAYOUT
1 : 100



2 E502 GROUNDING RISER DIAGRAM
N.T.S.

GENERAL NOTES:

A. ALL GROUND WIRES SHALL BE #2/0 BARE COPPER.

B. ALL GROUND RODS SHALL BE 19 mm DIA. x 3 m LONG COPPER CLAD TYPE.

C. ALL CONNECTIONS TO GROUND WIRES AND GROUND RODS SHALL BE EXOTHERMIC (CADWELD) TYPE.

D. ALL CONNECTIONS TO STEEL COLUMNS SHALL BE BY TWO-BOLT BONDING CLAMP OR EXOTHERMIC (CADWELD) TYPE.

E. ALL CONNECTIONS TO GROUND BUSBARS SHALL BE BY TWO-HOLE COMPRESSION LUGS.

F. SPACE GROUND RODS AT LEAST 3 m APART.

NOTES:

1. GROUND BUSBAR SHALL BE COPPER, 100 mm WIDE x 6 mm THICK x 914 mm LONG, MOUNTED ON WALL WITH TWO (2) INSULATORS. BUSBAR SHALL BE FACTORY PRE-DRILLED WITH HOLES FOR TWO-HOLE COMPRESSION LUGS. INSTALL GROUND BUSBAR AT 2400 mm ABOVE FINISHED FLOOR.
2. INSTALL #2/0 BARE COPPER GROUND WIRE RISER FROM UNDERGROUND GROUND LOOP TO GROUND BUSBAR IN 27 mm RIGID PVC CONDUIT.
3. PROVIDE 27 mm RIGID PVC CONDUIT SLEEVE THROUGH FOUNDATION FOR #2/0 COPPER GROUND WIRE INTERCONNECTION BETWEEN BUILDING PERIMETER AND ELECTRICAL ROOM GROUND LOOPS. EXTEND CONDUIT 300 mm BEYOND FOUNDATION.
4. INSTALL #2/0 BARE COPPER GROUND WIRE FROM STEEL COLUMN TO GROUND BUS BAR.

SUPPLEMENTARY LEGEND:

19mmØ x 3m LONG COPPER CLAD GROUND ROD

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NEW POWERHOUSE

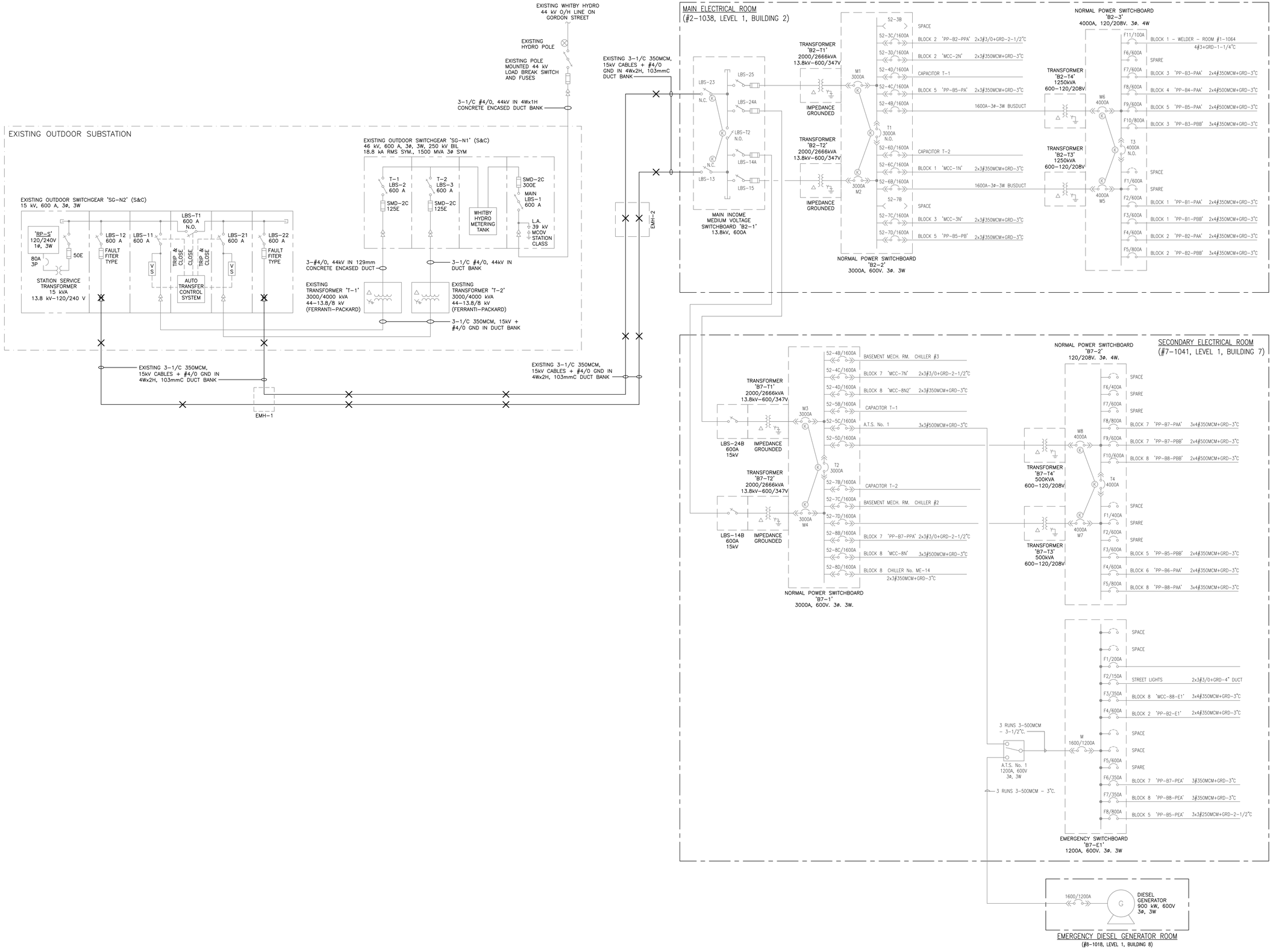
700 GORDON STREET, WHITBY, ON L1N 5S9

Sheet Title:

GROUNDING SYSTEM LAYOUT AND RISER DIAGRAM

Drawn By:	J.Y.	Date:	APRIL 26, 2019
Designed By:	J.Y.	Checked By:	T.G.
Scale:	AS SHOWN	File Path:	RM 360 I/M/H - 1802218 - Ontario Shores Powerhouse\1802218-Ontario Shores Powerhouse-RVT2018-ARCH.rvt

Project No:	Drawing No:
1802218	E502



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Project:

NEW POWERHOUSE

700 GORDON STREET, WHITBY, ON L1N 5S9

Sheet Title:

SINGLE LINE DIAGRAM
EXISTING AND REMOVALS

Drawn By:	J.Y.	Date:	DEC. 6, 2018
Designed By:	J.Y.	Checked By:	T.G.
Scale:	N.T.S.	File Path:	BIM 360:\RH - 1802218 - Ontario Shores Powerhouse\1802218-Ontario Shores Powerhouse-RVT2018-ARCH.rvt

Project No: 1802218

Drawing No: E601

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NOTES:

1. ALL BREAKERS IN SWITCHGEAR 'SG-E1' SHALL BE DRAW-OUT TYPE.
2. SWITCHGEAR FOOTPRINT SHALL NOT EXCEED THE DIMENSIONS SHOWN ON THE LAYOUT DRAWING AND SHALL COMPLY WITH ALL CODE REQUIREMENTS FOR WORKING SPACE AND ACCESSIBILITY – WITH CONSIDERATION TO POSITION OF ALL COLUMNS IN THE ELECTRICAL ROOM.
3. PROVIDE CONTACTS FOR ALL LOAD BREAK SWITCHES IN SWITCHGEAR 'SG-G1' FOR INDICATION OF SWITCH STATUS (OPEN OR CLOSED) TO SYNCHRONIZATION AND TRANSFER CONTROLS. PROVIDE 4–#14 – 20mmC FROM EACH SWITCH TO THE CONTROLS. PROVIDE ONE (1) SPARE KEY FOR EACH OF KIRK–KEYS K1 AND K2 FOR STORAGE OFF SITE.

PROPSED KIRK–KEY OPERATION:

1. ONLY ONE EACH OF KEYS K1, K2 AND K3 ARE KEPT ON SWITCHGEAR 'SG–G1'. LBS–G3 REQUIRES BOTH KEYS K1 AND K3 TO CLOSE. LBS–G4 REQUIRES BOTH KEYS K2 AND K3 TO CLOSE.
2. NORMAL OPERATION:
   KEYS: K1 – IN LSB–G1; K2 – IN LBS–G2, K3 – IN EITHER LBS–G3 OR G4
   OPEN: LBS–G3 AND LBS–G4
   CLOSED: LBS–G1 AND LSB–G2
2. LOAD BANK TESTING OF GENERATOR DG–1:
   KEYS: K1 – IN LSB–G3; K2 – IN LBS–G2, K3 – IN LBS–G3
   OPEN: LBS–G1 AND LBS–G4
   CLOSED: LBS–G2 AND LSB–G3
3. LOAD BANK TESTING OF GENERATOR DG–2:
   KEYS: K1 – IN LSB–G1; K2 – IN LBS–G2, K3 – IN LBS–G4
   OPEN: LBS–G2 AND LBS–G3
   CLOSE: LBS–G1 AND LSB–G4

SUPPLEMENTARY LEGEND:

RELAY–Gx GENERATOR PROTECTION RELAY, WITH MINIMUM ANSI DEVICES 32, 40, 46, 51G, 51V, 87

RELAY–Fx FEEDER PROTECTION RELAY, WITH MINIMUM ANSI DEVICES 50/51, 51N

RELAY–Fx BUS PROTECTION RELAY, WITH MINIMUM ANSI DEVICES 51, 51N

EXISTING WHITBY HYDRO 44 kV O/H LINE ON GORDON STREET

EXISTING HYDRO POLE

EXISTING POLE MOUNTED 44 kV LOAD BREAK SWITCH AND FUSES

NEW 3–350MCM TRXLPE, 15kV, 133% INSUL., COPPER TAPE SHIELDED + 1–#3 GND IN EX. 103mmC

3–1/C #4/0, 44kV IN 4W×1H CONCRETE ENCASED DUCT BANK

EXISTING OUTDOOR SUBSTATION

EXISTING OUTDOOR SWITCHGEAR 'SG–N1' (S&C)
46 kV, 600 A, 3ø, 3W, 250 kV BIL
18.8 kA RMS SYM., 1500 MVA 3ø SYM

NEW EXTENSION SECTION (BY OTHERS)

27.6kV:115V

INTERTIE PROTECTION RELAY–2 SEL–751
27, 32, 50, 51, 59, 59G, 60, 67, 81O, 81U

INTERTIE PROTECTION RELAY–1 SEL–751
27, 32, 50, 51, 59, 59G, 60, 67, 81O, 81U

T–1 LBS–2 600 A

T–2 LBS–3 600 A

SMD–2C 125E

100:5

SMD–2C 300E

MAIN LBS–1 600 A

WHITBY HYDRO METERING TANK

L.A. 39 kV MCOV STATION CLASS

EXISTING OUTDOOR SWITCHGEAR 'SG–N2' (S&C)
15 kV, 600 A, 3ø, 3W

'RP–S' 120/240V 1ø, 3W

80A 3P

50E

LBS–T1 600 A N.O.

LBS–12 600 A

LBS–11 600 A

LBS–21 600 A

LBS–22 600 A

FAULT FITER TYPE

V S

TRIP & CLOSE

AUTO TRANSFER CONTROL SYSTEM

STATION SERVICE TRANSFORMER 15 kVA 13.8 kV–120/240 V

FO CABLE

TRIP

LOAD CONTROL

TO PROTECTION & CONTROL CAB.–2 (BLK. 7 EL. RM.) (BY OTHERS)

TO CHP GENERATOR CONTROL PANEL (BY OTHERS)

3–#4/0, 44kV IN 129mm CONCRETE ENCASED DUCT

3–1/C #4/0, 44kV IN DUCT BANK

EXISTING TRANSFORMER 'T–1' 3000/4000 kVA 44–13.8/8 kV Z=5.51% (FERRANTI–PACKARD)

EXISTING TRANSFORMER 'T–2' 3000/4000 kVA 44–13.8/8 kV Z=5.47% (FERRANTI–PACKARD)

3–1/C 350MCM, 15kV + #4/0 GND IN DUCT BANK

EMH–2

NEW 3–350MCM TRXLPE, 15kV, 100% INSUL., COPPER TAPE SHIELDED + 1–#3 GND IN EX. 103mmC

NEW 3–350MCM TRXLPE, 15kV, 100% INSUL., COPPER TAPE SHIELDED + 1–#3 GND IN NEW 155mmC

NEW 3–350MCM TRXLPE, 15kV, 133% INSUL., COPPER TAPE SHIELDED + 1–#3 GND IN NEW 155mmC

EMH–1

LOAD BANK CONNECTION BOX 150A, 13.8kV, 3W+G

NEW POWERHOUSE

NEW GENERATOR 'DG–1' 2500kW STANDBY 2250kW PRIME, 13.8kV

1/C #2 + #6G, 8kV, 133% INS., SHIELDED CABLE IN 75mmC

TO RELAY–G1

51G

87

GROUNDING RESISTOR 8kV, 25A, 10s

3–#2, 15kV, 133% INS., COPPER TAPE SHIELDED CABLE + #6G IN 91mmC

GENERATOR SWITCHGEAR 'SG–G1' 13.8 kV, 600 A NOTES 2 AND 3

K1 K2 K3

LBS–G1 150E

LBS–G3 100E

LBS–G4 100E

LBS–G2 150E

NEW 3/C #2 + #6G, COPPER, 15kV, 133% INS., COPPER TAPE SHIELDED, TECK CABLE IN TRAY

NEW GENERATOR 'DG–2' 2500kW STANDBY 2250kW PRIME, 13.8kV

TO RELAY–G2

GENERATOR ROOM
ELECTRICAL ROOM

SYNCHRONIZATION AND TRANSFER CONTROLS

RELAY–G1 GB–G1 1200AF 350AT N.O.

RELAY–B1 MB–U1 1200AF 350AT N.C.

TB–T1 1200AF 350AT N.O. RELAY–F3

MB–U2 1200AF 350AT N.C. RELAY–B2

GB–G2 1200AF 350AT N.O. RELAY–G2

FB–11 1200AF 350AT N.C. RELAY–F1

FB–21 1200AF 350AT N.C. RELAY–F2

SPACE

FUTURE LOAD

10E

ROLL–OUT FUSE 'FU–EA1'

ROLL–OUT FUSE 'FU–EB1'

DRY–TYPE TRANSFORMER 'T–EA1' 75 kVA 13.8 kV–120/240 V

DRY–TYPE TRANSFORMER 'T–EB1' 75 kVA 13.8 kV–120/240 V

PARALLELING, TRANSFER AND DISTRIBUTION SWITCHGEAR 'SG–E1' 13.8 kV, 600 A, 3ø, MIN. 25kAIC NOTES 1 AND 2

NEW 3–600MCM + #2G – 78mmC

'ATS–E1' 400A, 120/240V 1ø, 3W, MIN. 10kAIC SWITCHED NEUTRAL

'LPP–SS' 400 A 120/240 V 1ø, 3W 72–CCT C/W 350 A MAIN BREAKER

MAIN ELECTRICAL ROOM
(#2–1038, LEVEL 1, BUILDING 2)

MAIN INCOME MEDIUM VOLTAGE SWITCHBOARD 'B2–1' 13.8kV, 600A

LBS–23 N.C.

LBS–24A

LBS–T2 N.O.

