TORONTO

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Purchasing Client Services

June 23, 2025

Posted via Ariba
(10 pages)

ADDENDUM No. 2
REQUEST FOR TENDER No. Doc5098158970
CONTRACT No. 25-PR-037

SUBMISSION DEADLINE: 12:00 NOON (LOCAL TIME), JULY 7, 2025

FOR: Bluffer's Park East Washroom Improvements and Exterior Works

Please refer to the above Request for Tender document in your possession and be advised of the following:

I. REVISIONS

R1. Replace Drawings E101, E201, E301, E401, E501 & E601 with the attached revised drawings issued with this Addendum.

The summary of changes are as follows:

1.1 E101 – GROUND FLOOR – POWER & SYSTEM PLAN
a. Equipment label updated from EH-4 to EH-3.
b. Panel DP-A-1 added to Utility Room 105, as shown.
c. Inverters INV-1 and INV-2 relocated, as shown.

1.2 E201 – GROUND FLOOR – LIGHTING PLAN
a. Added tags for remote heads RH.
b. Added tags for battery units BU.
c. Added tags and circuits for exit signs X1.

1.3 E301 – ELECTRICAL SINGLE LINE DIAGRAM & SCHEMATIC
a. DG-1 disconnect updated from 150A-3P to 200A-3P.
b. Wire and conduit sizes added for DG-1 and DP-PV.

1.4 E401 – ELECTRICAL SCHEDULES
a. EH-3 added to panel schedule PP-A-2.
b. K1 light fixture specification added to luminaire schedule.
c. Remote heads RH added to luminaire schedule.
d. Battery units BU added to luminaire schedule.
e. Exit signs X1 added to luminaire schedule.

1.5 E501 – ELECTRICAL DETAILS
a. Duplicate detail #8 removed.

1.6 E601 – ELECTRICAL SPECIFICATIONS
a. Updated details and notes on drawing, as shown

II. QUESTIONS AND ANSWERS

Q1. There are two fixtures labelled 'K1' which are not found on the lighting schedule. Can you please either update the lighting schedule to include or advise if these are labelled in error?

A1. The K1 fixture is required for the tender and to be included in the tender price. Light Fixture K1 is specified in Addendum 1 A4. See updated lighting schedule attached in this Addendum.

Q2. Who is to provide the Level 2 EV Charger? If electrical contractor, we need specifications on what you would like us to provide.

A2. *Electrical contractor to provide the level 2 EV charger in the Garage. EV Specifications have been added on E601 in this Addendum.*

Q3. Referencing SLD, DG-1, a non-fused disconnect switch rated at 150A does not exist. Are we to provide a 200A disconnect switch? Is this meant to be a fused disconnect switch with 150A fuses? Also, is this disconnect switch even necessary? DP-PV is located within the same room as DP-A-1 which is protecting the unit with a 150A breaker.

A3. *200A disconnect switch to be provided. DG-1 is an exterior wall-mounted disconnect, and is to be utility-accessible at all times. Location of DG-1 is provided on E100A.*

Q4. Referencing SLD, is the Bidirectional meter a separate unit or housed within DP-AAA-1? Please provide specifications.

A4. *Bidirectional meter to be a separate unit, and to be supplied and installed by Toronto Hydro.*

Q5. Are house keeping pads required for transformers?

A5. *Concrete housekeeping pads are required below floor-mounted transformers (e.g. TX-2).*

Q6. Will any specifications be provided for all distribution equipment?

A6. *Specifications have been added for distribution equipment on E601 in this Addendum.*

Q7. Who is to provide the electric heaters? If electrical, can we please have specifications?

A7. *Electric heaters to be specified and provided by mechanical.*

Q8. Referencing DWG E101 and Mechanical Equipment Schedule, EH-4 is not listed. Drawing says being fed from Panel PP-A-2 13,15,17, nothing on panel schedule. Please confirm.

A8. *EH-4 was mis-labelled, and has been updated to EH-3. Circuit to remain the same. EH-3 has been added to panel schedule PP-A-2 on E401 in this Addendum.*

Q9. Who is to supply and install the universal washroom devices?

A9. *Specification of universal washroom devices provided in the architectural hardware section. Hardware to be supplied by others. Wiring, including low-voltage wiring, to be done by Electrical Contractor.*

Q10. Please identify where DP-A-1 is located on drawing E101.

A10. *DP-A-1 has been added to the Utility Room on E101 in this Addendum.*

Q11. Please indicated feeder size for DG-1 and DP-PV on SLD.

A11. *Feeder sizes have been provided on E301 Electrical Single Line Diagram & Schematic in this Addendum.*

Q12. Please confirm whether all windows and glazed doors are to receive roller shades?

A12. Roller blinds are to be provided in the following locations:
Meeting Room 102 – windows (2)
Office 119 – windows (2)
Office 112 – windows (2)
Staff Room 106 – windows (2)

Q13. We can only find dimensions for steel insulated doors in the Beach House, 11 and 12. And door D104 in the East Building, which is a motorized rolling steel insulated door. The specifications are showing a rolling security shutter installed in between jambs, on the interior. It also shows shutter to be manufactured by Overhead Door Company, using the Alurra Model. I cannot find any information and measurements for this one.

A13. Refer to Door Schedule 1/A003 for location and dimension of doors including both hollow metal and aluminum doors. There are two overhead coiling doors in the project:

- D104 Garage Door – see Door Schedule 1/A003 for dimension and Specification Section 08 33 00, 2.1.1. for product information.
- Interior Coiling Door – located within Washrooms 114 providing closure between accessible washrooms to be open all-year, and row of non-accessible washrooms beyond that may be closed off during off-season. See Ground Floor Plan A201 for door opening width dimension and 6/A502 for door opening height dimension. See Specification Section 08 33 00, 2.1.2. for product information.

Q14. With reference to Specification Section 10 28 00 Washroom Accessories, shower rods and waste receptacles are specified, but they are not listed on the WC accessory schedule on drawing A800. Please advise if these items are to be provided and if so, location and quantities.

A14. Shower rods are needed for each interior shower location - 4 total. No interior waste receptacles are to be provided.

Q15. Please provide specification for washroom partitions.

A15. Refer to architectural specifications Section 06 40 00 (2.4 Phenolic Architectural Panel).

Q16. Would alternate light fixtures be acceptable?

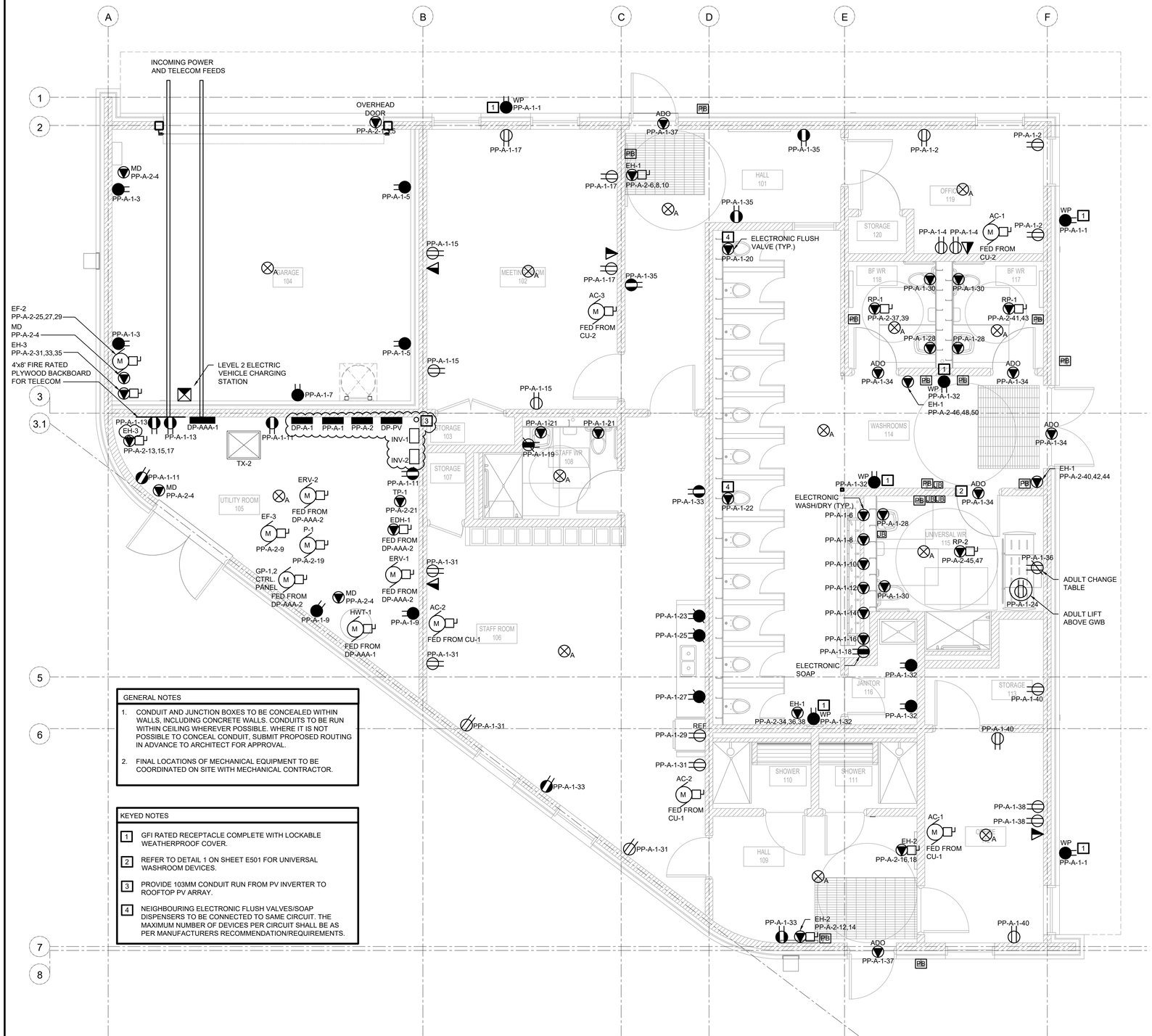
A16. No, alternatives will not be accepted during the tender process.