LBS–14A

LBS–13 N.C.

LBS–15

TRANSFORMER 'B2–T1' 2000/2666kVA 13.8kV–600/347V

TRANSFORMER 'B2–T2' 2000/2666kVA 13.8kV–600/347V

IMPEDANCE GROUNDED

M1 3000A

T1 3000A N.O.

3000A M2

NORMAL POWER SWITCHBOARD 'B2–2' 3000A, 600V. 3ø. 3W

52–3B SPACE

52–3C/1600A BLOCK 2 'PP–B2–PPA' 2x3#3/0+GRD–2–1/2"C

52–3D/1600A BLOCK 2 'MCC–2N' 2x3#350MCM+GRD–3"C

52–4D/1600A CAPACITOR T–1

52–4C/1600A BLOCK 5 'PP–B5–PA' 2x3#350MCM+GRD–3"C

52–4B/1600A 1600A–3ø–3W BUSDUCT

52–6D/1600A CAPACITOR T–2

52–6C/1600A BLOCK 1 'MCC–1N' 2x3#350MCM+GRD–3"C

52–6B/1600A 1600A–3ø–3W BUSDUCT

52–7B SPACE

52–7C/1600A BLOCK 3 'MCC–3N' 2x3#350MCM+GRD–3"C

52–7D/1600A BLOCK 5 'PP–B5–PB' 2x3#350MCM+GRD–3"C

TRANSFORMER 'B2–T4' 1250kVA 600–120/208V

TRANSFORMER 'B2–T3' 1250kVA 600–120/208V

M6 4000A

M5 4000A

T3 4000A N.O.

NORMAL POWER SWITCHBOARD 'B2–3' 4000A, 120/208V. 3ø. 4W

F11/1100A BLOCK 1 – WELDER – ROOM #1–1064 4#3+GRD–1–1/4"C

F6/600A SPACE

F7/600A BLOCK 3 'PP–B3–PAA' 2x4#350MCM+GRD–3"C

F8/600A BLOCK 4 'PP–B4–PAA' 2x4#500MCM+GRD–3"C

F9/600A BLOCK 5 'PP–B5–PAA' 2x4#500MCM+GRD–3"C

F10/800A BLOCK 3 'PP–B3–PBB' 3x4#350MCM+GRD–3"C

SPACE

F1/600A SPARE

F2/600A BLOCK 1 'PP–B1–PAA' 2x4#350MCM+GRD–3"C

F3/600A BLOCK 1 'PP–B1–PBB' 2x4#350MCM+GRD–3"C

F4/600A BLOCK 2 'PP–B2–PAA' 2x4#350MCM+GRD–3"C

F5/800A BLOCK 2 'PP–B2–PBB' 3x4#350MCM+GRD–3"C

SECONDARY ELECTRICAL ROOM
(#7–1041, LEVEL 1, BUILDING 7)

TRANSFORMER 'B7–T1' 2000/2666kVA 13.8kV–600/347V

TRANSFORMER 'B7–T2' 2500/2666kVA 13.8kV–600/347V

M3 3000A

T2 3000A

3000A M4

LBS–24B 600A 15kV

LBS–14B 600A 15kV

IMPEDANCE GROUNDED

NORMAL POWER SWITCHBOARD 'B7–1' 3000A, 600V. 3ø. 3W.

52–4B/1600A BASEMENT MECH. RM. CHILLER #3

52–4C/1600A BLOCK 7 'MCC–7N' 2x3#3/0+GRD–2–1/2"C

52–4D/1600A BLOCK 8 'MCC–8N2' 2x3#350MCM+GRD–3"C

52–5B/1600A CAPACITOR T–1

52–5C/1600A A.T.S. No. 1 3x3#500MCM+GRD–3"C

52–5D/1600A

52–7B/1600A

52–7C/1600A BASEMENT MECH. RM. CHILLER #2

52–7D/1600A

52–8B/1600A BLOCK 7 'PP–B7–PPA' 2x3#3/0+GRD–2–1/2"C

52–8C/1600A BLOCK 8 'MCC–8N' 3x3#500MCM+GRD–3"C

52–8D/1600A BLOCK 8 CHILLER No. ME–14 2x3#350MCM+GRD–3"C

TRANSFORMER 'B7–T4' 500kVA 600–120/208V

TRANSFORMER 'B7–T3' 500kVA 600–120/208V

M8 4000A

T4 4000A

4000A M7

NORMAL POWER SWITCHBOARD 'B7–2' 120/208V. 3ø. 4W.

SPACE

F6/400A SPARE

F7/600A SPARE

F8/800A BLOCK 7 'PP–B7–PAA' 3x4#350MCM+GRD–3"C

F9/600A BLOCK 7 'PP–B7–PBB' 2x4#500MCM+GRD–3"C

F10/600A BLOCK 8 'PP–B8–PBB' 2x4#500MCM+GRD–3"C

SPACE

F1/400A SPARE

F2/600A SPARE

F3/600A BLOCK 5 'PP–B5–PBB' 2x4#350MCM+GRD–3"C

F4/600A BLOCK 6 'PP–B6–PAA' 2x4#350MCM+GRD–3"C

F5/800A BLOCK 8 'PP–B8–PAA' 3x4#350MCM+GRD–3"C

3x3/C–500MCM TECK90 IN CABLE TRAY (BY OTHERS)

3 RUNS 3–500MCM – 3–1/2"C.

A.T.S. No. 1 1200A, 600V 3ø, 3W

3 RUNS 3–500MCM – 3"C.

M 1600/1200A

EMERGENCY SWITCHBOARD 'B7–E1' 1200A, 600V. 3ø. 3W

SPACE

SPACE

F1/200A

F2/150A STREET LIGHTS 2x3#3/0+GRD–4" DUCT

F3/350A BLOCK 8 'MCC–88–E1' 3x4#350MCM+GRD–3"C

F4/600A BLOCK 2 'PP–B2–E1' 2x4#350MCM+GRD–3"C

SPACE

SPACE

F5/600A SPARE

F6/350A BLOCK 7 'PP–B7–PEA' 3#350MCM+GRD–3"C

F7/350A BLOCK 8 'PP–B8–PEA' 3#350MCM+GRD–3"C

F8/800A BLOCK 5 'PP–B5–PEA' 3x3#250MCM+GRD–2–1/2"C

GAS COMBINED HEAT AND POWER (CHP) GENERATOR 800 kW, 600V 3ø, 4W, HRG (BY OTHERS)

1600/1000A

3x(3/C–500MCM TECK90 – 4"C) (BY OTHERS)

OUTDOOR GENERATOR ENCLOSURE (BY OTHERS)

1600/1200A

DIESEL GENERATOR 900 kW, 600V 3ø, 3W

EMERGENCY DIESEL GENERATOR ROOM
(#8–1018, LEVEL 1, BUILDING 8)

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Key Plan:

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Project:

NEW POWERHOUSE

700 GORDON STREET, WHITBY, ON L1N 5S9

Sheet Title:

SINGLE LINE DIAGRAM NEW

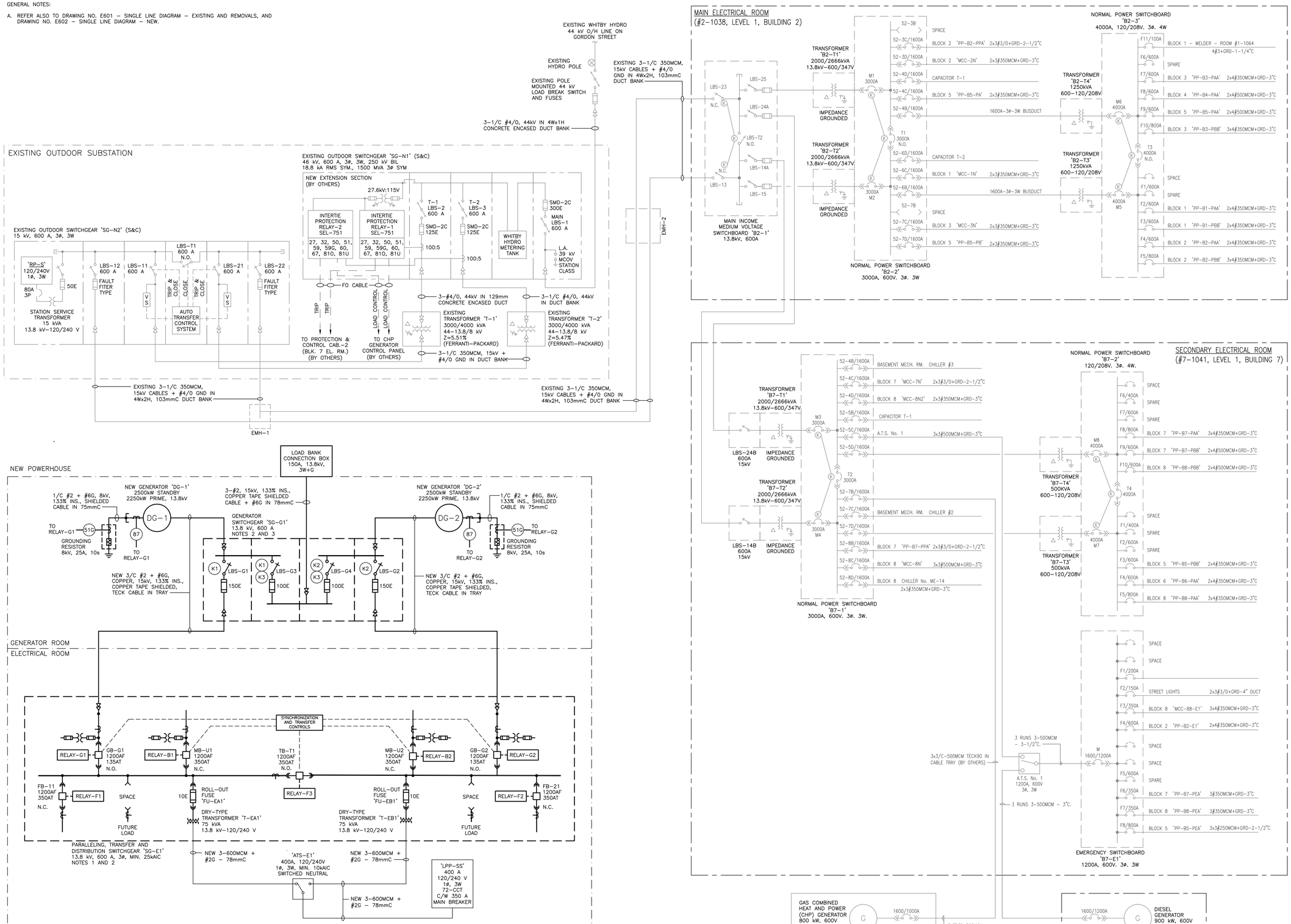
Drawn By:	J.Y.	Date:	DEC. 6, 2018
Designed By:	J.Y.	Checked By:	T.G.
Scale:	N.T.S.	File Path:	BIM 360:\RM - 1802218 - Ontario Shores Powerhouse\1802218-Ontario Shores Powerhouse-RVT2018-ARCH.rvt

Project No: 1802218

Drawing No: E602

GENERAL NOTES:

A. REFER ALSO TO DRAWING NO. E601 – SINGLE LINE DIAGRAM – EXISTING AND REMOVALS, AND DRAWING NO. E602 – SINGLE LINE DIAGRAM – NEW.



DRAWING NAME: P:\2018\180221800-RFP Emergency Generator Package\08. Working\Re-design\Electrical\E-601-607_SLD.dwg
CREATED: MODIFIED: 2019/10/23 1:27:05 PM

Key Plan:

Consultant:

MORRISON HERSHFIELD
Suite 300, 125 Commerce Valley Drive W.
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Tel: (416) 499-3110 Fax: (416) 499-9658

Seal:

REV	DESCRIPTION	DATE	BY
2	ISSUED FOR TENDER	OCT. 23/19	JY
1	ISSUED FOR REVIEW	OCT. 11/19	JY

Client:

Ontario Shores
Centre for Mental Health Sciences

Project:

NEW POWERHOUSE

700 GORDON STREET, WHITBY, ON L1N 5S9

Sheet Title:

SINGLE LINE DIAGRAM
STAGE 1

Drawn By:	J.Y.	Date:	DEC. 6, 2018
Designed By:	J.Y.	Checked By:	T.G.
Scale:	N.T.S.	File Path:	BIM 360:\RMH - 1802218 - Ontario Shores Powerhouse\1802218-Ontario Shores Powerhouse-RVT2018-ARCH.rvt

Project No: 1802218

Drawing No: E603

GENERAL NOTES:

A. REFER ALSO TO DRAWING NO. E601 – SINGLE LINE DIAGRAM – EXISTING AND REMOVALS, AND DRAWING NO. E602 – SINGLE LINE DIAGRAM – NEW.

EXISTING WHITBY HYDRO
44 kV O/H LINE ON
GORDON STREET

EXISTING HYDRO POLE

EXISTING POLE MOUNTED 44 kV LOAD BREAK SWITCH AND FUSES

EXISTING 3–1/C 350MCM, 15kV CABLES + #4/0 GND IN 4Wx2H, 103mmC DUCT BANK

3–1/C #4/0, 44kV IN 4Wx1H CONCRETE ENCASED DUCT BANK

EXISTING OUTDOOR SUBSTATION

EXISTING OUTDOOR SWITCHGEAR 'SG–N1' (S&C)
46 kV, 600 A, 3ø, 3W, 250 kV BIL
18.8 kA RMS SYM., 1500 MVA 3ø SYM

NEW EXTENSION SECTION
(BY OTHERS)

27.6kV:115V

INTERTIE PROTECTION RELAY–2 SEL–751
27, 32, 50, 51, 59, 59G, 60, 67, 81O, 81U

INTERTIE PROTECTION RELAY–1 SEL–751
27, 32, 50, 51, 59, 59G, 60, 67, 81O, 81U

T–1 LBS–2 600 A

T–2 LBS–3 600 A

SMD–2C 125E

100:5

SMD–2C 125E

100:5

WHITBY HYDRO METERING TANK

SMD–2C 300E

MAIN LBS–1 600 A

L.A. 39 kV MCOV STATION CLASS

EXISTING OUTDOOR SWITCHGEAR 'SG–N2' (S&C)
15 kV, 600 A, 3ø, 3W

'RP–S' 120/240V 1ø, 3W

80A 3P

50E

STATION SERVICE TRANSFORMER
15 kVA
13.8 kV–120/240 V

LBS–12 600 A

FAULT FITER TYPE

LBS–11 600 A

V S

TRIP & CLOSE

AUTO TRANSFER CONTROL SYSTEM

TRIP & CLOSE

V S

LBS–21 600 A

LBS–22 600 A

FAULT FITER TYPE

LBS–T1 600 A N.O.

FO CABLE

TRIP

TRIP

TO PROTECTION & CONTROL CAB.–2 (BLK. 7 EL. RM.) (BY OTHERS)

LOAD CONTROL

LOAD CONTROL

TO CHP GENERATOR CONTROL PANEL (BY OTHERS)

3–#4/0, 44kV IN 129mm CONCRETE ENCASED DUCT

3–1/C #4/0, 44kV IN DUCT BANK

EXISTING TRANSFORMER 'T–1'
3000/4000 kVA
44–13.8/8 kV
Z=5.51%
(FERRANTI–PACKARD)

EXISTING TRANSFORMER 'T–2'
3000/4000 kVA
44–13.8/8 kV
Z=5.47%
(FERRANTI–PACKARD)

3–1/C 350MCM, 15kV + #4/0 GND IN DUCT BANK

EMH–2

EXISTING 3–1/C 350MCM, 15kV CABLES + #4/0 GND IN 4Wx2H, 103mmC DUCT BANK

EXISTING 3–1/C 350MCM, 15kV CABLES + #4/0 GND IN 4Wx2H, 103mmC DUCT BANK

EMH–1

LOAD BANK CONNECTION BOX
150A, 13.8kV, 3W+G

NEW POWERHOUSE

NEW GENERATOR 'DG–1'
2500kW STANDBY
2250kW PRIME, 13.8kV

1/C #2 + #6G, 8kV, 133% INS., SHIELDED CABLE IN 75mmC

TO RELAY–G1

51G

87

TO RELAY–G1

GROUNDING RESISTOR 8kV, 25A, 10s

3–#2, 15kV, 133% INS., COPPER TAPE SHIELDED CABLE + #6G IN 78mmC

GENERATOR SWITCHGEAR 'SG–G1'
13.8 kV, 600 A
NOTES 2 AND 3

K1 LBS–G1 150E

K1 K3 LBS–G3 100E

K2 K3 LBS–G4 100E

K2 LBS–G2 150E

NEW 3/C #2 + #6G, COPPER, 15kV, 133% INS., COPPER TAPE SHIELDED, TECK CABLE IN TRAY

NEW GENERATOR 'DG–2'
2500kW STANDBY
2250kW PRIME, 13.8kV

DG–2

87

TO RELAY–G2

1/C #2 + #6G, 8kV, 133% INS., SHIELDED CABLE IN 75mmC

51G

TO RELAY–G2

GROUNDING RESISTOR 8kV, 25A, 10s

NEW 3/C #2 + #6G, COPPER, 15kV, 133% INS., COPPER TAPE SHIELDED, TECK CABLE IN TRAY

GENERATOR ROOM
ELECTRICAL ROOM

SYNCHRONIZATION AND TRANSFER CONTROLS

RELAY–G1

GB–G1 1200AF 350AT N.O.

RELAY–B1

MB–U1 1200AF 350AT N.C.

TB–T1 1200AF 350AT N.O.

RELAY–F3

MB–U2 1200AF 350AT N.C.

RELAY–B2

GB–G2 1200AF 135AT N.O.

RELAY–G2

FB–11 1200AF 350AT N.C.

RELAY–F1

SPACE

FUTURE LOAD

10E

ROLL–OUT FUSE 'FU–EA1'

DRY–TYPE TRANSFORMER 'T–EA1'
75 kVA
13.8 kV–120/240 V

ROLL–OUT FUSE 'FU–EB1'

10E

DRY–TYPE TRANSFORMER 'T–EB1'
75 kVA
13.8 kV–120/240 V

SPACE

FUTURE LOAD

RELAY–F2

FB–21 1200AF 350AT N.C.

PARALLELING, TRANSFER AND DISTRIBUTION SWITCHGEAR 'SG–E1'
13.8 kV, 600 A, 3ø, MIN. 25kAIC
NOTES 1 AND 2

NEW 3–600MCM + #2G – 78mmC

'ATS–E1'
400A, 120/240V
1ø, 3W, MIN. 10kAIC
SWITCHED NEUTRAL

NEW 3–600MCM + #2G – 78mmC

NEW 3–600MCM + #2G – 78mmC

'LPP–SS'
400 A
120/240 V
1ø, 3W
72–CCT
C/W 350 A
MAIN BREAKER

MAIN ELECTRICAL ROOM
(#2–1038, LEVEL 1, BUILDING 2)

MAIN INCOME MEDIUM VOLTAGE SWITCHBOARD 'B2–1'
13.8kV, 600A

LBS–25

LBS–23 N.C.

LBS–24A

LBS–T2 N.O.

LBS–14A

N.C.

LBS–13

LBS–15

TRANSFORMER 'B2–T1'
2000/2666kVA
13.8kV–600/347V

IMPEDANCE GROUNDED

TRANSFORMER 'B2–T2'
2000/2666kVA
13.8kV–600/347V

IMPEDANCE GROUNDED

M1 3000A

3000A M2

T1 3000A N.O.

NORMAL POWER SWITCHBOARD 'B2–2'
3000A, 600V. 3ø. 3W

52–3B SPACE

52–3C/1600A BLOCK 2 'PP–B2–PPA' 2x3#3/0+GRD–2–1/2"C

52–3D/1600A BLOCK 2 'MCC–2N' 2x3#350MCM+GRD–3"C

52–4D/1600A CAPACITOR T–1

52–4C/1600A BLOCK 5 'PP–B5–PA' 2x3#350MCM+GRD–3"C

52–4B/1600A 1600A–3ø–3W BUSDUCT

52–6D/1600A CAPACITOR T–2

52–6C/1600A BLOCK 1 'MCC–1N' 2x3#350MCM+GRD–3"C

52–6B/1600A 1600A–3ø–3W BUSDUCT

52–7B SPACE

52–7C/1600A BLOCK 3 'MCC–3N' 2x3#350MCM+GRD–3"C

52–7D/1600A BLOCK 5 'PP–B5–PB' 2x3#350MCM+GRD–3"C

TRANSFORMER 'B2–T4' 1250kVA 600–120/208V

TRANSFORMER 'B2–T3' 1250kVA 600–120/208V

M6 4000A

4000A M5

T3 4000A N.O.

NORMAL POWER SWITCHBOARD 'B2–3'
4000A, 120/208V. 3ø. 4W

F11/100A BLOCK 1 – WELDER – ROOM #1–1064 4#3+GRD–1–1/4"C

F6/600A SPARE

F7/600A BLOCK 3 'PP–B3–PAA' 2x4#350MCM+GRD–3"C

F8/600A BLOCK 4 'PP–B4–PAA' 2x4#500MCM+GRD–3"C

F9/600A BLOCK 5 'PP–B5–PAA' 2x4#500MCM+GRD–3"C

F10/800A BLOCK 3 'PP–B3–PBB' 3x4#350MCM+GRD–3"C

SPACE

F1/600A SPARE

F2/600A BLOCK 1 'PP–B1–PAA' 2x4#350MCM+GRD–3"C

F3/600A BLOCK 1 'PP–B1–PBB' 2x4#350MCM+GRD–3"C

F4/600A BLOCK 2 'PP–B2–PAA' 2x4#350MCM+GRD–3"C

F5/800A BLOCK 2 'PP–B2–PBB' 3x4#350MCM+GRD–3"C

SECONDARY ELECTRICAL ROOM
(#7–1041, LEVEL 1, BUILDING 7)

TRANSFORMER 'B7–T1'
2000/2666kVA
13.8kV–600/347V

M3 3000A

LBS–24B 600A 15kV

IMPEDANCE GROUNDED

TRANSFORMER 'B7–T2'
2000/2666kVA
13.8kV–600/347V

T2 3000A

3000A M4

LBS–14B 600A 15kV

IMPEDANCE GROUNDED

NORMAL POWER SWITCHBOARD 'B7–1'
3000A, 600V. 3ø. 3W.

52–4B/1600A BASEMENT MECH. RM. CHILLER #3

52–4C/1600A BLOCK 7 'MCC–7N' 2x3#3/0+GRD–2–1/2"C

52–4D/1600A BLOCK 8 'MCC–8N2' 2x3#350MCM+GRD–3"C

52–5B/1600A CAPACITOR T–1

52–5C/1600A A.T.S. No. 1 3x3#500MCM+GRD–3"C

52–5D/1600A

52–7B/1600A

52–7C/1600A BASEMENT MECH. RM. CHILLER #2

52–7D/1600A

52–8B/1600A BLOCK 7 'PP–B7–PPA' 2x3#3/0+GRD–2–1/2"C

52–8C/1600A BLOCK 8 'MCC–8N' 3x3#500MCM+GRD–3"C

52–8D/1600A BLOCK 8 CHILLER No. ME–14 2x3#350MCM+GRD–3"C

TRANSFORMER 'B7–T4' 500kVA 600–120/208V

TRANSFORMER 'B7–T3' 500kVA 600–120/208V

M8 4000A

4000A M7

T4 4000A

NORMAL POWER SWITCHBOARD 'B7–2'
120/208V. 3ø. 4W.

SPACE

F6/400A SPARE

F7/600A SPARE

F8/800A BLOCK 7 'PP–B7–PAA' 3x4#350MCM+GRD–3"C

F9/600A BLOCK 7 'PP–B7–PBB' 2x4#500MCM+GRD–3"C

F10/600A BLOCK 8 'PP–B8–PBB' 2x4#500MCM+GRD–3"C

SPACE

F1/400A SPARE

F2/600A SPARE

F3/600A BLOCK 5 'PP–B5–PBB' 2x4#350MCM+GRD–3"C

F4/600A BLOCK 6 'PP–B6–PAA' 2x4#350MCM+GRD–3"C

F5/800A BLOCK 8 'PP–B8–PAA' 3x4#350MCM+GRD–3"C

SPACE

SPACE

F1/200A

F2/150A STREET LIGHTS 2x3#3/0+GRD–4" DUCT

F3/350A BLOCK 8 'MCC–88–E1' 3x4#350MCM+GRD–3"C

F4/600A BLOCK 2 'PP–B2–E1' 2x4#350MCM+GRD–3"C

SPACE

SPACE

F5/600A SPARE

F6/350A BLOCK 7 'PP–B7–PEA' 3#350MCM+GRD–3"C

F7/350A BLOCK 8 'PP–B8–PEA' 3#350MCM+GRD–3"C

F8/800A BLOCK 5 'PP–B5–PEA' 3x3#250MCM+GRD–2–1/2"C

3 RUNS 3–500MCM – 3–1/2"C.

3x3/C–500MCM TECK90 IN CABLE TRAY (BY OTHERS)

A.T.S. No. 1 1200A, 600V 3ø, 3W

3 RUNS 3–500MCM – 3"C.

M 1600/1200A

EMERGENCY SWITCHBOARD 'B7–E1'
1200A, 600V. 3ø. 3W

GAS COMBINED HEAT AND POWER (CHP) GENERATOR 800 kW, 600V 3ø, 4W, HRG (BY OTHERS)

1600/1000A

3x(3/C–500MCM TECK90 – 4"C) (BY OTHERS)

OUTDOOR GENERATOR ENCLOSURE
(BY OTHERS)

1600/1200A

DIESEL GENERATOR 900 kW, 600V 3ø, 3W

EMERGENCY DIESEL GENERATOR ROOM
(#8–1018, LEVEL 1, BUILDING 8)

Key Plan:

Consultant:

MORRISON HERSHFIELD

Suite 300, 125 Commerce Valley Drive W.
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Seal:

REV	DESCRIPTION	DATE	BY
2	ISSUED FOR TENDER	OCT. 23/19	JY
1	ISSUED FOR REVIEW	OCT. 11/19	JY

Client:

Ontario Shores
Centre for Mental Health Sciences

Project:

NEW POWERHOUSE

700 GORDON STREET, WHITBY, ON L1N 5S9

Sheet Title:

SINGLE LINE DIAGRAM
STAGE 2A

Drawn By:	J.Y.	Date:	DEC. 6, 2018
Designed By:	J.Y.	Checked By:	T.G.
Scale:	N.T.S.	File Path:	BIM 360:\RMH - 1802218 - Ontario Shores Powerhouse\1802218-Ontario Shores Powerhouse-RVT2018-ARCH.rvt

Project No: 1802218

Drawing No: E604

DRAWING NAME: P:\2018\180221800–RFP Emergency Generator Package\08. Working\Re–design\Electrical\E–601–607_SLD.dwg
MODIFIED: 2019/10/23 1:26:20 PM
CREATED:

GENERAL NOTES:

A. REFER ALSO TO DRAWING NO. E601 – SINGLE LINE DIAGRAM – EXISTING AND REMOVALS, AND DRAWING NO. E602 – SINGLE LINE DIAGRAM – NEW.

EXISTING WHITBY HYDRO 44 kV O/H LINE ON GORDON STREET

EXISTING HYDRO POLE

EXISTING POLE MOUNTED 44 kV LOAD BREAK SWITCH AND FUSES

EXISTING 3–1/C 350MCM, 15kV CABLES + #4/0 GND IN 4Wx2H, 103mmC DUCT BANK

NEW 3–350MCM TRXLPE, 15kV, 133% INSUL., COPPER TAPE SHIELDED + 1–#3 GND IN EX. 103mmC

3–1/C #4/0, 44kV IN 4Wx1H CONCRETE ENCASED DUCT BANK

EXISTING OUTDOOR SWITCHGEAR 'SG–N1' (S&C)
46 kV, 600 A, 3ø, 3W, 250 kV BIL
18.8 kA RMS SYM., 1500 MVA 3ø SYM

NEW EXTENSION SECTION (BY OTHERS)

27.6kV:115V

INTERTIE PROTECTION RELAY–2 SEL–751
27, 32, 50, 51, 59, 59G, 60, 67, 81O, 81U

INTERTIE PROTECTION RELAY–1 SEL–751
27, 32, 50, 51, 59, 59G, 60, 67, 81O, 81U

T–1 LBS–2 600 A
SMD–2C 125E
100:5

T–2 LBS–3 600 A
SMD–2C 125E
100:5

WHITBY HYDRO METERING TANK

SMD–2C 300E
MAIN LBS–1 600 A

L.A. 39 kV MCOV STATION CLASS

EXISTING OUTDOOR SWITCHGEAR 'SG–N2' (S&C)
15 kV, 600 A, 3ø, 3W

'RP–S' 120/240V 1ø, 3W

80A 3P

50E

LBS–T1 600 A N.O.

LBS–12 600 A

FAULT FITER TYPE

LBS–11 600 A

V S

TRIP & CLOSE

AUTO TRANSFER CONTROL SYSTEM

LBS–21 600 A

LBS–22 600 A

FAULT FITER TYPE

STATION SERVICE TRANSFORMER
15 kVA
13.8 kV–120/240 V

FO CABLE

TRIP

LOAD CONTROL

TO PROTECTION & CONTROL CAB.–2 (BLK. 7 EL. RM.) (BY OTHERS)

TO CHP GENERATOR CONTROL PANEL (BY OTHERS)

3–#4/0, 44kV IN 129mm CONCRETE ENCASED DUCT

3–1/C #4/0, 44kV IN DUCT BANK

EXISTING TRANSFORMER 'T–1'
3000/4000 kVA
44–13.8/8 kV
Z=5.51%
(FERRANTI–PACKARD)

EXISTING TRANSFORMER 'T–2'
3000/4000 kVA
44–13.8/8 kV
Z=5.47%
(FERRANTI–PACKARD)

3–1/C 350MCM, 15kV + #4/0 GND IN DUCT BANK

EXISTING 3–1/C 350MCM, 15kV CABLES + #4/0 GND IN 4Wx2H, 103mmC DUCT BANK

NEW 3–350MCM TRXLPE, 15kV, 100% INSUL., COPPER TAPE SHIELDED + 1–#3 GND IN EX. 103mmC

NEW 3–350MCM TRXLPE, 15kV, 100% INSUL., COPPER TAPE SHIELDED + 1–#3 GND IN NEW 155mmC

NEW EXTENSION 3–350MCM TRXLPE, 15kV, 133% INSUL., COPPER TAPE SHIELDED + 1–#3 GND IN EX. 103mmC

EMH–1

EMH–2

LOAD BANK CONNECTION BOX
150A, 13.8kV, 3W+G

NEW POWERHOUSE

NEW GENERATOR 'DG–1'
2500kW STANDBY
2250kW PRIME, 13.8kV

1/C #2 + #6G, 8kV, 133% INS., SHIELDED CABLE IN 75mmC

TO RELAY–G1

51G

GROUNDING RESISTOR 8kV, 25A, 10s

87

TO RELAY–G1

GENERATOR SWITCHGEAR 'SG–G1'
13.8 kV, 600 A
NOTES 2 AND 3

3–#2, 15kV, 133% INS., COPPER TAPE SHIELDED CABLE + #6G IN 78mmC

NEW 3/C #2 + #6G, COPPER, 15kV, 133% INS., COPPER TAPE SHIELDED, TECK CABLE IN TRAY

K1 LBS–G1 150E

K3 LBS–G3 100E

K2 LBS–G4 100E

K2 LBS–G2 150E

NEW GENERATOR 'DG–2'
2500kW STANDBY
2250kW PRIME, 13.8kV

1/C #2 + #6G, 8kV, 133% INS., SHIELDED CABLE IN 75mmC

TO RELAY–G2

51G

GROUNDING RESISTOR 8kV, 25A, 10s

87

TO RELAY–G2

NEW 3/C #2 + #6G, COPPER, 15kV, 133% INS., COPPER TAPE SHIELDED, TECK CABLE IN TRAY

GENERATOR ROOM

ELECTRICAL ROOM

SYNCHRONIZATION AND TRANSFER CONTROLS

RELAY–G1

GB–G1 1200AF 350AT N.O.