Should you have any questions regarding this addendum send via the event message board or contact Alma Salcedo at alma.salcedo@toronto.ca.

Suppliers must acknowledge receipt of all addenda in the space provided on Part 4 – Submission Form as per Part 1 Tender Process, Section 1 RFT Specific Process and Submission Instructions, Item 1.7 – Addenda, of the Tender document. All other aspects of the Tender remain the same.

Yours truly,

Aimee Yang, Supervisor
Community & Social Services and City Manager's Office
Purchasing Client Services
Purchasing & Materials Management Division



GENERAL NOTES

1. CONDUIT AND JUNCTION BOXES TO BE CONCEALED WITHIN WALLS, INCLUDING CONCRETE WALLS. CONDUITS TO BE RUN WITHIN CEILING WHEREVER POSSIBLE. WHERE IT IS NOT POSSIBLE TO CONCEAL CONDUIT, SUBMIT PROPOSED ROUTING IN ADVANCE TO ARCHITECT FOR APPROVAL.
2. FINAL LOCATIONS OF MECHANICAL EQUIPMENT TO BE COORDINATED ON SITE WITH MECHANICAL CONTRACTOR.

KEYED NOTES

1. GFI RATED RECEPTACLE COMPLETE WITH LOCKABLE WEATHERPROOF COVER.
2. REFER TO DETAIL 1 ON SHEET E501 FOR UNIVERSAL WASHROOM DEVICES.
3. PROVIDE 103MM CONDUIT RUN FROM PV INVERTER TO ROOFTOP PV ARRAY.
4. NEIGHBOURING ELECTRONIC FLUSH VALVES/SOAP DISPENSERS TO BE CONNECTED TO SAME CIRCUIT. THE MAXIMUM NUMBER OF DEVICES PER CIRCUIT SHALL BE AS PER MANUFACTURERS RECOMMENDATION/REQUIREMENTS.

GROUND FLOOR - POWER & SYSTEMS - WEST BUILDING

SCALE: 1:50

GROUND FLOOR - POWER & SYSTEMS - EAST BUILDING

SCALE: 1:50

Introba

No.	Date	Description
6	2025-06-16	ISSUED FOR ELECTRICAL ADDENDUM 01
5	2025-04-15	ISSUED FOR ESA PLAN REVIEW
4	2025-04-11	ISSUED FOR TENDER
3	2024-09-18	ISSUED FOR BUILDING PERMIT
2	2024-08-16	ISSUED FOR 100% COSTING
1	2023-01-31	ISSUED FOR 50% CD

Issue Record

BLUFFER'S PARK
EAST WASHROOM
1 Brimley Road South
Scarborough, Toronto, ON

Drawing Title

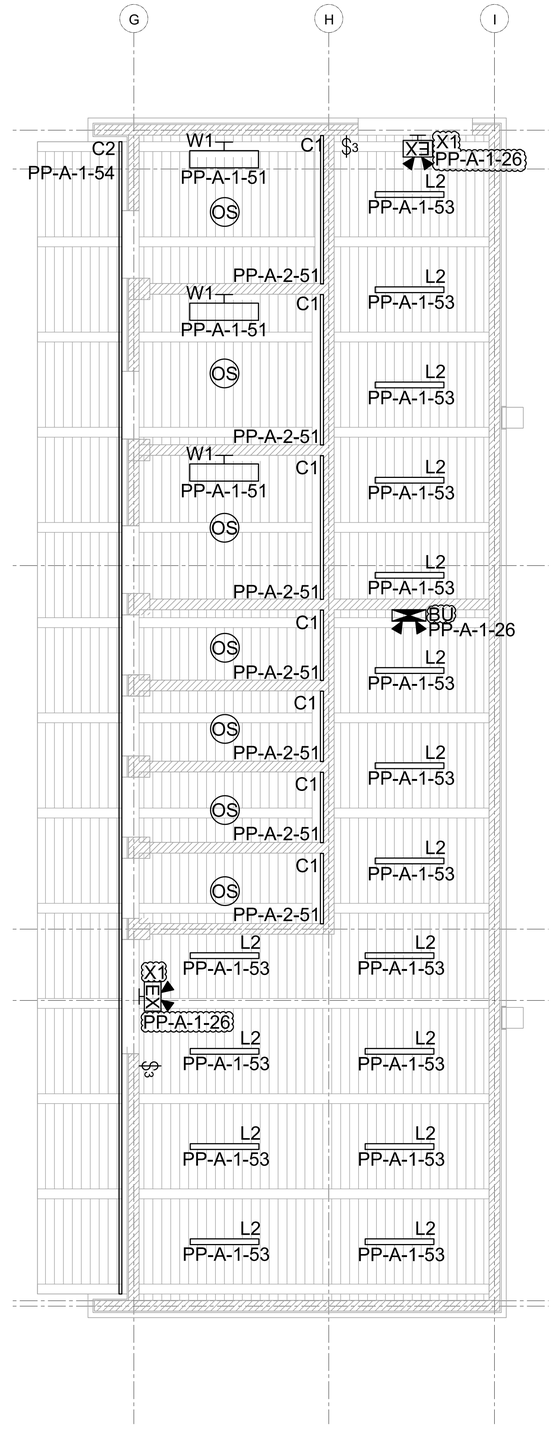
GROUND FLOOR - POWER & SYSTEM PLAN

Print Date	2025-06-19
Scale	1:50
Project No.	0010052.000
Drawn by	LT
Checked by	JN

E101

GROUND FLOOR - LIGHTING - WEST BUILDING

SCALE: 1:50



GROUND FLOOR - LIGHTING - EAST BUILDING

SCALE: 1:50

Introba

No.	Date	Description
6	2025-06-16	ISSUED FOR ELECTRICAL ADDENDUM 01
5	2025-04-15	ISSUED FOR ESA PLAN REVIEW
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Issue Record

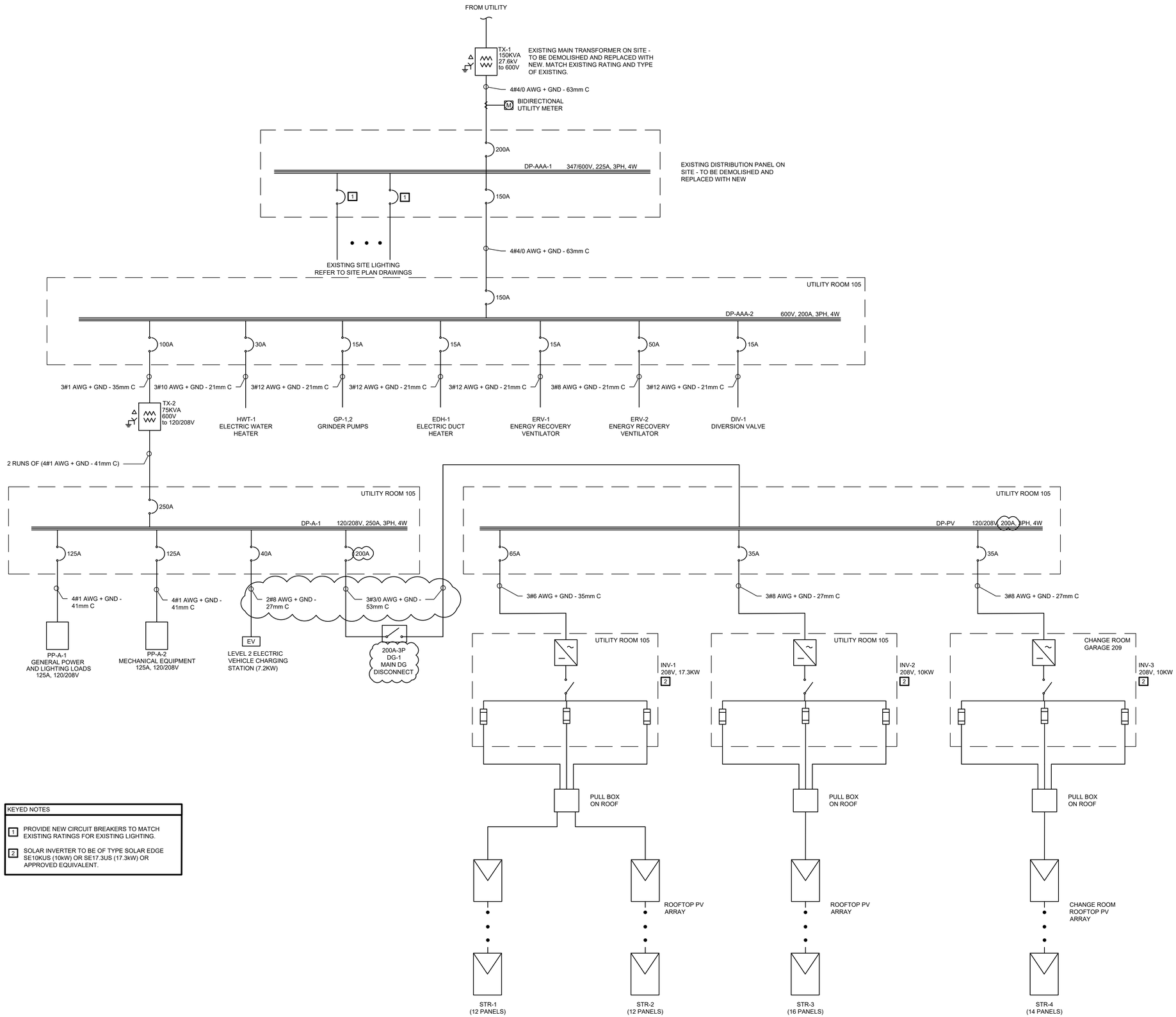
BLUFFER'S PARK
EAST WASHROOM
1 Brimley Road South
Scarborough, Toronto, ON