RELAY–B1

MB–U1 1200AF 350AT N.C.

TB–T1 1200AF 350AT N.O.

RELAY–F3

MB–U2 1200AF 350AT N.C.

RELAY–B2

GB–G2 1200AF 350AT N.O.

RELAY–G2

FB–11 1200AF 350AT N.C.

RELAY–F1

SPACE

FUTURE LOAD

10E

ROLL–OUT FUSE 'FU–EA1'

DRY–TYPE TRANSFORMER 'T–EA1' 75 kVA 13.8 kV–120/240 V

ROLL–OUT FUSE 'FU–EB1'

10E

DRY–TYPE TRANSFORMER 'T–EB1' 75 kVA 13.8 kV–120/240 V

SPACE

FUTURE LOAD

RELAY–F2

FB–21 1200AF 350AT N.C.

PARALLELING, TRANSFER AND DISTRIBUTION SWITCHGEAR 'SG–E1' 13.8 kV, 600 A, 3ø, MIN. 25kAIC NOTES 1 AND 2

NEW 3–600MCM + #2G – 78mmC

'ATS–E1' 400A, 120/240V 1ø, 3W, MIN. 10kAIC SWITCHED NEUTRAL

NEW 3–600MCM + #2G – 78mmC

NEW 3–600MCM + #2G – 78mmC

'LPP–SS' 400 A 120/240 V 1ø, 3W 72–CCT C/W 350 A MAIN BREAKER

MAIN ELECTRICAL ROOM
(#2–1038, LEVEL 1, BUILDING 2)

MAIN INCOME MEDIUM VOLTAGE SWITCHBOARD 'B2–1' 13.8kV, 600A

LBS–25

LBS–23 N.C.

LBS–24A

LBS–T2 N.O.

LBS–14A

N.C.

LBS–13

LBS–15

TRANSFORMER 'B2–T1' 2000/2666kVA 13.8kV–600/347V

IMPEDANCE GROUNDED

TRANSFORMER 'B2–T2' 2000/2666kVA 13.8kV–600/347V

IMPEDANCE GROUNDED

M1 3000A

T1 3000A N.O.

3000A M2

NORMAL POWER SWITCHBOARD 'B2–2' 3000A, 600V. 3ø. 3W

52–3B SPACE

52–3C/1600A BLOCK 2 'PP–B2–PPA' 2x3#3/0+GRD–2–1/2"C

52–3D/1600A BLOCK 2 'MCC–2N' 2x3#350MCM+GRD–3"C

52–4D/1600A CAPACITOR T–1

52–4C/1600A BLOCK 5 'PP–B5–PA' 2x3#350MCM+GRD–3"C

52–4B/1600A 1600A–3ø–3W BUSDUCT

52–6D/1600A CAPACITOR T–2

52–6C/1600A BLOCK 1 'MCC–1N' 2x3#350MCM+GRD–3"C

52–6B/1600A 1600A–3ø–3W BUSDUCT

52–7B SPACE

52–7C/1600A BLOCK 3 'MCC–3N' 2x3#350MCM+GRD–3"C

52–7D/1600A BLOCK 5 'PP–B5–PB' 2x3#350MCM+GRD–3"C

TRANSFORMER 'B2–T4' 1250kVA 600–120/208V

TRANSFORMER 'B2–T3' 1250kVA 600–120/208V

M6 4000A

M5 4000A

NORMAL POWER SWITCHBOARD 'B2–3' 4000A, 120/208V. 3ø. 4W

F11/100A BLOCK 1 – WELDER – ROOM #1–1064 4#3+GRD–1–1/4"C

F6/600A SPARE

F7/600A BLOCK 3 'PP–B3–PAA' 2x4#350MCM+GRD–3"C

F8/600A BLOCK 4 'PP–B4–PAA' 2x4#500MCM+GRD–3"C

F9/600A BLOCK 5 'PP–B5–PAA' 2x4#500MCM+GRD–3"C

F10/800A BLOCK 3 'PP–B3–PBB' 3x4#350MCM+GRD–3"C

T3 4000A N.O.

F1/600A SPACE

F2/600A SPARE

F3/600A BLOCK 1 'PP–B1–PAA' 2x4#350MCM+GRD–3"C

F4/600A BLOCK 1 'PP–B1–PBB' 2x4#350MCM+GRD–3"C

F5/800A BLOCK 2 'PP–B2–PAA' 2x4#350MCM+GRD–3"C

BLOCK 2 'PP–B2–PBB' 3x4#350MCM+GRD–3"C

SECONDARY ELECTRICAL ROOM
(#7–1041, LEVEL 1, BUILDING 7)

TRANSFORMER 'B7–T1' 2000/2666kVA 13.8kV–600/347V

M3 3000A

LBS–24B 600A 15kV

IMPEDANCE GROUNDED

TRANSFORMER 'B7–T2' 2000/2666kVA 13.8kV–600/347V

T2 3000A

3000A M4

LBS–14B 600A 15kV

IMPEDANCE GROUNDED

NORMAL POWER SWITCHBOARD 'B7–1' 3000A, 600V. 3ø. 3W.

52–4B/1600A BASEMENT MECH. RM. CHILLER #3

52–4C/1600A BLOCK 7 'MCC–7N' 2x3#3/0+GRD–2–1/2"C

52–4D/1600A BLOCK 8 'MCC–8N2' 2x3#350MCM+GRD–3"C

52–5B/1600A CAPACITOR T–1

52–5C/1600A A.T.S. No. 1 3x3#500MCM+GRD–3"C

52–5D/1600A

52–7B/1600A

52–7C/1600A BASEMENT MECH. RM. CHILLER #2

52–7D/1600A

52–8B/1600A BLOCK 7 'PP–B7–PPA' 2x3#3/0+GRD–2–1/2"C

52–8C/1600A BLOCK 8 'MCC–8N' 3x3#500MCM+GRD–3"C

52–8D/1600A BLOCK 8 CHILLER No. ME–14 2x3#350MCM+GRD–3"C

TRANSFORMER 'B7–T4' 500kVA 600–120/208V

TRANSFORMER 'B7–T3' 500kVA 600–120/208V

M8 4000A

T4 4000A

4000A M7

NORMAL POWER SWITCHBOARD 'B7–2' 120/208V. 3ø. 4W.

SPACE

F6/400A SPARE

F7/600A SPARE

F8/800A BLOCK 7 'PP–B7–PAA' 3x4#350MCM+GRD–3"C

F9/600A BLOCK 7 'PP–B7–PBB' 2x4#500MCM+GRD–3"C

F10/600A BLOCK 8 'PP–B8–PBB' 2x4#500MCM+GRD–3"C

SPACE

F1/400A SPARE

F2/600A SPARE

F3/600A BLOCK 5 'PP–B5–PBB' 2x4#350MCM+GRD–3"C

F4/600A BLOCK 6 'PP–B6–PAA' 2x4#350MCM+GRD–3"C

F5/800A BLOCK 8 'PP–B8–PAA' 3x4#350MCM+GRD–3"C

SPACE

SPACE

F1/200A

F2/150A STREET LIGHTS 2x3#3/0+GRD–4" DUCT

F3/350A BLOCK 8 'MCC–88–E1' 3x4#350MCM+GRD–3"C

F4/600A BLOCK 2 'PP–B2–E1' 2x4#350MCM+GRD–3"C

SPACE

SPACE

F5/600A SPARE

F6/350A BLOCK 7 'PP–B7–PEA' 3#350MCM+GRD–3"C

F7/350A BLOCK 8 'PP–B8–PEA' 3#350MCM+GRD–3"C

F8/800A BLOCK 5 'PP–B5–PEA' 3x3#250MCM+GRD–2–1/2"C

3 RUNS 3–500MCM – 3–1/2"C.

3x3/C–500MCM TECK90 IN CABLE TRAY (BY OTHERS)

A.T.S. No. 1 1200A, 600V 3ø, 3W

3 RUNS 3–500MCM – 3"C.

M 1600/1200A

EMERGENCY SWITCHBOARD 'B7–E1' 1200A, 600V. 3ø. 3W

GAS COMBINED HEAT AND POWER (CHP) GENERATOR 800 kW, 600V 3ø, 4W, HRG (BY OTHERS)

1600/1000A

3x(3/C–500MCM TECK90 – 4"C) (BY OTHERS)

OUTDOOR GENERATOR ENCLOSURE (BY OTHERS)

1600/1200A

DIESEL GENERATOR 900 kW, 600V 3ø, 3W

EMERGENCY DIESEL GENERATOR ROOM
(#8–1018, LEVEL 1, BUILDING 8)

DRAWING NAME: P:\2018\180221800–RFP Emergency Generator Package\08. Working\Re–design\Electrical\E–601–607_SLD.dwg
MODIFIED: 2019/10/23 1:27:42 PM
CREATED:

Key Plan:

Consultant:

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Seal:

REV	DESCRIPTION	DATE	BY
2	ISSUED FOR TENDER	OCT. 23/19	JY
1	ISSUED FOR REVIEW	OCT. 11/19	JY

Client:

Ontario Shores
Centre for Mental Health Sciences

Project:

NEW POWERHOUSE

700 GORDON STREET, WHITBY, ON L1N 5S9

Sheet Title:

SINGLE LINE DIAGRAM
STAGE 2B

Drawn By:	J.Y.	Date:	DEC. 6, 2018
Designed By:	J.Y.	Checked By:	T.G.
Scale:	N.T.S.	File Path:	BIM 360:\RMH - 1802218 - Ontario Shores Powerhouse\1802218-Ontario Shores Powerhouse-RVT2018-ARCH.rvt

Project No: 1802218

Drawing No: E605

GENERAL NOTES:

A. REFER ALSO TO DRAWING NO. E601 – SINGLE LINE DIAGRAM – EXISTING AND REMOVALS, AND DRAWING NO. E602 – SINGLE LINE DIAGRAM – NEW.

EXISTING WHITBY HYDRO 44 kV O/H LINE ON GORDON STREET

EXISTING HYDRO POLE

EXISTING POLE MOUNTED 44 kV LOAD BREAK SWITCH AND FUSES

EXISTING 3–1/C 350MCM, 15kV CABLES + #4/0 GND IN 4Wx2H, 103mmC DUCT BANK

NEW 3–350MCM TRXLPE, 15kV, 133% INSUL., COPPER TAPE SHIELDED + 1–#3 GND IN EX. 103mmC

3–1/C #4/0, 44kV IN 4Wx1H CONCRETE ENCASED DUCT BANK

EMH–2

EXISTING OUTDOOR SWITCHGEAR 'SG–N1' (S&C)
46 kV, 600 A, 3ø, 3W, 250 kV BIL
18.8 kA RMS SYM., 1500 MVA 3ø SYM

NEW EXTENSION SECTION (BY OTHERS)

27.6kV:115V

INTERTIE PROTECTION RELAY–2 SEL–751
27, 32, 50, 51, 59, 59G, 60, 67, 81O, 81U

INTERTIE PROTECTION RELAY–1 SEL–751
27, 32, 50, 51, 59, 59G, 60, 67, 81O, 81U

T–1 LBS–2 600 A
SMD–2C 125E
100:5

T–2 LBS–3 600 A
SMD–2C 125E
100:5

WHITBY HYDRO METERING TANK

SMD–2C 300E
MAIN LBS–1 600 A

L.A. 39 kV MCOV STATION CLASS

FO CABLE

TRIP
TRIP
TO PROTECTION & CONTROL CAB.–2 (BLK. 7 EL. RM.) (BY OTHERS)

LOAD CONTROL
LOAD CONTROL
TO CHP GENERATOR CONTROL PANEL (BY OTHERS)

3–#4/0, 44kV IN 129mm CONCRETE ENCASED DUCT

3–1/C #4/0, 44kV IN DUCT BANK

EXISTING TRANSFORMER 'T–1'
3000/4000 kVA
44–13.8/8 kV
Z=5.51%
(FERRANTI–PACKARD)

EXISTING TRANSFORMER 'T–2'
3000/4000 kVA
44–13.8/8 kV
Z=5.47%
(FERRANTI–PACKARD)

3–1/C 350MCM, 15kV + #4/0 GND IN DUCT BANK

EXISTING OUTDOOR SWITCHGEAR 'SG–N2' (S&C)
15 kV, 600 A, 3ø, 3W

'RP–S' 120/240V 1ø, 3W

80A 3P

50E

LBS–T1 600 A N.O.

LBS–12 600 A
FAULT FITER TYPE

LBS–11 600 A
V S
TRIP & CLOSE

AUTO TRANSFER CONTROL SYSTEM

LBS–21 600 A
TRIP & CLOSE
V S

LBS–22 600 A
FAULT FITER TYPE

STATION SERVICE TRANSFORMER
15 kVA
13.8 kV–120/240 V

EXISTING 3–1/C 350MCM, 15kV CABLES + #4/0 GND IN 4Wx2H, 103mmC DUCT BANK

NEW 3–350MCM TRXLPE, 15kV, 100% INSUL., COPPER TAPE SHIELDED + 1–#3 GND IN EX. 103mmC

NEW 3–350MCM TRXLPE, 15kV, 100% INSUL., COPPER TAPE SHIELDED + 1–#3 GND IN NEW 155mmC

EXISTING 3–1/C 350MCM, 15kV CABLES + #4/0 GND IN 4Wx2H, 103mmC DUCT BANK

EMH–1

LOAD BANK CONNECTION BOX
150A, 13.8kV, 3W+G

NEW POWERHOUSE

NEW GENERATOR 'DG–1'
2500kW STANDBY
2250kW PRIME, 13.8kV

1/C #2 + #6G, 8kV, 133% INS., SHIELDED CABLE IN 75mmC

TO RELAY–G1

51G

87

TO RELAY–G1

GROUNDING RESISTOR 8kV, 25A, 10s

3–#2, 15kV, 133% INS., COPPER TAPE SHIELDED CABLE + #6G IN 78mmC

GENERATOR SWITCHGEAR 'SG–G1'
13.8 kV, 600 A
NOTES 2 AND 3

K1 LBS–G1 150E
K1 K3 LBS–G3 100E
K2 K3 LBS–G4 100E
K2 LBS–G2 150E

NEW 3/C #2 + #6G, COPPER, 15kV, 133% INS., COPPER TAPE SHIELDED, TECK CABLE IN TRAY

NEW GENERATOR 'DG–2'
2500kW STANDBY
2250kW PRIME, 13.8kV

DG–2

1/C #2 + #6G, 8kV, 133% INS., SHIELDED CABLE IN 75mmC

87

TO RELAY–G2

51G

TO RELAY–G2

GROUNDING RESISTOR 8kV, 25A, 10s

NEW 3/C #2 + #6G, COPPER, 15kV, 133% INS., COPPER TAPE SHIELDED, TECK CABLE IN TRAY

GENERATOR ROOM
ELECTRICAL ROOM

SYNCHRONIZATION AND TRANSFER CONTROLS

RELAY–G1
GB–G1 1200AF 350AT N.O.