Drawing Title

GROUND FLOOR PLAN - LIGHTING PLAN

Print Date	2025-06-19
Scale	1:50
Project No.	0010052.000
Drawn by	LT
Checked by	JN

E201



KEYED NOTES

1. PROVIDE NEW CIRCUIT BREAKERS TO MATCH EXISTING RATINGS FOR EXISTING LIGHTING.
2. SOLAR INVERTER TO BE OF TYPE SOLAR EDGE SE10KUS (10kW) OR SE17.3US (17.3kW) OR APPROVED EQUIVALENT.

Introba

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6	2025-06-16	ISSUED FOR ELECTRICAL ADDENDUM 01
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Issue Record

N

BLUFFER'S PARK
EAST WASHROOM
1 Brimley Road South
Scarborough, Toronto, ON

Drawing Title

ELECTRICAL SINGLE LINE DIAGRAM & SCHEMATIC

Print Date	2025-06-19
Scale	NTS
Project No.	0010052.000
Drawn by	LT
Checked by	JN

E301

PANEL NUMBER: PP-A-1

MOUNTING: SURFACE | VOLTAGE: 120/208V | A.I.C. RATING

FED FROM: DP-A-1 | PHASE: 3 | MAIN BREAKER: 125A MCB

PANEL LOCATION: UTILITY ROOM | CIRCUITS: 72

CCT	LOAD								LOAD	CCT
No.	DESCRIPTION	TYPE	VA	BKR		BKR	VA	TYPE	DESCRIPTION	No.
1	EXTERIOR WP GFI T-SLOT REC	REC.	1200	20A	A	15A	600	REC.	OFFICE RECS	2
3	GARAGE GFI T-SLOT REC	REC.	800	20A	B	15A	400	REC.	OFFICE REC	4
5	GARAGE GFI T-SLOT REC	REC.	800	20A	C	15A	1000	OTH.	W/R ELECTRONIC WASH/DRY	6
7	GARAGE GFI T-SLOT REC	REC.	400	20A	A	15A	1000	OTH.	W/R ELECTRONIC WASH/DRY	8
9	UTILITY RM GFI T-SLOT REC	REC.	400	20A	B	15A	1000	OTH.	W/R ELECTRONIC WASH/DRY	10
11	UTILITY RM T-SLOT REC	REC.	600	20A	C	15A	1000	OTH.	W/R ELECTRONIC WASH/DRY	12
13	UTILITY RM TELECOM REC	REC.	400	20A	A	15A	1000	OTH.	W/R ELECTRONIC WASH/DRY	14
15	MTG RM CONV. REC	REC.	600	15A	B	15A	1000	OTH.	W/R ELECTRONIC WASH/DRY	16
17	MTG RM CONV. REC	REC.	600	15A	C	15A	500	OTH.	W/R ELECTRONIC SOAP	18
19	STAFF RM W/R GFI REC	REC.	200	15A	A	15A	600	OTH.	W/R ELECTRONIC FLUSH	20
21	STAFF RM W/R ELECTRONIC FIXTURES	OTH.	200	15A	B	15A	600	OTH.	W/R ELECTRONIC FLUSH	22
23	STAFF RM KITCHEN GFI T-SLOT REC	REC.	800	20A	C	15A	200	OTH.	W/R ADULT LIFT	24
25	STAFF RM KITCHEN GFI T-SLOT REC	REC.	800	20A	A	15A	400	OTH.	EM LTG. EXT SIGNS & BATT.	26
27	STAFF RM KITCHEN GFI T-SLOT REC	REC.	800	20A	B	15A	150	OTH.	W/R ELECTRONIC FAUCET	28
29	STAFF RM KITCHEN REFRIGERATOR REC	REC.	800	15A	C	15A	300	OTH.	W/R ELECTRONIC FLUSH	30
31	STAFF RM CONV. REC	REC.	1000	15A	A	20A	1000	REC.	W/R WP GFI T-SLOT REC	32
33	STAFF RM & HALL T-SLOT CONV. REC	REC.	600	20A	B	15A	600	OTH.	W/R ADOs	34
35	HALL T-SLOT CONV. REC	REC.	600	20A	C	15A	400	REC.	W/R ADULT CHANGE TABLE	36
37	HALL ADOs	OTH.	300	15A	A	15A	200	REC.	SHOWER HALL REC	38
39	GARAGE & UTILITY RM LTG	LTG.	360	15A	B	15A	400	REC.	OFFICE REC	40
41	MTG RM, HALL & OFFICE LTG	LTG.	760	15A	C	15A	600	REC.	STORAGE & OFFICE REC	42
43	STAFF RM LTG	LTG.	601	15A	A	15A	361	LTG.	HALL & STORAGE LTG	44
45	W/R LTG	LTG.	586	15A	B	20A	1500	LTG.	EXTERIOR COVE LTG	46
47	EB EXTERIOR WP GFI T-SLOT REC	REC.	400	20A	C	20A	800	REC.	EB GARAGE T-SLOT REC	48
49	EB CHANGE ROOM ADOs	OTH.	450	15A	A	20A	800	REC.	EB GARAGE T-SLOT REC	50
51	EB CHANGE ROOM LTG	LTG.	293	15A	B	20A	1000	REC.	EB STORAGE T-SLOT REC	52
53	EB GARAGE & STORAGE LTG	LTG.	480	15A	C	15A	670	LTG.	EB EXTERIOR COVE LTG	54
55	SITE LIGHTING	LTG.	421	20A	A					56
57	SITE LIGHTING	LTG.	336	20A	B					58
59					C					60
61					A					62
63					B					64
65	SPARE			15A	C	15A			SPARE	66
67	SPARE			15A	A	15A			SPARE	68
69	SPARE			15A	B	15A			SPARE	70
71	SPARE			15A	C	15A			SPARE	72

LOAD TOTALS			DEMAND	
PHASE A	11.73 KVA			
PHASE B	11.62 KVA		LIGHTING	6.37 KVA
PHASE C	11.31 KVA	DIVERSITY FACTOR	RECEPTACLES	9.00 KVA
			MOTORS	0.00 KVA
LIGHTING	6.37 KVA	1	OTHERS	10.30 KVA
RECEPTACLES	18.00 KVA	0.5		
MOTORS	0.00 KVA	0.75	TOTAL POWER	25.67 KVA
OTHERS	10.30 KVA	1	TOTAL CURRENT	71.30 A

PANEL NUMBER: PP-A-2

MOUNTING: SURFACE | VOLTAGE: 120/208V | A.I.C. RATING

FED FROM: DP-A-1 | PHASE: 3 | MAIN BREAKER: 125A MCB

PANEL LOCATION: UTILITY ROOM | CIRCUITS: 72

CCT	LOAD								LOAD	CCT
No.	DESCRIPTION	TYPE	VA	BKR		BKR	VA	TYPE	DESCRIPTION	No.
1	GARAGE OVERHEAD DOOR	MTR.	1167	15A	A					2
3		MTR.	1167		B	15A	250	OTH.	MOTORIZED DAMPERS	4
5		MTR.	1167		C		500	OTH.	NORTH ENTRY ELECTRIC HEATER EH-1	6
7	STORAGE - EF-1	MTR.	55	15A	A	15A	500	OTH.		8
9	UTILITY ROOM - EF-3	MTR.	60	15A	B		500	OTH.		10
11					C	15A	381	OTH.	SOUTH ENTRY EH-2	12
13	UTILITY RM EH-3	OTH.	1000	15A	A		381	OTH.		14
15		OTH.	1000		B	15A	381	OTH.	SOUTH ENTRY EH-2	16
17		OTH.	1000		C		381	OTH.		18
19	UNDER SINK P-1	MTR.	270	15A	A					20
21	STAFF W/C TRAP PRIMER TP-1	OTH.	6	15A	B	20A	200	MTR.	ROOF MECH EQUIP MAINTENANCE GFI T-SLOT REC	22
23					C	20A	200	MTR.	ROOF MECH EQUIP MAINTENANCE GFI T-SLOT REC	24
25	GARAGE EF-2	MTR.	288	15A	A	40A	1016	MTR.	ROOF AIR-COOLED OUTDOOR CONDENSING UNIT CU-1	26
27		MTR.	288		B		1016	MTR.		28
29		MTR.	288		C	40A	1016	MTR.	ROOF AIR-COOLED OUTDOOR CONDENSING UNIT CU-2	30
31	GARAGE EH-3	OTH.	1000	15A	A		1016	MTR.		32
33		OTH.	1000		B		500	OTH.	WASHROOMS ELECTRIC HEATER EH-1	34
35		OTH.	1000		C	15A	500	OTH.		36
37	BARRIER FREE WASHROOM RADIANT HEATER RP-1	OTH.	155	15A	A		500	OTH.		38
39		OTH.	155		B		500	OTH.	WASHROOMS ELECTRIC HEATER EH-1	40
41	UNIVERSAL WASHROOM RADIANT HEATER RP-1	OTH.	155	15A	C	15A	500	OTH.		42
43		OTH.	155		A		500	OTH.		44
45	BARRIER FREE WASHROOM RADIANT HEATER RP-2	OTH.	265	15A	B		500	OTH.	WASHROOMS ELECTRIC HEATER EH-1	46
47		OTH.	265		C	15A	500	OTH.		48
49					A		500	OTH.		50
51					B					52
53					C					54
55					A					56
57					B					58
59					C					60
61					A					62
63	SPARE			15A	B					64
65					C	15A			SPARE	66
67					A					68
69	SPARE			15A	B					70
71					C	15A			SPARE	72

LOAD TOTALS			DEMAND	
PHASE A	8.50 KVA			
PHASE B	7.79 KVA		LIGHTING	0.00 KVA
PHASE C	7.85 KVA	DIVERSITY FACTOR	RECEPTACLES	0.00 KVA
			MOTORS	6.91 KVA
LIGHTING	0.00 KVA	1	OTHERS	14.93 KVA
RECEPTACLES	0.00 KVA	0.5		
MOTORS	9.21 KVA	0.75	TOTAL POWER	21.84 KVA
OTHERS	14.93 KVA	1	TOTAL CURRENT	60.67 A

LUMINAIRE SCHEDULE

	EQUIPMENT INFO.			ELECTRICAL INFO.						INSTALLATION INFO.
TYPE	DESCRIPTION	LOCATION	MODEL	POWER	VOLTAGE	LAMP	ILLUMINANCE	CCT (K)	CRI	REMARKS
PL1	EXTERIOR POLE MOUNTED LIGHTING FIXTURE. POLE HEIGHT OF 3.7M	EXTERIOR	LANDSCAPE FORMS MOTIVE AREA LIGHT	48W	120V	LED	3987lm	4000K	80+	TO BE CONTROLLED BY TIME CLOCK/PHOTOCELL
PL2	EXTERIOR POLE MOUNTED PROJECTOR LIGHTING FIXTURE. POLE HEIGHT OF 6M	EXTERIOR	WE-EF LIGHTING FLC220 LED GOBO PROJECTOR	37W	120V	LED	4900lm	4000K	80+	TO BE CONTROLLED BY TIME CLOCK/PHOTOCELL
C1	INTEGRATED COVE LIGHTING FIXTURE	WASHROOMS	WINONA LIGHTING CVF WINCOVE	5.5W/ft	120V	LED	600lm/ft	3000K	80+	FIXTURE LENGTH VARIES, REFER TO FLOOR PLANS
C2	EXTERIOR COVE LIGHTING FIXTURE	EXTERIOR	COOPER LIGHTING iO LED CowO	10W/ft	120V	LED	1000lm/ft	4000K	90+	TO BE CONTROLLED BY TIME CLOCK/PHOTOCELL
D1	4" ROUND RECESSED DOWNLIGHT	WASHROOMS	EDISON LIGHTING ED-RD	20W	120V	LED	2050lm	3500K	90+	
K1	UNDERCABINET LED STRIP LIGHT	STAFF ROOM	HALO VALUE LED UNDERCABINET	5.3W/ft	120V	LED	385lm/ft	3500K	90+	FIXTURE LENGTH TO BE 9'
L1	SUSPENDED 4' LINEAR LIGHTING FIXTURE, WITH 70% UP AND 30% DOWNLIGHT COMPONENT	STAFF AREA	EDISON LIGHTING VECTOR 5+	40W	120V	LED	4280lm	3500K	90+	
L2	SUSPENDED 4' VANDAL PROOF LINEAR LIGHTING FIXTURE	UTILITY ROOM, GARAGE, STORAGE	COOPER LIGHTING FAIL-SAFE VAPORITE LED	30W	120V	LED	4000lm	3500K	80+	
P1	7.5" ROUND SUSPENDED PENDANT LIGHTING FIXTURE	WASHROOMS	EDISON LIGHTING ED-PRO+	30W	120V	LED	3000lm	3500K	90+	
W1	VANDAL RESISTANT WALL MOUNTED LIGHTING FIXTURE	CHANGE ROOMS	COOPER LIGHTING FAIL-SAFE G12 LED	15W	120V	LED	1700lm	3500K	80+	
X1	RUNNING MAN PICTOGRAM COMBINATION UNIT WITH EMERGENCY HEADS	THROUGHOUT	LUMACELL LAC1250 DOUBLE HEADS	30W	120V	LED				MIN. 2H BACKUP
BU	BATTERY UNIT WITH EMERGENCY HEADS	THROUGHOUT	LUMACELL RGS12S200 DOUBLE HEADS	50W	120V	LED				MIN. 2H BACKUP
RH	REMOTE EMERGENCY HEADS	THROUGHOUT	LUMACELL MP-BLD DOUBLE HEADS	3W	12V	LED				

Project name: Bluffer's Park Pavilion

MECHANICAL EQUIPMENT SCHEDULE

EQUIPMENT TAG	QUANTITY	UNIT DESCRIPTION	UNIT LOCATION	POWER						STARTER				DISC.			CONTROLS				
				HP	FLA	kW	MCA	VOLTAGE	PHASE	BREAKER (A)	POLES	NO. OF WIRES	WIRE SIZE	CONDUIT SIZE (mm)	DISTRIBUTION BOARD	TYPE (B)	SUP'LD BY (A)	INST'LD BY (A)	WIRED BY (A)	SUP'LD BY (A)	INST'LD BY (A)	WIRED BY (A)	TYPE (C)	SUP'LD BY (A)	INST'LD BY (A)	WIRED BY (A)
ERV-1	1	ENERGY RECOVERY VENTILATOR	UTILITY ROOM - SERVING STAFF AREA	2.05	6.0	1.53	7.5	600V	3	15	3	3	#12 AWG	21mm	DP-AAA-2		M	M	E	E	E	E		M	M	E
ERV-2	1	ENERGY RECOVERY VENTILATOR	UTILITY ROOM - SERVING WASHROOMS		38.2	32.00	47.7	600V	3	50	3	3	#6 AWG	21mm	DP-AAA-2		M	M	E	E	E	E		M	M	E
AC-1	2	FAN COIL UNIT	OFFICE, OFFICE		0.8	0.29	1.0	208V	1	15	2	2	#12 AWG	21mm	PP-A-2		M	M	E	E	E	E		M	M	E
AC-2	2	FAN COIL UNIT	STAFF ROOM		0.8	0.29	1.0	208V	1	15	2	2	#12 AWG	21mm	PP-A-2		M	M	E	E	E	E		M	M	E
AC-3	2	FAN COIL UNIT	MEETING ROOM		0.8	0.29	1.0	208V	1	15	2	2	#12 AWG	21mm	PP-A-2		M	M	E	E	E	E		M	M	E
CU-1	1	CONDENSING UNIT	ROOF		24.4	5.08	30.5	208V	1	40	2	2	#8 AWG	21mm	PP-A-2		M	M	E	E	E	E		M	M	E
CU-2	1	CONDENSING UNIT	ROOF		24.4	5.08	30.5	208V	1	40	2	2	#8 AWG	21mm	PP-A-2		M	M	E	E	E	E		M	M	E
DIV-1	1	DIVERSION VALVE	DIVERSION MANHOLE - EXTERIOR		0.6	0.12	0.8	600V	3	15	3	3	#12 AWG	21mm	DP-AAA-2		M	M	E	E	E	E		M	M	E
EF-1	1	EXHAUST FAN	SEASONAL GARAGE, STORAGE		0.5	0.06	0.6	120V	1	15	1	2	#12 AWG	21mm	PP-A-2		M	M	E	E	E	E		M	M	E
EF-2	1	EXHAUST FAN	GARAGE	0.33	2.4	0.25	3.0	208V	3	15	3	3	#12 AWG	21mm	PP-A-2		M	M	E	E	E	E		M	M	E
EF-3	1	EXHAUST FAN	UTILITY ROOM		0.5	0.06	0.6	120V	1	15	1	2	#12 AWG	21mm	PP-A-2		M	M	E	E	E	E		M	M	E
EH-1	4	ELECTRIC HEATER	WASHROOMS		4.2	1.50	5.2	208V	3	15	3	3	#12 AWG	21mm	PP-A-2		N/A	N/A	N/A	E	E	E		M	M	E
EH-2	2	ELECTRIC HEATER	SOUTH ENTRYWAY		5.5	1.15	6.9	208V	1	15	2	2	#12 AWG	21mm	PP-A-2		N/A	N/A	N/A	E	E	E		M	M	E
EH-3	2	ELECTRIC HEATER	UTILITY ROOM, GARAGE		8.3	3.00	10.4	208V	3	15	3	3	#12 AWG	21mm	PP-A-2		N/A	N/A	N/A	E	E	E		M	M	E
EDH-1	1	ELECTRIC DUCT HEATER	UTILITY ROOM		4.8	5.00	6.0	600V	3	15	3	3	#12 AWG	21mm	DP-AAA-2		N/A	N/A	N/A	E	E	E		M	M	E
GP-1,2	1	GRINDER PUMPS	SANITARY TANK - EXTERIOR	5.00	6.4	3.73	8.0	600V	3	15	3	3	#12 AWG	21mm	DP-AAA-2		M	M	E	E	E	E		M	M	E
HWT-1	1	HOT WATER TANK	UTILITY ROOM		24.0	24.94	30.0	600V	3	30	3	3	#10 AWG	21mm	DP-AAA-2		N/A	N/A	N/A	E	E	E		M	M	E
P-1	1	RECIRC PUMP	UTILITY ROOM		2.3	0.27	2.9	120V	1	15	1	2	#12 AWG	21mm	PP-A-2		M	M	E	E	E	E		M	M	E
TP-1	1	TRAP PRIMER	STAFF WASHROOM		0.1	0.01	0.1	120V	1	15	1	2	#12 AWG	21mm	PP-A-2		M	M	E	E	E	E		M	M	E
RP-1	1	RADIANT HEATER	BARRIER FREE WASHROOM		1.5	0.31	1.8	208V	1	15	1	2	#12 AWG	21mm	PP-A-2		N/A	N/A	N/A	E	E	E		M	M	E
RP-2	1	RADIANT HEATER	UNIVERSAL WASHROOM		2.5	0.53	3.2	208V	1	15	1	2	#12 AWG	21mm	PP-A-2		N/A	N/A	N/A	E	E	E		M	M	E