RELAY–B1
MB–U1 1200AF 350AT N.C.

TB–T1 1200AF 350AT N.O.
RELAY–F3

MB–U2 1200AF 350AT N.C.
RELAY–B2

RELAY–G2
GB–G2 1200AF 350AT N.O.

FB–11 1200AF 350AT N.C.
RELAY–F1
SPACE
FUTURE LOAD

10E
ROLL–OUT FUSE 'FU–EA1'
DRY–TYPE TRANSFORMER 'T–EA1'
75 kVA
13.8 kV–120/240 V

ROLL–OUT FUSE 'FU–EB1'
10E
DRY–TYPE TRANSFORMER 'T–EB1'
75 kVA
13.8 kV–120/240 V

SPACE
FUTURE LOAD
RELAY–F2
FB–21 1200AF 350AT N.C.

PARALLELING, TRANSFER AND DISTRIBUTION SWITCHGEAR 'SG–E1'
13.8 kV, 600 A, 3ø, MIN. 25kAIC
NOTES 1 AND 2

NEW 3–600MCM + #2G – 78mmC

'ATS–E1'
400A, 120/240V
1ø, 3W, MIN. 10kAIC
SWITCHED NEUTRAL

NEW 3–600MCM + #2G – 78mmC

NEW 3–600MCM + #2G – 78mmC

'LPP–SS'
400 A
120/240 V
1ø, 3W
72–CCT
C/W 350 A MAIN BREAKER

MAIN ELECTRICAL ROOM
(#2–1038, LEVEL 1, BUILDING 2)

LBS–25
LBS–23 N.C.
LBS–24A
LBS–T2 N.O.
LBS–14A
N.C.
LBS–13
LBS–15

MAIN INCOME MEDIUM VOLTAGE SWITCHBOARD 'B2–1'
13.8kV, 600A

TRANSFORMER 'B2–T1'
2000/2666kVA
13.8kV–600/347V
IMPEDANCE GROUNDED

TRANSFORMER 'B2–T2'
2000/2666kVA
13.8kV–600/347V
IMPEDANCE GROUNDED

M1 3000A
T1 3000A N.O.
3000A M2

NORMAL POWER SWITCHBOARD 'B2–2'
3000A, 600V. 3ø. 3W

52–3B SPACE
52–3C/1600A BLOCK 2 'PP–B2–PPA' 2x3#3/0+GRD–2–1/2"C
52–3D/1600A BLOCK 2 'MCC–2N' 2x3#350MCM+GRD–3"C
52–4D/1600A CAPACITOR T–1
52–4C/1600A BLOCK 5 'PP–B5–PA' 2x3#350MCM+GRD–3"C
52–4B/1600A 1600A–3ø–3W BUSDUCT
52–6D/1600A CAPACITOR T–2
52–6C/1600A BLOCK 1 'MCC–1N' 2x3#350MCM+GRD–3"C
52–6B/1600A 1600A–3ø–3W BUSDUCT
52–7B SPACE
52–7C/1600A BLOCK 3 'MCC–3N' 2x3#350MCM+GRD–3"C
52–7D/1600A BLOCK 5 'PP–B5–PB' 2x3#350MCM+GRD–3"C

TRANSFORMER 'B2–T4' 1250kVA 600–120/208V
TRANSFORMER 'B2–T3' 1250kVA 600–120/208V
M6 4000A
M5 4000A
T3 4000A N.O.

NORMAL POWER SWITCHBOARD 'B2–3'
4000A, 120/208V. 3ø. 4W

F11/100A BLOCK 1 – WELDER – ROOM #1–1064 4#3+GRD–1–1/4"C
F6/600A SPARE
F7/600A BLOCK 3 'PP–B3–PAA' 2x4#350MCM+GRD–3"C
F8/600A BLOCK 4 'PP–B4–PAA' 2x4#500MCM+GRD–3"C
F9/600A BLOCK 5 'PP–B5–PAA' 2x4#500MCM+GRD–3"C
F10/800A BLOCK 3 'PP–B3–PBB' 3x4#350MCM+GRD–3"C
SPACE
F1/600A SPARE
F2/600A BLOCK 1 'PP–B1–PAA' 2x4#350MCM+GRD–3"C
F3/600A BLOCK 1 'PP–B1–PBB' 2x4#350MCM+GRD–3"C
F4/600A BLOCK 2 'PP–B2–PAA' 2x4#350MCM+GRD–3"C
F5/800A BLOCK 2 'PP–B2–PBB' 3x4#350MCM+GRD–3"C

SECONDARY ELECTRICAL ROOM
(#7–1041, LEVEL 1, BUILDING 7)

TRANSFORMER 'B7–T1'
2000/2666kVA
13.8kV–600/347V

M3 3000A
LBS–24B 600A 15kV
IMPEDANCE GROUNDED

TRANSFORMER 'B7–T2'
2000/2666kVA
13.8kV–600/347V

T2 3000A
3000A M4
LBS–14B 600A 15kV
IMPEDANCE GROUNDED

NORMAL POWER SWITCHBOARD 'B7–1'
3000A, 600V. 3ø. 3W.

52–4B/1600A BASEMENT MECH. RM. CHILLER #3
52–4C/1600A BLOCK 7 'MCC–7N' 2x3#3/0+GRD–2–1/2"C
52–4D/1600A BLOCK 8 'MCC–8N2' 2x3#350MCM+GRD–3"C
52–5B/1600A CAPACITOR T–1
52–5C/1600A A.T.S. No. 1 3x3#500MCM+GRD–3"C
52–5D/1600A
52–7B/1600A
52–7C/1600A BASEMENT MECH. RM. CHILLER #2
52–7D/1600A
52–8B/1600A BLOCK 7 'PP–B7–PPA' 2x3#3/0+GRD–2–1/2"C
52–8C/1600A BLOCK 8 'MCC–8N' 3x3#500MCM+GRD–3"C
52–8D/1600A BLOCK 8 CHILLER No. ME–14 2x3#350MCM+GRD–3"C

TRANSFORMER 'B7–T4' 500kVA 600–120/208V
TRANSFORMER 'B7–T3' 500kVA 600–120/208V
M8 4000A
M7 4000A
T4 4000A

NORMAL POWER SWITCHBOARD 'B7–2'
120/208V. 3ø. 4W.

SPACE
F6/400A SPARE
F7/600A SPARE
F8/800A BLOCK 7 'PP–B7–PAA' 3x4#350MCM+GRD–3"C
F9/600A BLOCK 7 'PP–B7–PBB' 2x4#500MCM+GRD–3"C
F10/600A BLOCK 8 'PP–B8–PBB' 2x4#500MCM+GRD–3"C
SPACE
F1/400A SPARE
F2/600A SPARE
F3/600A BLOCK 5 'PP–B5–PBB' 2x4#350MCM+GRD–3"C
F4/600A BLOCK 6 'PP–B6–PAA' 2x4#350MCM+GRD–3"C
F5/800A BLOCK 8 'PP–B8–PAA' 3x4#350MCM+GRD–3"C

3x3/C–500MCM TECK90 IN CABLE TRAY (BY OTHERS)
3 RUNS 3–500MCM – 3–1/2"C.
A.T.S. No. 1 1200A, 600V 3ø, 3W
3 RUNS 3–500MCM – 3"C.

M 1600/1200A

SPACE
SPACE
F1/200A
F2/150A STREET LIGHTS 2x3#3/0+GRD–4" DUCT
F3/350A BLOCK 8 'MCC–88–E1' 3x4#350MCM+GRD–3"C
F4/600A BLOCK 2 'PP–B2–E1' 2x4#350MCM+GRD–3"C
SPACE
SPACE
F5/600A SPARE
F6/350A BLOCK 7 'PP–B7–PEA' 3#350MCM+GRD–3"C
F7/350A BLOCK 8 'PP–B8–PEA' 3#350MCM+GRD–3"C
F8/800A BLOCK 5 'PP–B5–PEA' 3x3#250MCM+GRD–2–1/2"C

EMERGENCY SWITCHBOARD 'B7–E1'
1200A, 600V. 3ø. 3W

GAS COMBINED HEAT AND POWER (CHP) GENERATOR
800 kW, 600V
3ø, 4W, HRG
(BY OTHERS)

1600/1000A

3x(3/C–500MCM TECK90 – 4"C) (BY OTHERS)

OUTDOOR GENERATOR ENCLOSURE
(BY OTHERS)

1600/1200A

DIESEL GENERATOR
900 kW, 600V
3ø, 3W

EMERGENCY DIESEL GENERATOR ROOM
(#8–1018, LEVEL 1, BUILDING 8)

DRAWING NAME: P:\2018\180221800–RFP Emergency Generator Package\08. Working\Re–design\Electrical\E–601–607_SLD.dwg
MODIFIED: 2019/10/23 1:29:07 PM
CREATED:

Key Plan:

Consultant:

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Seal:

REV	DESCRIPTION	DATE	BY
2	ISSUED FOR TENDER	OCT. 23/19	JY
1	ISSUED FOR REVIEW	OCT. 11/19	JY

Client:

Ontario Shores
Centre for Mental Health Sciences

Project:

NEW POWERHOUSE

700 GORDON STREET, WHITBY, ON L1N 5S9

Sheet Title:

SINGLE LINE DIAGRAM
STAGE 3A

Drawn By:	J.Y.	Date:	DEC. 6, 2018
Designed By:	J.Y.	Checked By:	T.G.
Scale:	N.T.S.	File Path:	BIM 360:\RMH - 1802218 - Ontario Shores Powerhouse\1802218-Ontario Shores Powerhouse-RVT2018-ARCH.rvt

Project No: 1802218

Drawing No: E606

GENERAL NOTES:

A. REFER ALSO TO DRAWING NO. E601 – SINGLE LINE DIAGRAM – EXISTING AND REMOVALS, AND DRAWING NO. E602 – SINGLE LINE DIAGRAM – NEW.

EXISTING WHITBY HYDRO
44 kV O/H LINE ON
GORDON STREET

EXISTING HYDRO POLE

EXISTING POLE MOUNTED 44 kV LOAD BREAK SWITCH AND FUSES

NEW 3–350MCM TRXLPE, 15kV, 133% INSUL., COPPER TAPE SHIELDED + 1–#3 GND IN EX. 103mmC

3–1/C #4/0, 44kV IN 4Wx1H CONCRETE ENCASED DUCT BANK

EXISTING OUTDOOR SWITCHGEAR 'SG–N1' (S&C)
46 kV, 600 A, 3ø, 3W, 250 kV BIL
18.8 kA RMS SYM., 1500 MVA 3ø SYM

NEW EXTENSION SECTION
(BY OTHERS)

27.6kV:115V

INTERTIE PROTECTION RELAY–2 SEL–751
27, 32, 50, 51, 59, 59G, 60, 67, 81O, 81U

INTERTIE PROTECTION RELAY–1 SEL–751
27, 32, 50, 51, 59, 59G, 60, 67, 81O, 81U

T–1 LBS–2 600 A
SMD–2C 125E
100:5

T–2 LBS–3 600 A
SMD–2C 125E
100:5

WHITBY HYDRO METERING TANK

SMD–2C 300E
MAIN LBS–1 600 A

L.A. 39 kV MCOV STATION CLASS

EXISTING OUTDOOR SWITCHGEAR 'SG–N2' (S&C)
15 kV, 600 A, 3ø, 3W

'RP–S' 120/240V 1ø, 3W

80A 3P

50E

STATION SERVICE TRANSFORMER
15 kVA
13.8 kV–120/240 V

LBS–12 600 A
FAULT FITER TYPE

LBS–11 600 A

LBS–T1 600 A N.O.

TRIP & CLOSE

AUTO TRANSFER CONTROL SYSTEM

LBS–21 600 A

LBS–22 600 A
FAULT FITER TYPE

FO CABLE

TRIP

LOAD CONTROL

TO PROTECTION & CONTROL CAB.–2 (BLK. 7 EL. RM.) (BY OTHERS)

TO CHP GENERATOR CONTROL PANEL (BY OTHERS)

3–#4/0, 44kV IN 129mm CONCRETE ENCASED DUCT

3–1/C #4/0, 44kV IN DUCT BANK

EXISTING TRANSFORMER 'T–1'
3000/4000 kVA
44–13.8/8 kV
Z=5.51%
(FERRANTI–PACKARD)

EXISTING TRANSFORMER 'T–2'
3000/4000 kVA
44–13.8/8 kV
Z=5.47%
(FERRANTI–PACKARD)

3–1/C 350MCM, 15kV + #4/0 GND IN DUCT BANK

EMH–2

NEW 3–350MCM TRXLPE, 15kV, 100% INSUL., COPPER TAPE SHIELDED + 1–#3 GND IN EX. 103mmC

NEW 3–350MCM TRXLPE, 15kV, 100% INSUL., COPPER TAPE SHIELDED + 1–#3 GND IN NEW 155mmC

NEW 3–350MCM TRXLPE, 15kV, 133% INSUL., COPPER TAPE SHIELDED + 1–#3 GND IN NEW 155mmC

EMH–1

LOAD BANK CONNECTION BOX
150A, 13.8kV, 3W+G

NEW POWERHOUSE

NEW GENERATOR 'DG–1'
2500kW STANDBY
2250kW PRIME, 13.8kV

1/C #2 + #6G, 8kV, 133% INS., SHIELDED CABLE IN 75mmC

TO RELAY–G1

51G

GROUNDING RESISTOR 8kV, 25A, 10s

87

TO RELAY–G1

GENERATOR SWITCHGEAR 'SG–G1'
13.8 kV, 600 A
NOTES 2 AND 3

3–#2, 15kV, 133% INS., COPPER TAPE SHIELDED CABLE + #6G IN 78mmC

K1 LBS–G1 150E

K1 K3 LBS–G3 100E

K2 K3 LBS–G4 100E

K2 LBS–G2 150E

NEW 3/C #2 + #6G, COPPER, 15kV, 133% INS., COPPER TAPE SHIELDED, TECK CABLE IN TRAY

NEW GENERATOR 'DG–2'
2500kW STANDBY
2250kW PRIME, 13.8kV

DG–2

1/C #2 + #6G, 8kV, 133% INS., SHIELDED CABLE IN 75mmC

TO RELAY–G2

51G

GROUNDING RESISTOR 8kV, 25A, 10s

87

TO RELAY–G2

NEW 3/C #2 + #6G, COPPER, 15kV, 133% INS., COPPER TAPE SHIELDED, TECK CABLE IN TRAY

GENERATOR ROOM
ELECTRICAL ROOM

SYNCHRONIZATION AND TRANSFER CONTROLS

RELAY–G1 GB–G1 1200AF 350AT N.O.

RELAY–B1 MB–U1 1200AF 350AT N.C.

TB–T1 1200AF 350AT N.O. RELAY–F3

MB–U2 1200AF 350AT N.C. RELAY–B2

RELAY–G2 GB–G2 1200AF 135AT N.O.

FB–11 1200AF 350AT N.C. RELAY–F1

SPACE
FUTURE LOAD

10E ROLL–OUT FUSE 'FU–EA1'

DRY–TYPE TRANSFORMER 'T–EA1'
75 kVA
13.8 kV–120/240 V

DRY–TYPE TRANSFORMER 'T–EB1'
75 kVA
13.8 kV–120/240 V

ROLL–OUT FUSE 'FU–EB1' 10E

SPACE
FUTURE LOAD

RELAY–F2 FB–21 1200AF 350AT N.C.