DATE: June 19, 2025

TOTAL LOAD 94.98 kW

EMERGENCY LOAD 0.00 kW

NON EMERGENCY LOAD 94.98 kW

NOTES

(A) ABBREVIATIONS:
E = ELECTRICAL CONTRACTOR
M = MECHANICAL CONTRACTOR
O = OWNER REPRESENTATIVE
K = KITCHEN CONTRACTOR

(B) STARTER TYPE:
HOA = HAND-OFF-AUTO SWITCH
MS = MANUAL STARTER
CO = COMBINATION STARTER
CO2 = 2-SPEED COMBINATION STARTER
VFD = VARIABLE FREQUENCY DRIVE
MRR = MOTOR RATED RELAY (24 VAC COIL AND MS)
PCS = PACKAGED CONTROL SYSTEM

(C) CONTROL DEVICES:
BA = BUILDING AUTOMATION SYSTEM
ES = END SWITCH
LT = LINE VOLTAGE THERMOSTAT
FS = FLOW SWITCH
GS = GAS SENSOR
H = HUMIDITY SENSOR
I = INTERLOCK
LS = LEVEL SWITCH
PS = PRESSURE SWITCH
TC = TIME CLOCK
T = THERMOSTAT
VFD = VARIABLE FREQUENCY DRIVE
WS = WALL SWITCH
RT = REVERSE ACTING THERMOSTAT
FCCF = FIREFIGHTERS CENTRAL CONTROL FACILITY
FA = FIRE ALARM SYSTEM
DDC = DIRECT DIGITAL CONTROLS
HOA = HAND-OFF-AUTO SWITCH

NOTES:
1. CONTRACTOR TO CONFIRM EXACT SIZE, LOCATION AND WIRING REQUIREMENTS OF ALL MECHANICAL EQUIPMENT PRIOR TO ANY WIRING.
2. CONTRACTOR SHALL REVIEW DIV.25 DRAWINGS AND SPECIFICATION TO ENSURE LOCATIONS AND QUANTITIES ARE CORRECT
3. WIRE MOTOR DISCONNECT AHEAD OF THE VFD AND INSTALL AT THE MOTOR. PROVIDE WIRING BETWEEN MOTOR AND VFD
4. ALL MOTORS 1/2 HP OR LARGER SHALL HAVE MAGNETIC STARTERS
5. SINGLE SPEED STARTERS TO BE WITH HOA POSITION SWITCH, PILOT LIGHT, AND 120 VAC CONTROL CIRCUIT.
6. CONTROL PANELS ARE SHIPPED LOOSE AND REQUIRE FIELD WIRING BY DIVISION 26.
7. ALL STARTERS TO BE WIRED BY DIVISION 26.
8. DIVISION 26 TO SUPPLY AND INSTALL DISCONNECT SWITCHES. IF THE DISCONNECT COLUMN INDICATES 'M', THEN IT IS A PACKAGE UNIT C/W A DISCONNECT SWITCH WIRED BY DIVISION 26.
9. ALL FIRE ALARM DEVICES WIRED BY DIVISION 26. PROVIDE HARDWIRE CONNECTION TO SHUTDOWN ON FIRE ALARM.
10. PROVIDE EMERGENCY SHUTDOWN FOR ALL BOILERS AT DOOR TO BOILER ROOM
11. PROVIDE 120 VOLT 20A RECEPTACLE ON A DEDICATED CIRCUIT FOR ALL DDC PANELS. CONFIRM QUANTITIES AND LOCATIONS WITH DIV. 25
12. PROVIDE FIRE ALARM DUCT SMOKE DETECTOR INSTALLED AFTER THE SUPPLY AIR FAN AS PER CAN/CSA-S524

Introba

No.	Date	Description
6	2025-06-16	ISSUED FOR ELECTRICAL ADDENDUM 01
5	2025-04-15	ISSUED FOR ESA PLAN REVIEW
4	2025-04-11	ISSUED FOR TENDER
3	2024-09-18	ISSUED FOR BUILDING PERMIT
2	2024-08-16	ISSUED FOR 100% COSTING
1	2023-01-31	ISSUED FOR 50% CD

Issue Record

N

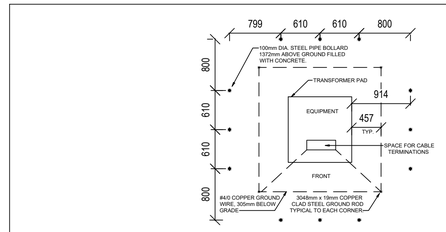
BLUFFER'S PARK
EAST WASHROOM
1 Brimley Road South
Scarborough, Toronto, ON

Drawing Title

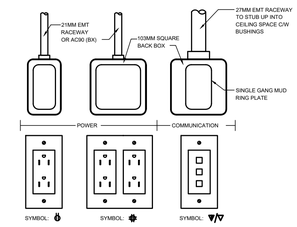
ELECTRICAL SCHEDULES

Print Date 2025-06-19
Scale NTS
Project No. 0010052.000
Drawn by LT
Checked by JN

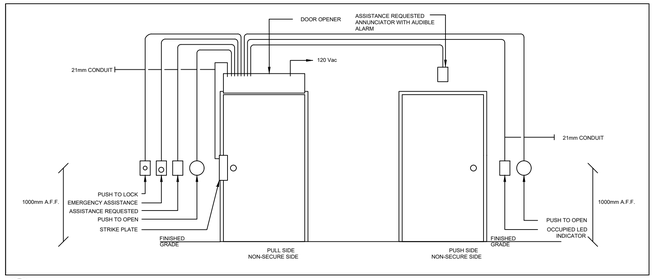
E401



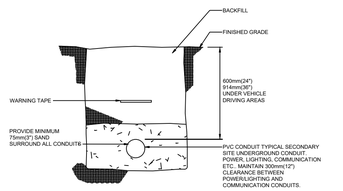
8 E501 PAD MOUNT TRANSFORMER GROUNDING DETAIL
SCALE: N.T.S.



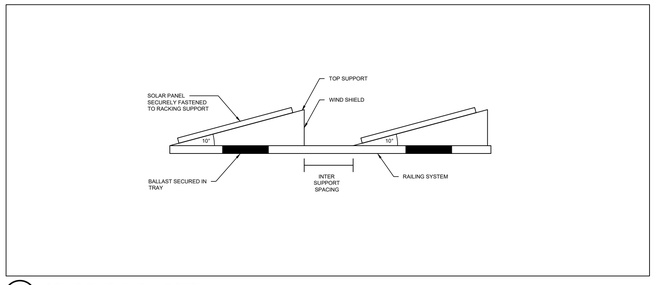
4 E501 TYPICAL POWER/COMMUNICATION OUTLET INSTALLATION DETAIL
SCALE: N.T.S.



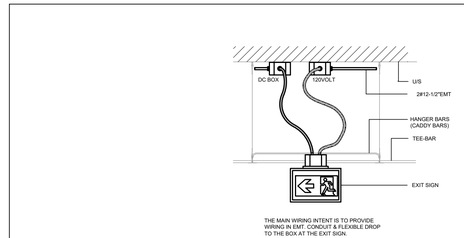
7 E501 UNIVERSAL WASHROOM DETAIL
SCALE: N.T.S.



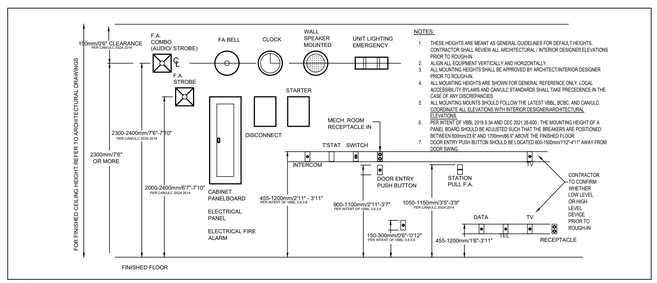
3 E501 TYPICAL DIRECT BURIED CONDUIT INCOMING SERVICE DETAIL
SCALE: N.T.S.



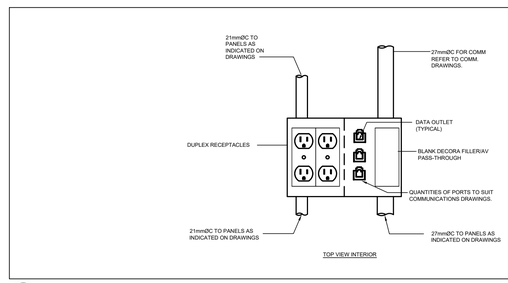
6 E501 SOLAR PANEL RACKING DETAIL
SCALE: N.T.S.



2 E501 TYPICAL EXIT SIGN WIRING DETAIL
SCALE: N.T.S.



5 E501 TYPICAL DEVICES MOUNTING DETAIL
SCALE: N.T.S.



1 E501 TYPICAL COMMUNICATION FLOOR OUTLET BOX
SCALE: N.T.S.

Introba

No.	Date	Description
6	2025-06-16	ISSUED FOR ELECTRICAL ADDENDUM 01
5	2025-04-15	ISSUED FOR ESA PLAN REVIEW
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Issue Record

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BLUFFER'S PARK
EAST WASHROOM
1 Brimley Road South
Scarborough, Toronto, ON

Drawing Title

ELECTRICAL DETAILS

Print Date	2025-06-19
Scale	NTS
Project No.	0010052.000
Drawn by	LT
Checked by	JN

E501

ELECTRICAL SPECIFICATIONS:

1. GENERAL

1.1. SHORT FORM SPECIFICATIONS

1.1.1. THE ELECTRICAL PROJECT SPECIFICATION IS IN SHORT FORM FORMAT AND IS BASED ON THE "MASTER FORMAT" PUBLISHED JOINTLY BY CONSTRUCTION SPECIFICATIONS CANADA AND THE CONSTRUCTION SPECIFICATIONS INSTITUTE.

1.1.2. THE NATURE OF THE SHORT FORM SPECIFICATION FORMAT INDICATES THAT DETAILED EXECUTION AND REGULATORY REQUIREMENTS MAY NOT BE PRESENT IN THIS SECTION.

1.1.3. IT IS EXPECTED THAT THE CONTRACTOR SHALL MAKE ALLOWANCE FOR ANY EXCLUSIONS ARISING FROM THE USE OF THE SHORT FORM SPECIFICATION IN THE BID PRICE, AND INCLUDE ALL REQUIREMENTS THAT WOULD BE NECESSARY IF THIS HAD BEEN A STANDARD, THREE PART FORMAT SPECIFICATION.

1.1.4. REQUIREMENTS OF WORK REQUIRING COORDINATION OR COMBINED SKILLS WILL BE READ AS ONE REQUIREMENT, APPLICABLE TO ALL PARTIES PROVIDING WORK.

1.1.5. THESE DOCUMENTS INCLUDE ALL DRAWINGS AND SPECIFICATIONS AND CONTRACT REQUIREMENTS; WHAT IS REQUIRED BY ONE COMPONENT IS REQUIRED BY ALL.

1.1.6. THESE SPECIFICATIONS SHOULD BE READ IN CONJUNCTION WITH ALL OTHER DOCUMENTS; WHERE DIFFERENCES OCCUR BETWEEN DIFFERENT DOCUMENTS, THE MOST RESTRICTIVE REQUIREMENT WILL APPLY.

1.1.7. COORDINATE ACTIVITIES WITH OTHER SECTIONS AND TRADES TO MINIMIZE CONFLICTS THAT MAY ARISE.

1.2. DEFINITIONS

1.2.1. PROVIDE: THE WORD PROVIDE MEANS TO SUPPLY, INSTALL AND MAKE OPERATIONAL, AND IS APPLICABLE TO THE CONTRACTOR OF THE WORK OF THIS SECTION.

1.2.2. ALTERNATES: THE WORD ALTERNATE IS APPLIED TO A PRODUCT LISTED BY THE CONSULTANT THAT IS DIFFERENT THAN PRODUCTS SPECIFIED FOR THE PROJECT, AND THAT HAS BEEN DETERMINED TO ESSENTIALLY FUNCTION, OPERATE AND PERFORM IN A MANNER SIMILAR TO OR BETTER THAN THE SPECIFIED PRODUCT; WILL NOT ALTER CONSTRUCTION METHODS OR DIMENSIONS; AND WILL HAVE THE SAME VISUAL APPEARANCE, FIT AND FINISH INCLUDING ANY ADDITIONAL REQUIREMENTS AS LISTED AS A PART OF THE PROPERTIES LISTED IN THIS SECTION.

1.2.3. SUBSTITUTION: THE WORD SUBSTITUTION WILL BE APPLIED TO A PRODUCT PROPOSED FOR USE BY THE SUBCONTRACTOR THAT IS DIFFERENT THAN PRODUCTS SPECIFIED FOR THE PROJECT, BUT WILL ESSENTIALLY FUNCTION, OPERATE AND PERFORM IN A MANNER SIMILAR TO OR BETTER THAN THE SPECIFIED PRODUCT; WILL NOT ALTER CONSTRUCTION METHODS OR DIMENSIONS; AND WILL HAVE THE SAME VISUAL APPEARANCE, FIT AND FINISH INCLUDING ANY ADDITIONAL REQUIREMENTS AS LISTED AS A PART OF THE PROPERTIES LISTED IN THIS SECTION.

1.3. ADMINISTRATIVE REQUIREMENTS

1.3.1. GENERAL PROVISIONS: PROVIDE LABOUR, MATERIALS, PRODUCTS, EQUIPMENT, SERVICES AND ALL INCIDENTALS REQUIRED TO COMPLETE, TEST AND COMMISSION ALL ELECTRICAL WORK SHOWN ON THE DRAWINGS OR NOTED IN THIS SPECIFICATION:
1. DRAWINGS ARE DIAGRAMMATIC EXCEPT WHERE SPECIFIC DETAILS ARE GIVEN.
2. OBTAIN ACCURATE DIMENSIONS FROM THE ARCHITECTURAL, STRUCTURAL, OR BY ONSITE MEASUREMENTS.
3. WHERE DIRECTED, RELOCATE OUTLETS AND FIXTURES TO WITHIN 3050 MM OF THE INDICATED LOCATION AT NO EXTRA COST PROVIDING THAT INSTRUCTIONS ARE GIVEN BEFORE THE INSTALLATION OF THE OUTLETS AND FIXTURES REQUIRING RELOCATION.

1.3.2. WORKMANSHIP: WORK SHALL BE COMPLIMENTARY TO THE BASE BUILDING DESIGN AND INSTALLATIONS:
1. WHERE AN EXACT METHOD OF INSTALLATION HAS NOT BEEN INDICATED, FOLLOW THE METHODS USED ON THE BASE BUILDING.
2. GENERALLY, THE STANDARD OF WORK SHALL BE EQUAL TO OR BETTER THAN THAT OF THE BASE BUILDING.

1.3.3. ADDITIONS OR CHANGES TO EXISTING SYSTEMS SHALL BE MADE USING EQUIPMENT IDENTICAL TO THAT ALREADY USED IN THE BASE BUILDING, E.G.: FIRE ALARM SYSTEM COMPONENTS, PANELS, ETCETERA

1.3.4. EXAMINATION OF SITE: VISIT THE SITE TO THOROUGHLY EXAMINE AND BECOME FAMILIAR WITH CONDITIONS WHICH MAY AFFECT THE WORK:

1.3.5. NO CLAIMS FOR EXTRAS WILL BE ALLOWED FOR WORK OR MATERIALS NECESSARY FOR PROPER EXECUTION AND COMPLETION OF THE CONTRACT OR FOR THE BIDDER'S FAILURE, ERROR, OR NEGLIGENCE IN THIS REGARD.

1.4. SUBMITTALS

1.4.1. PROVIDE REQUIRED INFORMATION IN ACCORDANCE WITH GENERAL REQUIREMENTS: SUBMITTALS.

1.4.2. ACTION SUBMITTALS: PROVIDE THE FOLLOWING SUBMITTALS BEFORE STARTING ANY WORK OF THIS SECTION:
1. SHOP DRAWINGS: SUBMIT MANUFACTURER'S DETAILED DRAWINGS SHOWING DIMENSIONS, CAPACITIES, WEIGHTS, AND ELECTRICAL DATA AND PERFORMANCE CHARACTERISTICS FOR EQUIPMENT INCLUDING, BUT NOT LIMITED TO, THE FOLLOWING:
   - SERVICE EQUIPMENT
   - PANEL BOARDS
   - STARTERS
   - LIGHT FIXTURES
   - TELECOMMUNICATIONS EQUIPMENT
   - PHOTOVOLTAIC (PV) SYSTEM
   - OTHER ITEMS REASONABLY REQUESTED BY THE CONSULTANT, OR AS LISTED IN THESE SPECIFICATIONS.

1.5. RECORD DOCUMENTS (DRAWINGS AND SPECIFICATIONS)

1.5.1. SUBMIT AS CONSTRUCTED INFORMATION AS DESCRIBED IN THIS SECTION.

1.5.2. RECORD INFORMATION USING A RED PEN ON PRINTS AND SPECIFICATION MANUAL DEDICATED FOR THE USE OF RECORD DOCUMENTS.

1.5.3. INDICATE ALL CHANGES AND VARIATIONS FROM CONTRACT DRAWINGS CONCURRENTLY WITH CONSTRUCTION PROCESS; DO NOT CONCEAL ANY WORK UNTIL REQUIRED INFORMATION IS RECORDED.