PARALLELING, TRANSFER AND DISTRIBUTION SWITCHGEAR 'SG–E1'
13.8 kV, 600 A, 3ø, MIN. 25kAIC
NOTES 1 AND 2

NEW 3–600MCM + #2G – 78mmC

'ATS–E1'
400A, 120/240V
1ø, 3W, MIN. 10kAIC
SWITCHED NEUTRAL

NEW 3–600MCM + #2G – 78mmC

NEW 3–600MCM + #2G – 78mmC

'LPP–SS'
400 A
120/240 V
1ø, 3W
72–CCT
C/W 350 A
MAIN BREAKER

MAIN ELECTRICAL ROOM
(#2–1038, LEVEL 1, BUILDING 2)

MAIN INCOME MEDIUM VOLTAGE SWITCHBOARD 'B2–1'
13.8kV, 600A

LBS–25
LBS–23 N.C.
LBS–24A
LBS–T2 N.O.
LBS–14A
N.C. LBS–13
LBS–15

TRANSFORMER 'B2–T1'
2000/2666kVA
13.8kV–600/347V

IMPEDANCE GROUNDED

TRANSFORMER 'B2–T2'
2000/2666kVA
13.8kV–600/347V

IMPEDANCE GROUNDED

M1 3000A
3000A M2
T1 3000A N.O.

NORMAL POWER SWITCHBOARD 'B2–2'
3000A, 600V. 3ø. 3W

52–3B SPACE
52–3C/1600A BLOCK 2 'PP–B2–PPA' 2x3#3/0+GRD–2–1/2"C
52–3D/1600A BLOCK 2 'MCC–2N' 2x3#350MCM+GRD–3"C
52–4D/1600A CAPACITOR T–1
52–4C/1600A BLOCK 5 'PP–B5–PA' 2x3#350MCM+GRD–3"C
52–4B/1600A 1600A–3ø–3W BUSDUCT
52–6D/1600A CAPACITOR T–2
52–6C/1600A BLOCK 1 'MCC–1N' 2x3#350MCM+GRD–3"C
52–6B/1600A 1600A–3ø–3W BUSDUCT
52–7B SPACE
52–7C/1600A BLOCK 3 'MCC–3N' 2x3#350MCM+GRD–3"C
52–7D/1600A BLOCK 5 'PP–B5–PB' 2x3#350MCM+GRD–3"C

NORMAL POWER SWITCHBOARD 'B2–3'
4000A, 120/208V. 3ø. 4W

TRANSFORMER 'B2–T4' 1250kVA 600–120/208V

TRANSFORMER 'B2–T3' 1250kVA 600–120/208V

M6 4000A
4000A M5
T3 4000A N.O.

F11/100A BLOCK 1 – WELDER – ROOM #1–1064 4#3+GRD–1–1/4"C
F6/600A SPARE
F7/600A BLOCK 3 'PP–B3–PAA' 2x4#350MCM+GRD–3"C
F8/600A BLOCK 4 'PP–B4–PAA' 2x4#500MCM+GRD–3"C
F9/600A BLOCK 5 'PP–B5–PAA' 2x4#500MCM+GRD–3"C
F10/800A BLOCK 3 'PP–B3–PBB' 3x4#350MCM+GRD–3"C
SPACE
F1/600A SPARE
F2/600A BLOCK 1 'PP–B1–PAA' 2x4#350MCM+GRD–3"C
F3/600A BLOCK 1 'PP–B1–PBB' 2x4#350MCM+GRD–3"C
F4/600A BLOCK 2 'PP–B2–PAA' 2x4#350MCM+GRD–3"C
F5/800A BLOCK 2 'PP–B2–PBB' 3x4#350MCM+GRD–3"C

SECONDARY ELECTRICAL ROOM
(#7–1041, LEVEL 1, BUILDING 7)

TRANSFORMER 'B7–T1'
2000/2666kVA
13.8kV–600/347V

M3 3000A
3000A M4
T2 3000A

LBS–24B 600A 15kV
IMPEDANCE GROUNDED

TRANSFORMER 'B7–T2'
2000/2666kVA
13.8kV–600/347V

LBS–14B 600A 15kV
IMPEDANCE GROUNDED

NORMAL POWER SWITCHBOARD 'B7–1'
3000A, 600V. 3ø. 3W.

52–4B/1600A BASEMENT MECH. RM. CHILLER #3
52–4C/1600A BLOCK 7 'MCC–7N' 2x3#3/0+GRD–2–1/2"C
52–4D/1600A BLOCK 8 'MCC–8N2' 2x3#350MCM+GRD–3"C
52–5B/1600A CAPACITOR T–1
52–5C/1600A A.T.S. No. 1 3x3#500MCM+GRD–3"C
52–5D/1600A
52–7B/1600A
52–7C/1600A BASEMENT MECH. RM. CHILLER #2
52–7D/1600A
52–8B/1600A BLOCK 7 'PP–B7–PPA' 2x3#3/0+GRD–2–1/2"C
52–8C/1600A BLOCK 8 'MCC–8N' 3x3#500MCM+GRD–3"C
52–8D/1600A BLOCK 8 CHILLER No. ME–14 2x3#350MCM+GRD–3"C

NORMAL POWER SWITCHBOARD 'B7–2'
120/208V. 3ø. 4W.

TRANSFORMER 'B7–T4' 500kVA 600–120/208V

TRANSFORMER 'B7–T3' 500kVA 600–120/208V

M8 4000A
4000A M7
T4 4000A

SPACE
F6/400A SPARE
F7/600A SPARE
F8/800A BLOCK 7 'PP–B7–PAA' 3x4#350MCM+GRD–3"C
F9/600A BLOCK 7 'PP–B7–PBB' 2x4#500MCM+GRD–3"C
F10/600A BLOCK 8 'PP–B8–PBB' 2x4#500MCM+GRD–3"C
SPACE
F1/400A SPARE
F2/600A SPARE
F3/600A BLOCK 5 'PP–B5–PBB' 2x4#350MCM+GRD–3"C
F4/600A BLOCK 6 'PP–B6–PAA' 2x4#350MCM+GRD–3"C
F5/800A BLOCK 8 'PP–B8–PAA' 3x4#350MCM+GRD–3"C

3x3/C–500MCM TECK90 IN CABLE TRAY (BY OTHERS)

3 RUNS 3–500MCM – 3–1/2"C.

A.T.S. No. 1
1200A, 600V
3ø, 3W

3 RUNS 3–500MCM – 3"C.

M 1600/1200A

EMERGENCY SWITCHBOARD 'B7–E1'
1200A, 600V. 3ø. 3W

SPACE
SPACE
F1/200A
F2/150A STREET LIGHTS 2x3#3/0+GRD–4" DUCT
F3/350A BLOCK 8 'MCC–88–E1' 3x4#350MCM+GRD–3"C
F4/600A BLOCK 2 'PP–B2–E1' 2x4#350MCM+GRD–3"C
SPACE
SPACE
F5/600A SPARE
F6/350A BLOCK 7 'PP–B7–PEA' 3#350MCM+GRD–3"C
F7/350A BLOCK 8 'PP–B8–PEA' 3#350MCM+GRD–3"C
F8/800A BLOCK 5 'PP–B5–PEA' 3x3#250MCM+GRD–2–1/2"C

GAS COMBINED HEAT AND POWER (CHP) GENERATOR
800 kW, 600V
3ø, 4W, HRG
(BY OTHERS)

G

1600/1000A

3x(3/C–500MCM TECK90 – 4"C) (BY OTHERS)

OUTDOOR GENERATOR ENCLOSURE
(BY OTHERS)

1600/1200A

G

DIESEL GENERATOR
900 kW, 600V
3ø, 3W

EMERGENCY DIESEL GENERATOR ROOM
(#8–1018, LEVEL 1, BUILDING 8)

DRAWING NAME: P:\2018\180221800–RFP Emergency Generator Package\08. Working\Re–design\Electrical\E–601–607_SLD.dwg
CREATED: MODIFIED: 2019/10/23 1:32:31 PM

Key Plan:

Consultant:

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Seal:

REV	DESCRIPTION	DATE	BY
2	ISSUED FOR TENDER	OCT. 23/19	JY
1	ISSUED FOR REVIEW	OCT. 11/19	JY

Client:

Ontario Shores
Centre for Mental Health Sciences

Project:

NEW POWERHOUSE

700 GORDON STREET, WHITBY, ON L1N 5S9

Sheet Title:

SINGLE LINE DIAGRAM
STAGE 3B

Drawn By:	J.Y.	Date:	DEC. 6, 2018
Designed By:	J.Y.	Checked By:	T.G.
Scale:	N.T.S.	File Path:	BIM 360:\RM - 1802218 - Ontario Shores Powerhouse\1802218-Ontario Shores Powerhouse-RVT2018-ARCH.rvt

Project No: 1802218

Drawing No: E607

PANEL 'LPP-PH1'

400A, 120/240V, 1Ø, 3W, MIN. 10kAIC

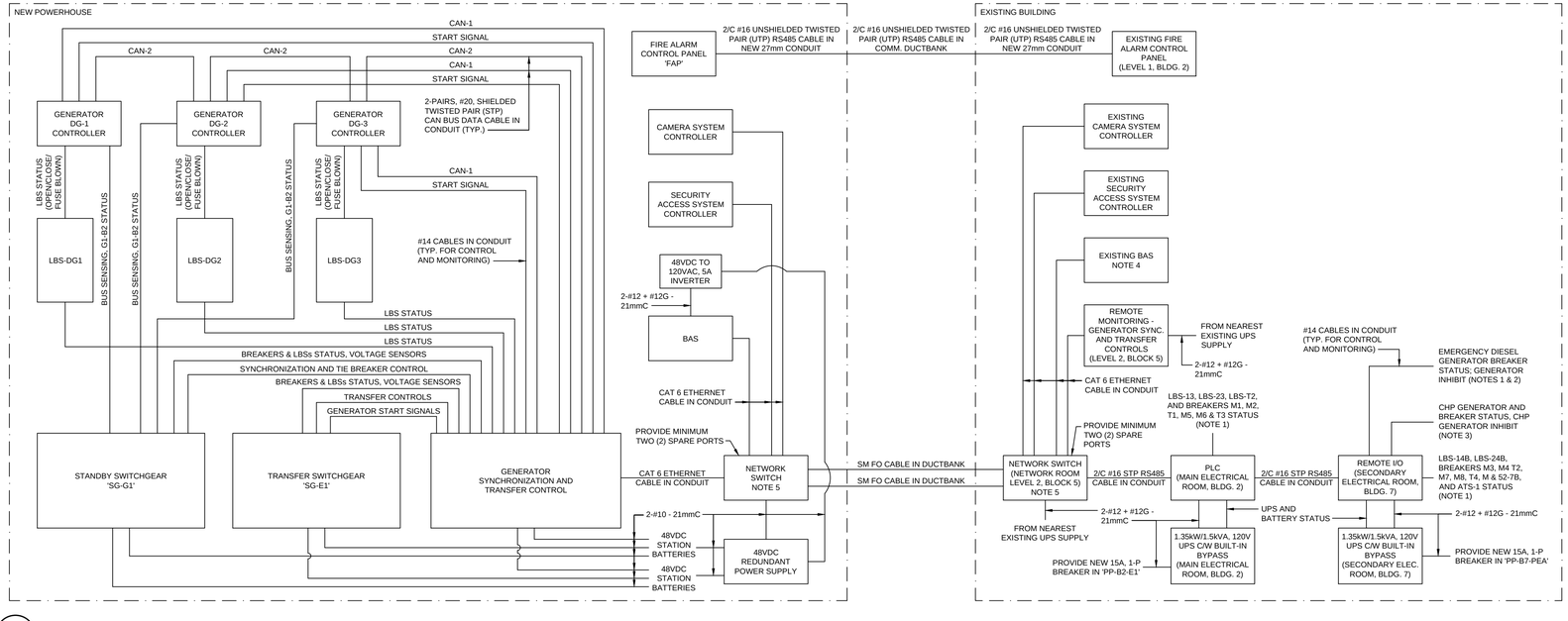
TYPE: -
MAINS: 350A 2P BREAKER
MOUNTING: SURFACE

LOCATION: ELECTRICAL ROOM
SOURCE: T-E1

LOAD kVA	DESCRIPTION	BKR.	CIRCUITS		BKR.	DESCRIPTION	LOAD kVA
6.0	DG-1 COOLANT HEATER	35A 2P	1	2	20A 2P	UNIT HEATER UH-1 GENERATOR ROOM	3.0
			3	4			
2.5	DG-1 COOLANT HEATER	30A	5	6	20A 2P	UNIT HEATER UH-2 GENERATOR ROOM	3.0
6.0	DG-2 COOLANT HEATER	35A 2P	7	8			
			9	10	20A 2P	UNIT HEATER UH-3 GENERATOR ROOM	3.0
2.5	DG-2 COOLANT HEATER	30A	11	12			
	SPARE	20A	13	14	20A 2P	UNIT HEATER UH-4 GENERATOR ROOM	3.0
	SPARE	20A	15	16			
3.68	FUEL TRANSFER PUMP TP-1	25A 2P	17	18	20A 2P	UNIT HEATER UH-5 ELECTRICAL ROOM	3.0
			19	20			
3.68	FUEL TRANSFER PUMP TP-2	25A 2P	21	22	20A 2P	UNIT HEATER UH-6 ELECTRICAL ROOM	3.0
			23	24			
1.2	BC-DG1 - BATTERY CHARGER FOR DG-1	15A	25	26	15A 2P	UNIT HEATER UH-7 FUEL STORAGE	2.0
1.2	BC-DG2 - BATTERY CHARGER FOR DG-2	15A	27	28			
	SPARE	15A	29	30	15A 2P	UNIT HEATER UH-8 FUEL STORAGE	2.0
	VCP VENTILATION CONTROL PANEL	15A	31	32			
	BAS	15A	33	34	20A 2P	EXHAUST FAN EF-1 GENERATOR ROOM	1.84
	FM-1 VEEDER-ROOT FUEL MONITORING	15A	35	36			
	FM-2 OVERFILL ALARM	15A	37	38	20A 2P	EXHAUST FAN EF-2 GENERATOR ROOM	1.84
1.59	FP-1 FUEL POLISHER	15A 2P	39	40			
			41	42	15A	EXHAUST FAN EF-3, ELECTRICAL ROOM	0.83
	SPARE	15A	43	44	15A	EXHAUST FAN EF-4, FUEL STORAGE	0.51
	SPARE	15A	45	46	20A	SPARE	
2.0	BC-SS - STATION BATTERY CHARGER	15A 2P	47	48	20A	SPARE	
			49	50	20A	LIGHTING - GENERATOR ROOM	1.3
	FIRE ALARM CONTROL PANEL	15A	51	52	20A	LIGHTING - ELECTRICAL ROOM	0.6
	SECURITY ACCESS CONTROL PANEL	15A	53	54	20A	LIGHTING - FUEL STORAGE & FS ROOM	0.5
	CAMERA CONTROLLER	15A	55	56	20A	LIGHTING - EXTERIOR	1.6
	RECEPTACLES - GENERATOR ROOM	15A	57	58	15A	BU-1 & EXIT SIGNS - ELEC., FUEL ST., FSR	
	RECEPTACLES - GENERATOR ROOM	15A	59	60	15A	BU-2 & EXIT SIGNS - GENERATOR ROOM	
	RECEPTACLES - ELECTRICAL ROOM	15A	61	62	15A	ROLL-UP DOOR	
	RECEPTACLES - ELECTRICAL ROOM	15A	63	64	15A	SPARE	
	RECEPTACLES - FUEL STORAGE/FS RM.	15A	65	66	20A	SPARE	
	SPACE	-	67	68	-	SPACE	
	SPACE	-	69	70	-	SPACE	
	SPACE	-	71	72	-	SPACE	

BRANCH CIRCUIT FEEDER SCHEDULE

BREAKER SIZE (A)	DESCRIPTION	
15A, 1P	2-#12 + #12 GND - 21mmC	
15A, 2P	2-#12 + #12 GND - 21mmC	
20A, 1P	2-#12 + #12 GND - 21mmC	
20A, 2P	2-#12 + #12 GND - 21mmC	
25A, 2P	2-#10 + #10 GND - 21mmC	
30A, 1P	2-#10 + #10 GND - 21mmC	
35A, 1P	2-#8 + #10 GND - 21mmC	
35A, 2P	2-#8 + #10 GND - 21mmC	



1 E701 — CONTROLS AND MONITORING SCHEMATIC
N.T.S.

GENERAL NOTES:

A. THIS CONTROLS AND MONITORING SCHEMATIC IS INDICATE TO SHOW THE INTENTION OF THE SYSTEM ONLY. THE CONTRACTOR SHALL RETAIN AND COORDINATE WITH SPECIALISTS IN THE DESIGN OF THE RESPECTIVE SUB-SYSTEMS AND SUPPLIERS TO PROVIDE A COMPLETE OPERATING SYSTEM BASED ON THE EQUIPMENT SUPPLIED, THE EXISTING EQUIPMENT TO BE CONNECTED, AND THE REQUIREMENTS OF THE SYSTEM, AND TO PROVIDE ALL CABLES AND CONDUITS REQUIRED FOR THE INTERCONNECTION OF THE DEVICES AND EQUIPMENT.