1.5.4. INCLUDE SUFFICIENT INFORMATION ACCURATELY RECORDING ACTUAL CONSTRUCTION INCLUDING; BUT NOT LIMITED TO, THE FOLLOWING:
1. MEASURED LOCATIONS OF INTERNAL UTILITIES AND APPURTENANCES CONCEALED IN CONSTRUCTION REFERENCED TO VISIBLE AND ACCESSIBLE FEATURES OF CONSTRUCTION.
2. SITE CHANGES OF DIMENSION AND DETAIL OR CHANGES IN CONSTRUCTION MATERIALS OR LOCATIONS REQUIRED BY ONSITE CONDITIONS AND TO MAKE COMPONENTS OF THE WORK COME TOGETHER.
3. CHANGES TO EQUIPMENT LAYOUT AND SERVICES.
4. DEVIATIONS IN PIPING, DUCT RUNS, WIRING, AND UTILITY CONNECTIONS.
5. ACTUAL LOCATIONS OF EQUIPMENT, POWER, DATA, AND COMMUNICATIONS LINES REFERENCED TO FIXED STRUCTURAL ELEMENTS FOR ITEMS THAT ARE SCHEMATICALLY INDICATED ON THE DRAWING.
6. CHANGES REQUIRED BY ADDENDA, BID REVISIONS, CHANGE ORDERS, WORK ORDERS AND CONSTRUCTION COMMUNICATIONS.

1.5.5. MAKE RECORDINGS IMMEDIATELY AFTER THE RESPECTIVE WORK IS COMPLETED AND NOT LESS THAN ONCE A WEEK; DATE EACH RECORDING.

1.5.6. CHANGES TO SPECIFICATION SECTIONS SHALL BE LEGIBLY NOTED IN THE MARGINS OF THE DOCUMENT OR BY STAPLING A SHEET OF WHITE PAPER TO THE MARGIN AND REFERENCING THE AFFECTED ARTICLE(S); USE OF ADHESIVE TAPE OR SELF-STICKING REMOVABLE NOTES WILL NOT BE ACCEPTABLE FOR THIS PURPOSE.

1.5.7. ARRANGE AND PAY FOR THE SERVICES OF THE CONSULTANT TO INCORPORATE INTO THE AUTOCAD DRAWING BASE.

1.6. QUALITY ASSURANCE

1.6.1. REGULATORY REQUIREMENTS: COMPLETE WORK IN ACCORDANCE WITH CURRENT CANADIAN ELECTRIC CODE, CSA STANDARDS, THE LOCAL ELECTRICAL INSPECTION AUTHORITY'S REQUIREMENTS, AND WITH THE REQUIREMENTS OF ALL AUTHORITIES HAVING JURISDICTION:
1. SUBMIT THE NECESSARY PLANS AND INFORMATION TO THE ELECTRICAL INSPECTION AUTHORITY AND PAY FOR ALL PERMITS AND FEES AS REQUIRED BEFORE COMMENCEMENT OF WORK.
2. QUALIFICATIONS: PROVIDE PROOF OF QUALIFICATIONS WHEN REQUESTED BY CONSULTANT:

1.6.2. MATERIALS: USE ONLY NEW MATERIALS HAVING APPROPRIATE CSA LABELLING INDICATING APPROVAL, AND CONFORM WITH NEMA OR EEMAC STANDARDS WHERE APPLICABLE AND AS FOLLOWS:
1. ONLY USE NEW MATERIALS, EXCEPT WHERE SPECIFICALLY DETAILED OR INDICATED THAT EXISTING MATERIALS SHALL BE REUSED.
2. WORKMANSHIP: USE ONLY SKILLED WORKERS WHO PERFORM THEIR WORK IN A NEAT AND PROFESSIONAL MANNER; AS A MINIMUM, THE CONSULTANT WILL EXPECT THAT:
3. EXPOSED CONDUIT AND WIRING BE INSTALLED SQUARE AND PLUMB TO BUILDING LINES AND LEVELS.
4. DAMAGED OR INCORRECTLY INSTALLED MATERIALS BE REMOVED AND REPLACED.
5. DAMAGED FINISHES ARE RESTORED TO MATCH ORIGINAL FINISHES.
6. STRUCTURAL, ARCHITECTURAL OR MECHANICAL ITEMS ARE NOT DAMAGED, ALTERED, OR INTERFERED WITH BY INSTALLATION OF MATERIALS BY THIS SECTION, WHETHER CAUSED DIRECTLY OR INDIRECTLY BECAUSE OF THEIR WORK.
7. SITE IS LEFT CLEAN AND TIDY AT THE END OF EACH WORKDAY BY REMOVING TOOLS, EQUIPMENT, LADDERS, AND EMPTY CARDBOARD BOXES FROM SITE AND PREMISES ARE LEFT BROOM CLEAN AT THE END OF THE WEEK.

2. PRODUCTS

2.1. ALTERNATES AND SUBSTITUTIONS

2.1.1. BID PRICE SHALL BE BASED ON MATERIALS AND EQUIPMENT SPECIFIED; ALTERNATES WILL BE CONSIDERED FOR MATERIALS AND EQUIPMENT THAT PERFORM SIMILARLY TO OR BETTER THAN THE ACCEPTABLE MATERIALS OR BASIS-OF-DESIGN MATERIALS LISTED AND AS FOLLOWS:
1. SUBMIT PROPOSED ALTERNATES WHERE ALTERNATE EQUIPMENT IS PROPOSED INDICATING PROPOSED COST SAVING OR IMPROVED VALUE TO THE PROJECT.
2. INCLUDE COSTS FOR ADDITIONAL WORK REQUIRED BY SUBSTITUTE MATERIALS WHERE THE CHANGE IN MATERIALS REQUIRES A CHANGE IN THE DESIGN BASED ON THE ORIGINALLY SPECIFIED EQUIPMENT, INCLUDING WORK REQUIRED BY OTHER DIVISIONS TO ACCOMMODATE ALTERNATE EQUIPMENT.

2.2. FIRE STOPPING

2.2.1. PROVIDE FIRESTOP FOR ALL PENETRATIONS THROUGH FIRE RATED SEPARATIONS.

2.2.2. FIRESTOP MUST BE A COMPLETE SYSTEM MEETING CANULF FIRE RESISTANCE STANDARDS.

2.3. PANELBOARDS BREAKER TYPE

2.3.1. PANELBOARD
1. PANELBOARDS SHALL BE TO CSA C22.2 NO.29 AND PRODUCT OF ONE MANUFACTURER.
   - INSTALL CIRCUIT BREAKERS IN PANELBOARDS BEFORE SHIPMENT.
   - IN ADDITION TO CSA REQUIREMENTS, MANUFACTURER'S NAMEPLATE MUST SHOW FAULT CURRENT THAT PANEL INCLUDING BREAKERS HAS BEEN BUILT TO WITHSTAND.
2. VOLTAGE AS INDICATED - PANELBOARDS: BUS AND BREAKERS RATED FOR AIC AS INDICATED (SYMMETRICAL) INTERRUPTING CAPACITY.
3. SEQUENCE PHASE BUSSING WITH ODD NUMBERED BREAKERS ON LEFT AND EVEN ON RIGHT, WITH EACH BREAKER IDENTIFIED BY PERMANENT NUMBER IDENTIFICATION AS TO CIRCUIT NUMBER AND PHASE.
4. PANELBOARDS: MAINS, NUMBER OF CIRCUITS, AND NUMBER AND SIZE OF BRANCH CIRCUIT BREAKERS AS INDICATED.
5. MINIMUM OF 2 FLUSH LOCKS FOR EACH PANEL BOARD.
6. TWO KEYS FOR EACH PANELBOARD AND KEY PANELBOARDS ALIKE.
7. COPPER BUS WITH NEUTRAL OF SAME AMPERE RATING OF MAINS.
8. MAINS: SUITABLE FOR BOLT-ON BREAKERS.
9. TRIM WITH CONCEALED FRONT BOLTS AND HINGES.
10. TRIM AND DOOR FINISH: AS PER COLOUR SCHEDULE
11. ISOLATED GROUND BUS AS APPROPRIATE
12. INCLUDE GROUNDING BUSBAR WITH 3 OF TERMINALS FOR BONDING CONDUCTOR EQUAL TO BREAKER CAPACITY OF THE PANEL BOARD.
13. ENSURE THAT THERE IS SUFFICIENT PROVISIONS SUPPLIED FOR 20% SPARE BREAKER SPACES.

2.3.2. BREAKERS
1. BREAKERS WITH THERMAL AND MAGNETIC TRIPPING IN PANELBOARDS EXCEPT AS INDICATED OTHERWISE.
2. MAIN BREAKER: SEPARATELY MOUNTED ON TOP OR BOTTOM OF PANEL TO SUIT CABLE ENTRY. WHEN MOUNTED VERTICALLY, DOWN POSITION SHOULD OPEN BREAKER. CONTRACT TO INCLUDE FOR THE SUPPLY OF MAIN BREAKERS FOR ALL PANELS UNLESS THE SOURCE BRANCH BREAKER IS WITHIN THE SAME ROOM.
3. LOCK-ON DEVICES FOR 5% OF 15 TO 30 A BREAKERS INSTALLED AS INDICATED. TURN OVER UNUSED LOCK-ON DEVICES TO OWNER.
4. LOCK-ON DEVICES FOR FIRE ALARM, CLOCK OUTLET, EMERGENCY, DOOR SUPERVISORY, INTERCOM, STAIRWAY, EXIT AND NIGHT LIGHT CIRCUITS.