B. COORDINATE WITH OWNER'S VENDORS/CONTRACTORS FOR EXISTING SECURITY AND FIRE ALARM SYSTEMS FUNCTIONALITY. OWNER'S CURRENT VENDORS/CONTRACTORS ARE PALADIN TECHNOLOGIES (SECURITY, CONTACT CHRISTINA, TEL. 437-828-1200) AND VIPOND INC. (FIRE ALARM, CONTACT MAX PASQUALI, TEL. 905-564-7066 EXT. 298)

NOTES:

1. PROVIDE NEW CONTACTS FOR STATUS MONITORING IN EXISTING EQUIPMENT. RETAIN SERVICES OF EQUIPMENT MANUFACTURER AS REQUIRED FOR THE ADDITION OF THE CONTACTS.
2. RETAIN SERVICES OF GENERATOR MANUFACTURER, TOROMONT/CATERPILLAR, FOR ALL MODIFICATIONS TO THE CONTROLS OF THE GENERATOR.
3. CONTACTS FOR STATUS MONITORING WILL BE PROVIDED BY CHP GENERATOR SUPPLIER/CONTRACTOR IN SECONDARY ELECTRICAL ROOM IN BUILDING 7. COORDINATE WITH CHP GENERATOR SUPPLIER/CONTRACTOR FOR ALL NECESSARY MODIFICATIONS TO COMPLETE THE SYSTEM.
4. REFER TO MECHANICAL DRAWINGS FOR CONNECTION TO EXISTING BAS SYSTEM. COORDINATE WITH MECHANICAL TRADE FOR THE BAS FUNCTIONALITY.
5. ETHERNET - FIBRE OPTIC SWITCH, 48VDC, C/W ETHERNET 10/100-BASE AUTO-SENSING PORTS (QUANTITY AS INDICATED, WITH MINIMUM 6 PORTS), TWO (2) SINGLE MODE (1300/1550 nm) FIBRE OPTIC 100BASE-FX PORTS

Key Plan:

Consultant:

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Seal:

REV	DESCRIPTION	DATE	BY
2	ISSUED FOR TENDER	OCT. 23/19	JY
1	ISSUED FOR REVIEW	OCT. 11/19	JY

Client:

Ontario Shores
Centre for Mental Health Sciences

Project:

NEW POWERHOUSE

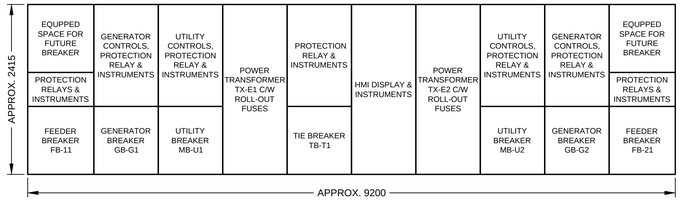
700 GORDON STREET, WHITBY, ON L1N 5S9

Sheet Title:

PANEL SCHEDULE AND ELECTRICAL DETAILS

Drawn By:	J.Y.
Designed By:	J.Y.
Scale:	N.T.S.
Date:	DEC. 6, 2018
Checked By:	T.G.
File Path:	BIM 360:\RH - 1802218 - Ontario Shores Powerhouse\Models\1802218 - Powerhouse-RVT2018-ARCH.rvt
Project No:	1802218
Drawing No:	E701

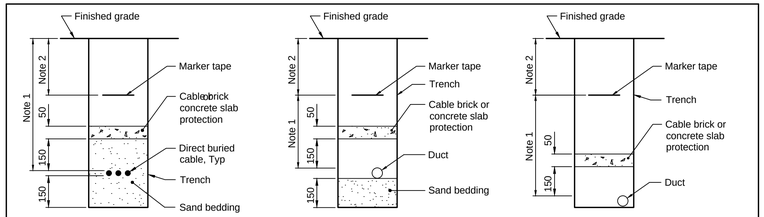
DRAWING NAME: P:\2018\1802218\00-RFP Emergency Generator Package\08. Working\Re-design\Electrical\E-701_Schedule.dwg
CREATED: MODIFIED: 2019/10/23 1:33:23 PM

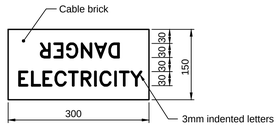


FRONT (DEPTH OF SWITCHGEAR = APPROX. 2340 mm)

1 - ELEVATIONS – SWITCHGEAR 'SG–E1'

N.T.S.



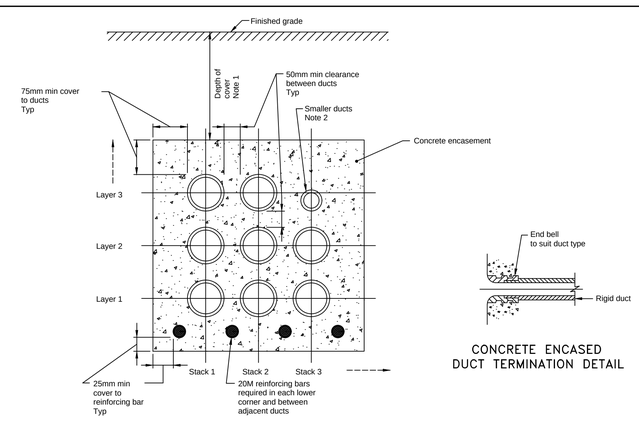


NOTES:

1 Depth of cable or duct shall be as specified in the Ontario Electrical Safety Code.
2 Depth of marker tape shall be as specified in the Ontario Electrical Safety Code.

A This OPSD shall be read in conjunction with OPSD 2100.010 and 2101.01.
B All dimensions are in millimetres unless otherwise shown.

ONTARIO PROVINCIAL STANDARD DRAWING	Nov 2013	Rev	0
CABLE AND DUCT PROTECTION AND MARKING			
	OPSD 2100.050		



NOTES:

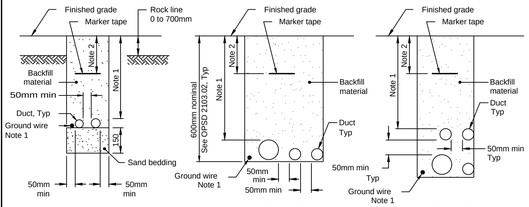
1 For depth of cover see OPSD 2103.02.
2 Smaller ducts shall be installed in uppermost layers.

A Maximum number of layers shall be 4, maximum number of stacks shall be 4.
B All dimensions are in millimetres unless otherwise shown.

ONTARIO PROVINCIAL STANDARD DRAWING	Nov 2015	Rev	2
RIGID DUCTS ENCASED IN CONCRETE			
	OPSD 2100.06		

MINIMUM TRENCH WIDTH FOR ONE LAYER AND TWO LAYER DUCT ARRANGEMENT

No. OF 100 mm DUCTS	No. OF LAYERS	NUMBER OF 50 mm DUCTS										
		0	1	2	3	4	5	6	7	8	9	10
0	1	N/A	150	205	300	460	610	N/A	N/A	N/A	N/A	N/A
	2	N/A	N/A	N/A	N/A	205	300	350	460	460	610	610
1	1	150	255	460	610	610	N/A	N/A	N/A	N/A	N/A	N/A
	2	N/A	N/A	205	255	300	460	460	610	610	610	N/A
2	1	300	460	610	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	2	150	255	255	460	460	610	610	610	N/A	N/A	N/A
3	1	460	610	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	2	300	300	460	460	610	610	610	N/A	N/A	N/A	N/A
4	1	610	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	2	300	460	460	610	610	N/A	N/A	N/A	N/A	N/A	N/A

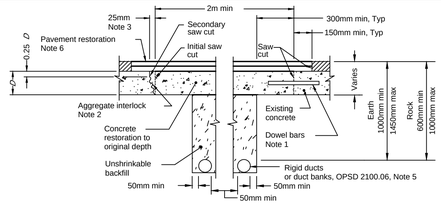


NOTES:

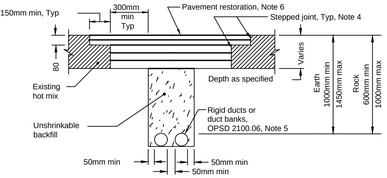
1 Ground wire shall be installed in the duct or trench as specified in the Contract Documents.
2 Depth of marker tape shall be as specified in the Ontario Electrical Safety Code.

A Cable brick or concrete slab shall be installed where specified in the Contract Documents. See OPSD 2100.050.
B This OPSD shall be read in conjunction with OPSD 2103.02.
C Contractor has the option of installing one or two layer duct arrangement.
D N/A - Not Applicable, undesirable or exceeding equipment limits.
E All dimensions are in millimetres unless otherwise shown.

ONTARIO PROVINCIAL STANDARD DRAWING	Nov 2013	Rev	1
DUCT INSTALLATION IN TRENCHES			
	OPSD 2101.01		



COMPOSITE OR CONCRETE PAVEMENT



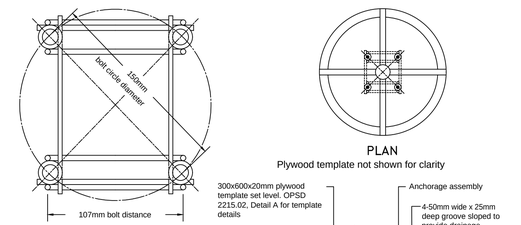
BITUMINOUS PAVEMENT

NOTES:

1 Dowelled treatment is only required in existing concrete pavement or concrete base that contains load transfer devices. Dowels shall be 32mm diameter, 450mm long, epoxy coated, installed at 300mm intervals at mid depth of the concrete slab, in plane to the pavement surface, parallel to the centre line of the road, and set 225mm in 35mm holes with epoxy grout.
2 Undowelled treatment is only required in existing concrete pavement or concrete base that is constructed without load transfer devices at joints. Aggregate interlock is created by chipping the vertical concrete face with a light 15kg maximum pneumatic hammer.
3 The initial saw cut shall be full depth. The secondary saw cut shall be 1/4 of existing pavement depth with 25mm of chipping for aggregate interlock.
4 Where existing pavement depth is between 80 and 120mm, the 150mm wide stepped joint shall be 40mm deep.
5 In rock, the ducts shall be placed on 150mm sand bedding.
6 Bituminous pavement restoration shall match existing type unless otherwise specified. The surface and top binder courses shall be placed in 40mm lifts with other lifts placed at 80mm maximum.

A All voids below the pavement shall be filled with unshrinkable backfill.
B All dimensions are in millimetres unless otherwise shown.

ONTARIO PROVINCIAL STANDARD DRAWING	Nov 2015	Rev	1
RIGID DUCT INSTALLATION IN EXISTING PAVED AREA UNSHRINKABLE BACKFILL METHOD			
	OPSD 2103.030		

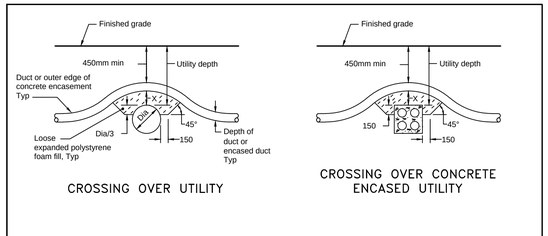


NOTES:

1 When rock is encountered at 600mm or less below ground level, the depth of the concrete footing shall be a minimum of 900mm.
2 Studs shall be factory set with preapplied thread locking compound and shall remain in place during footing and pole installation.
3 Top of footing shall be installed at 40mm ±15mm above finished grade in paved or concrete areas and 75mm ±25mm above finished grade in earth or granular areas.

A All dimensions are in millimetres unless otherwise shown.

ONTARIO PROVINCIAL STANDARD DRAWING	Nov 2014	Rev	2
CONCRETE FOOTING AND ANCHORAGE ASSEMBLY FOR 3.3m BASE MOUNTED METAL POLE			
	OPSD 2200.04		



NOTES:

A The required clearance between the utility and the ducts or concrete encasement shall be as follows:

UTILITY	X mm min
Ducts, direct buried or encased	100
All other pipes	300
High voltage cables	300
All other cables	300

B Trench widths shall be kept to the minimum required for working space. Manual excavation and backfill methods shall be used with the utility supported in place, when required, when crossing under a utility is necessary.
C All dimensions are in millimetres unless otherwise shown.

ONTARIO PROVINCIAL STANDARD DRAWING	Nov 2015	Rev	0
DUCT INSTALLATION AT UTILITY CROSSINGS			
	OPSD 2103.050		

Key Plan:

Consultant:

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Seal:

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2	ISSUED FOR TENDER	OCT. 23/19	JY
1	ISSUED FOR REVIEW	OCT. 11/19	JY

Client:

Ontario Shores
Centre for Mental Health Sciences

Project:

NEW POWERHOUSE

700 GORDON STREET, WHITBY, ON L1N 5S9

Sheet Title:

ELECTRICAL DETAILS

Drawn By:	J.Y.	Date:	DEC. 6, 2018
Designed By:	J.Y.	Checked By:	T.G.
Scale:	N.T.S.	File Path:	RM-360-IMH - 1802218 - Ontario Shores Powerhouse\1802218-Ontario Shores Powerhouse-RVT2018-ARCH.rvt

Project No: 1802218

Drawing No: E702

DRAWING NAME: P:\2018\18022\1800-RFP Emergency Generator Package\08. Working\Re-design\Electrical\E-702_Electrical Details.dwg
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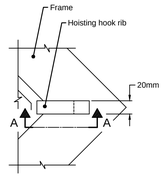
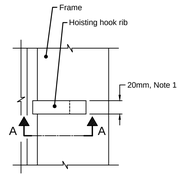
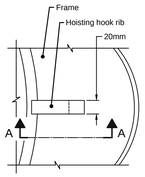


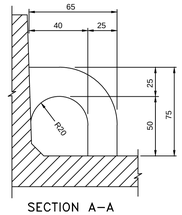
SQUARE FRAME PLAN
SQUARE CORNER



SQUARE FRAME PLAN
MID-SECTION



SQUARE FRAME PLAN
ROUND CORNER

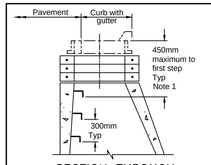


SECTION A–A

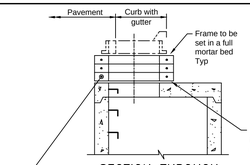
NOTES:
1 For OPSD 402.030, the hoisting hook rib thickness is 29mm.

A All dimensions are in millimetres unless otherwise shown.

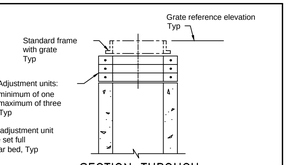
ONTARIO PROVINCIAL STANDARD DRAWING	Nov 2007	Rev	0
HOISTING HOOK RIB FOR CAST IRON FRAMES FOR CATCH BASINS, MAINTENANCE HOLES, AND VALVE CHAMBERS			
	OPSD 400.001		



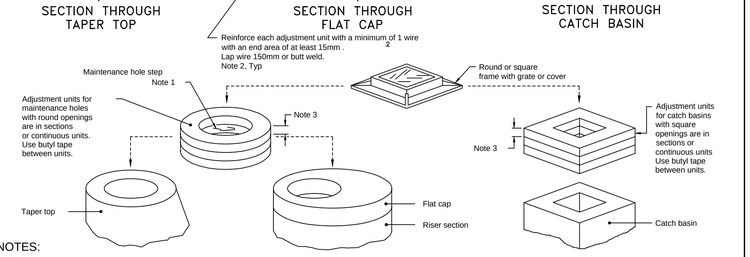
SECTION THROUGH TAPER TOP



SECTION THROUGH FLAT CAP



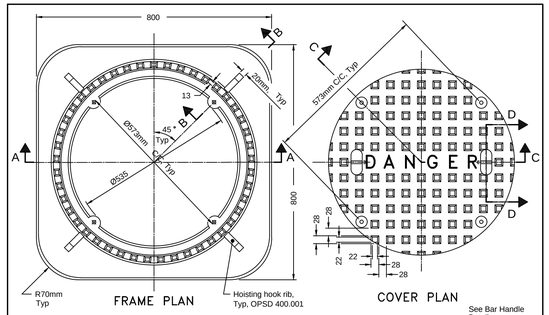
SECTION THROUGH CATCH BASIN



NOTES:
1 If first step is in an adjustment unit, the adjustment unit shall be of the type manufactured with a step in place.
2 Centre reinforcing in adjustment unit ±10mm.
3 Round and square adjustment unit thicknesses: 50, 75, 100, 150, and 300mm.

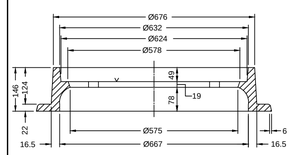
A Adjustment units shall not extend beyond the outside edge of the structure.
B All dimensions are in millimetres unless otherwise shown.

ONTARIO PROVINCIAL STANDARD DRAWING	Nov 2009	Rev	2
PRECAST CONCRETE ADJUSTMENT UNITS FOR MAINTENANCE HOLES, CATCH BASINS, AND VALVE CHAMBERS			
	OPSD 704.010		

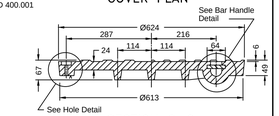


FRAME PLAN

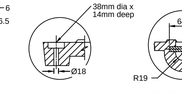
COVER PLAN



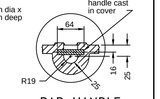
SECTION A–A



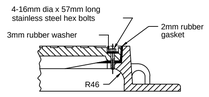
SECTION C–C



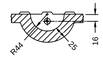
HOLE DETAIL



BAR HANDLE DETAIL



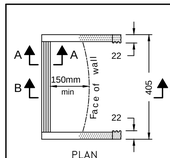
SECTION B–B



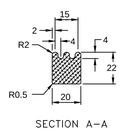
SECTION D–D

NOTE:
A All dimensions are in millimetres unless otherwise shown.

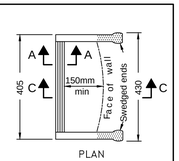
ONTARIO PROVINCIAL STANDARD DRAWING	Nov 2007	Rev	2
CAST IRON, SQUARE FRAME WITH CIRCULAR WATERTIGHT COVER FOR MAINTENANCE HOLES			
	OPSD 401.030		



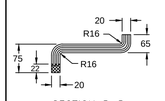
PLAN



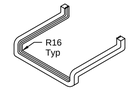
SECTION A–A



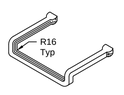
PLAN



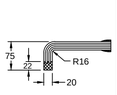
SECTION B–B



AUXILIARY VIEW

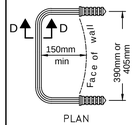


AUXILIARY VIEW



SECTION C–C

TYPE A TYPE B
RECTANGULAR ALUMINUM



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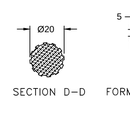
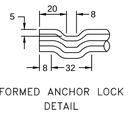
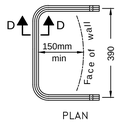


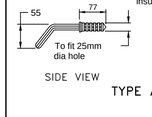
SECTION D–D



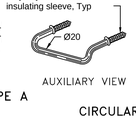
FORMED ANCHOR LOCK DETAIL



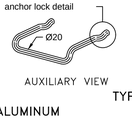
PLAN



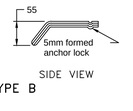
SIDE VIEW



AUXILIARY VIEW



AUXILIARY VIEW

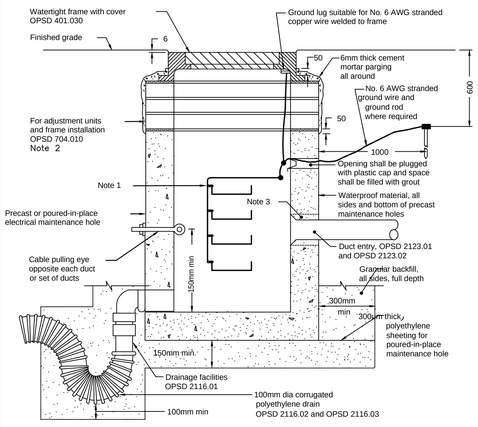


SIDE VIEW

TYPE A TYPE B
CIRCULAR ALUMINUM

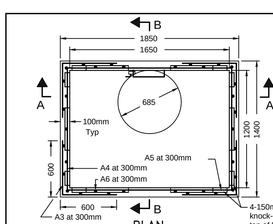
NOTES:
A All aluminum in contact with concrete shall be thoroughly coated with asphalt paint.
B All dimensions are in millimetres unless otherwise shown.

ONTARIO PROVINCIAL STANDARD DRAWING	Nov 2008	Rev	2
MAINTENANCE HOLE STEPS SOLID			
	OPSD 405.020		

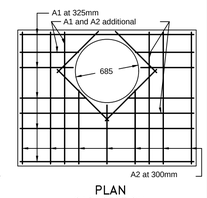


NOTES:
1 No. 6 AWG stranded copper bare wire shall be fastened to steps using single cable to pipe copper ground connectors. The ground connector shall be a copper or copper-alloy saddle. The connector shall be attached to each step in such a way that the ground wire runs perpendicularly to the steps.
2 When specified, a precast concrete cap shall be used to replace the frame with cover and adjustment units.
3 Space surrounding ducts in used openings shall be filled with grout.
A This OPSD shows general equipment only. Refer to other drawings for particular applications.
B Orient maintenance hole such that the wall with maintenance hole steps is nearest to the travelled roadway, where practical. Orient maintenance hole to accommodate existing ducts both in line and grade. Maintain a maximum 45° skew to existing ducts in line. Where required, cut back duct encasement to 3.0m maximum beyond the maintenance hole and refit duct to proper location.
C Unused openings shall be filled with grout.
D All dimensions are in millimetres unless otherwise shown.

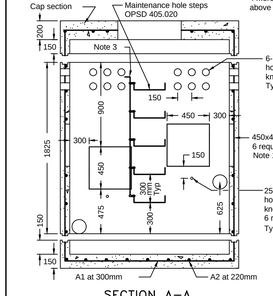
ONTARIO PROVINCIAL STANDARD DRAWING	Nov 2013	Rev	2
ELECTRICAL MAINTENANCE HOLES GENERAL INSTALLATION REQUIREMENTS			
	OPSD 2117.01		



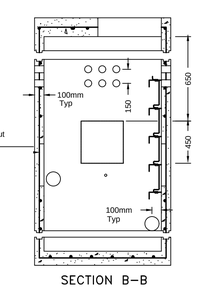
PLAN



PLAN
CAP SECTION



SECTION A–A



SECTION B–B

NOTES:
1 For general installation details see OPSD 2117.01.
2 For duct installation profiles see OPSD 2103.02.
3 1/O AWG stranded copper bare wire shall be fastened to steps using aluminum parallel groove clamps and anti-oxidant component.
A Minimum cover for reinforcing steel shall be 35mm external surface, 25mm internal surface.
B All reinforcing bars shall be cut to suit openings.
C All dimensions are in millimetres unless otherwise shown.

REINFORCING TABLE

Mark	Quant	Size	Length m	Mass kg	Detail
A1	13	10	2.15	21.94	1.75
A2	18	10	1.68	23.74	1.3
A3	24	15	1.2	45.21	SD.6
A4	12	10	1.83	17.24	1.27
A5	12	15	1.72	32.40	Straight
A6	34	10	1.77	47.24	Straight

ONTARIO PROVINCIAL STANDARD DRAWING	Nov 2015	Rev	1
ELECTRICAL MAINTENANCE HOLE PRECAST CONCRETE 1200 x 1650mm			
	OPSD 2111.040		

Key Plan:

Consultant:

MORRISON HERSHFIELD
Suite 300, 125 Commerce Valley Drive W.
Markham, ON L3T 7W4
Tel: (416) 499-3110 Fax: (416) 499-9658

Seal:

REV	DESCRIPTION	DATE	BY
2	ISSUED FOR TENDER	OCT. 23/19	JY
1	ISSUED FOR REVIEW	OCT. 11/19	JY

Client:

Ontario Shores
Centre for Mental Health Sciences

Project:

NEW POWERHOUSE

700 GORDON STREET, WHITBY, ON L1N 5S9

Sheet Title:

ELECTRICAL DETAILS

Drawn By:	J.Y.	Date:	DEC. 6, 2018
Designed By:	J.Y.	Checked By:	T.G.
Scale:	N.T.S.	File Path:	BIM 360:\RH - 1802218 - Ontario Shores Powerhouse\1802218-Ontario Shores Powerhouse-RVT2018-ARCH.rvt

Project No: 1802218

Drawing No: E703

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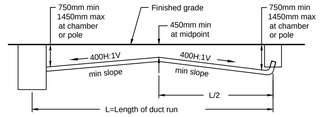
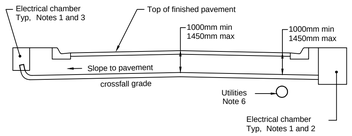
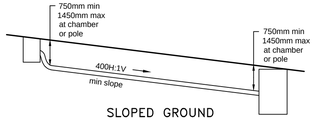


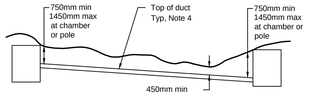
FLAT GROUND



OPEN TRENCH METHOD ACROSS ROADWAYS
NOTE 5



SLOPED GROUND



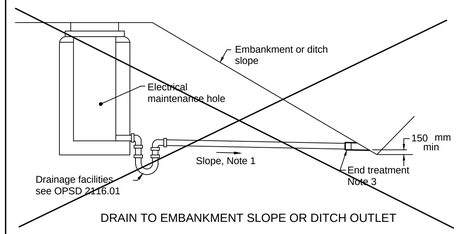
UNEVEN GROUND

NOTES:

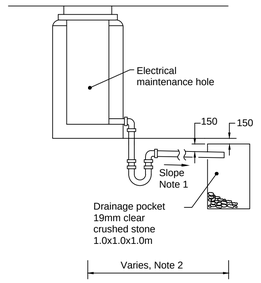
1 Type and size of electrical chambers shall be as specified.
2 For duct connection to electrical maintenance hole see OPSD 2123.01 and 2123.02.
3 For duct connection to electrical handholes see OPSD 2123.03.
4 Depth of cover specified shall be to top of direct buried ducts or to top of concrete encasement.
5 For subsurface and underpavement installation, the cover shall be 1000mm minimum and 1450mm maximum measured from the top of steel encasement or duct to the finished grade.
6 For treatment at utility crossings see OPSD 2103.050.

A All dimensions are in millimetres unless otherwise shown.

ONTARIO PROVINCIAL STANDARD DRAWING	Nov 2015	Rev	1
DUCT INSTALLATION PROFILES			
	OPSD 2103.02		



DRAIN TO EMBANKMENT SLOPE OR DITCH OUTLET



DRAIN TO DRAINAGE POCKET

NOTES:

1 Drain to slope shall be a minimum of 0.25% (400H:1V) to outlet.
2 Drainage pocket shall be located 1.5m from centreline of maintenance hole in paved or restricted areas and 3.0m from centreline of maintenance hole in grass or unrestricted areas.
~~3 A 2.5m length of 150mm diameter corrugated steel pipe with galvanized rodent gate shall be installed with drain pipe with 0.3m overlap.~~

A All dimensions are in millimetres unless otherwise shown.

ONTARIO PROVINCIAL STANDARD DRAWING	Nov 2013	Rev	1
ELECTRICAL MAINTENANCE HOLE DRAINS TO DRAINAGE POCKETS, EMBANKMENT OUTLETS, AND DITCHES			
	OPSD 2116.02		

NOTES:

1 Grout shall be placed full depth, flush both walls.
2 Vertical location of drain shall be adjusted between the highest and lowest limits shown to obtain a minimum grade on the drain as set by the outlet elevation.
3 Water trap shall be formed in all cases when the outlet is part of the storm sewer system.

A All dimensions are in millimetres unless otherwise shown.

ONTARIO PROVINCIAL STANDARD DRAWING	Nov 2013	Rev	1
DRAINAGE FACILITIES FOR ELECTRICAL MAINTENANCE HOLES			
	OPSD 2116.01		

RIGID DUCTS, STEEL ENCASED

RIGID DUCTS, CONCRETE ENCASED

NOTES:

1 Grout shall be placed full depth and flush with both walls.
2 Grout shall be placed within steel pipe, around all ducts, to a minimum depth of 75mm.
3 Concrete shall be placed flush with inside wall.

A All dimensions are in millimetres unless otherwise shown.

ONTARIO PROVINCIAL STANDARD DRAWING	Nov 2013	Rev	1
ELECTRICAL MAINTENANCE HOLES ENTRY OF ENCASED DUCTS			
	OPSD 2123.02		

Key Plan:

Consultant:

MORRISON HERSHFIELD
Suite 300, 125 Commerce Valley Drive W.
Markham, ON L3T 7W4
Tel: (416) 499-3110 Fax: (416) 499-9658

Seal:

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Centre for Mental Health Sciences

Project:

NEW POWERHOUSE

700 GORDON STREET, WHITBY, ON L1N 5S9

Sheet Title:

ELECTRICAL DETAILS

Drawn By:	J.Y.	Date:	DEC. 6, 2018
Designed By:	J.Y.	Checked By:	T.G.
Scale:	N.T.S.	File Path:	RM 360 rMH - 1802218 - Ontario Shores Powerhouse\1802218-Ontario Shores Powerhouse-RVT2018-ARCH.rvt

Project No: 1802218

Drawing No: E704

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CREATED:
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