2.3.3. EQUIPMENT IDENTIFICATION
1. NAMEPLATE FOR EACH PANELBOARD SIZE 4 ENGRAVED.
2. NAMEPLATE FOR EACH CIRCUIT IN DISTRIBUTION PANELBOARDS SIZE 2 ENGRAVED.
3. COMPLETE CIRCUIT DIRECTORY WITH TYPEWRITTEN LEGEND SHOWING LOCATION AND LOAD OF EACH CIRCUIT, MOUNTED IN PLASTIC ENVELOPE AT INSIDE OF PANEL DOOR.

2.4. DRY TYPE TRANSFORMERS UP TO 600V PRIMARY

2.4.1. DESIGN:
1. TYPE: ANN, 600 VOLTS PRIMARY WITH 4-2½ % TAPS.
2. 3 PHASE, 60 HZ OR 1 PHASE, 60 HZ (SEE DRAWINGS)
3. 150 DEGREE C TEMPERATURE RISE INSULATION SYSTEM.
4. BASIC INPULSE LEVEL (BIL): 10 KV
5. INSULATION CLASS: H
6. AVERAGE SOUND LEVEL: STANDARD
7. ENCLOSURE: AIR VENTILATED EEMAC 2.
8. DRIP SHIELDS
9. MANUFACTURER: SCHNEIDER ECN SERIES, EATON / REX POWER MAGNETICS / HAMMOND POWER SOLUTIONS / DELTA / ATLAS TRANSFORMERS, OR APPROVED EQUAL.

2.4.2. EQUIPMENT IDENTIFICATION:

2.4.2.1. PROVIDE EQUIPMENT IDENTIFICATION IN ACCORDANCE WITH THE FOLLOWING:
1. NAMEPLATES: LAMACOID 3MM THICK PLASTIC ENGRAVING SHEET, MATTE WHITE FINISH FACE, BLACK CORE, LETTERING ACCURATELY ALIGNED AND ENGRAVED INTO CORE AND MECHANICALLY ATTACHED WITH SELF TAPPING SCREWS. INDICATE CAPACITY, PRIMARY AND SECONDARY VOLTAGES.
2. LABELS: SIZE 7. EMBOSSED PLASTIC LABELS WITH 6MM HIGH LETTERS UNLESS SPECIFIED OTHERWISE.

2.5. MOULDED CASE CIRCUIT BREAKERS

1. BREAKERS TO CSA C22.2 NO. 5
2. BOLT-ON MOULDED CASE CIRCUIT BREAKER: QUICK-MAKE, QUICK-BREAK TYPE, FOR MANUAL AND AUTOMATIC OPERATION WITH TEMPERATURE COMPENSATION FOR 40 DEGREES C AMBIENT.
3. PLUG-IN MOULDED CASE CIRCUIT BREAKERS: QUICK-MAKE, QUICK-BREAK TYPE, FOR MANUAL AND AUTOMATIC OPERATION WITH TEMPERATURE COMPENSATION FOR 40 DEGREE C AMBIENT.
4. COMMON-TRIP BREAKERS: WITH SINGLE HANDLE FOR MULTI-POLE APPLICATIONS.
5. MAGNETIC INSTANTANEOUS TRIP ELEMENTS IN CIRCUIT BREAKERS TO OPERATE ONLY WHEN VALUE OF CURRENT REACHES SETTING.
   - TRIP SETTINGS ON BREAKERS WITH ADJUSTABLE TRIPS TO RANGE FROM 3-8 TIMES CURRENT RATING.
6. CIRCUIT BREAKERS WITH INTERCHANGEABLE TRIPS AS INDICATED.
7. CIRCUIT BREAKERS TO HAVE MINIMUM AS INDICATED SYMMETRICAL RMS INTERRUPTING CAPACITY RATING.

2.6. DISCONNECT SWITCHES - FUSED AND NON-FUSED

1. HORSEPOWER RATED NON-FUSIBLE / FUSIBLE, DISCONNECT SWITCH IN CSA ENCLOSURE TO CAN/CSA-C22.2 NO.4 SIZE AS APPROPRIATE.
2. PROVISION FOR PADLOCKING IN ON-OFF SWITCH POSITION BY 3 LOCKS.
3. MECHANICALLY INTERLOCKED DOOR TO PREVENT OPENING WHEN HANDLE IN ON POSITION.
4. FUSES: SIZE AS INDICATED.
5. FUSEHOLDERS: TO CSA C22.2 NO.39 SUITABLE WITHOUT ADAPTORS, FOR TYPE AND SIZE OF FUSE INDICATED.
6. QUICK-MAKE, QUICK-BREAK ACTION.
7. ON-OFF SWITCH POSITION INDICATION ON SWITCH ENCLOSURE COVER.
8. EQUIPMENT IDENTIFICATION:
   - INDICATE NAME OF LOAD/EQUIPMENT CONTROLLED AND VOLTAGE ON SIZE 4 NAMEPLATE.

2.7. CONDUIT

2.7.1. INSTALL WIRING IN EMT CONDUIT, EXCEPT WHERE SPECIFICALLY STATED OTHERWISE OR WHERE SUBJECT TO INJURY WHERE SAME SHALL BE RIGID METALLIC CONDUIT.

2.7.2. CONDUIT IN CONTACT WITH EARTH SHALL BE RIGID METALLIC CONDUIT WITH PROTECTIVE COATING OR RIGID PVC.

2.7.3. FLEXIBLE CABLE MAY BE USED FOR SHORT BRANCH CIRCUIT CONNECTIONS BETWEEN OUTLETS AND MOTORIZED EQUIPMENT, FIXED APPLIANCES, ELECTRIC HEATING EQUIPMENT, IN ACCESSIBLE CEILING SPACES FOR FINAL CONNECTION TO LIGHTING FIXTURES AND FOR WIRING DEVICES IN CAVITY WALL CONSTRUCTION.

2.7.4. INSTALL CONDUIT PARALLEL OR PERPENDICULAR TO BUILDING LINES WHEREVER POSSIBLE AND AS FOLLOWS:
1. CONDUITS SHALL BE CONCEALED IN WALLS WHEREVER POSSIBLE, INCLUDING CMU WALLS.
2. RUN ALL CONDUITS CONCEALED IN FINISHED AREAS.
3. CONDUITS IN SERVICE AREAS MAY BE SURFACE MOUNTED
4. MAINTAIN 50 MM BETWEEN PARALLEL CONDUITS IN CAST CONCRETE CONSTRUCTION, EXCEPT IMMEDIATELY ADJACENT TO CAST IN OUTLET BOXES, WHERE CONDUIT RUN CAN BE ADJUSTED TO FIT.

2.7.5. INSTALL A CONTINUOUS 180 KG TEST NYLON CORD IN ALL EMPTY CONDUITS, WITH CAP AT EACH END OF CONDUIT.

2.7.6. PROVIDE SUITABLE METAL BRACKETS, PIPING HANGERS, CLAMPS AND RELATED TYPES OF SUPPORT TO SUPPORT CONDUIT AND CABLE RUNS.

2.7.7. FASTEN EXPOSED CONDUITS TO BUILDING CONSTRUCTION OR SUPPORT SYSTEM USING ONE HOLE MALLEABLE IRON STRAPS.

2.7.8. SUPPORT TWO OR MORE CONDUITS ON U-CHANNELS SUPPORTED BY MINIMUM 6 MM DIAMETER THREADED ROD HANGERS WHERE DIRECT FASTENING TO BUILDING CONSTRUCTION IS IMPRACTICAL.

2.7.9. SUPPORT CONDUITS FROM U-CHANNELS USING ONE PIECE PIPE CLAMPS.

2.7.10. USE EMT CONDUIT WITH DIE CAST SET SCREW TYPE CONCRETE TIGHT COUPLINGS AND CONNECTORS IN DRY AREAS.

2.7.11. USE FLEXIBLE CONDUIT FOR CONNECTION TO MOTORS IN DRY AREAS AND DRY TYPE TRANSFORMERS.

2.7.12. USE LIQUID-TIGHT FLEXIBLE METAL CONDUIT WITH COMPRESSION TYPE RAIN-TIGHT COUPLINGS AND CONNECTORS WITH INSULATED THROAT FOR CONNECTION TO EQUIPMENT IN DAMP OR WET LOCATIONS.

2.7.13. INSTALL ALL SECURITY POWER AND COMMUNICATIONS WIRING IN CONDUIT. FREE AIR HOOKS OR CABLE TRAY WILL NOT BE ACCEPTED FOR SECURITY WIRING.

2.8. WIRE AND CABLE

2.8.1. BUILDING AND CONTROL WIRES SHALL BE 98% CONDUCTIVITY COPPER CONDUCTORS; SIZE AS INDICATED WITH 600 V INSULATION, CROSS LINKED THERMOSETTING POLYETHYLENE MATERIAL RATED RW90XL.

2.8.2. COMPUTER EQUIPMENT RECEPTACLES AND DEDICATED GROUND RECEPTACLES: PROVIDE SEPARATE NEUTRAL AND SEPARATE GROUND WIRES FOR EVERY CIRCUIT; NEUTRAL WIRES SHALL BE MINIMUM 12 AWG OR TO MATCH CIRCUIT CONDUCTOR SIZE IF LARGER; GROUND WIRES SHALL BE MINIMUM 12 AWG.

2.8.3. HOUSEKEEPING RECEPTACLES AND MISCELLANEOUS POWER AND LIGHTING CIRCUITS: PROVIDE SHARED NEUTRAL WIRES IN ACCORDANCE WITH THE CANADIAN ELECTRICAL CODE; SHARED NEUTRAL SHALL BE MINIMUM 10 AWG; SHARED GROUND SHALL BE MINIMUM 12 AWG.

2.8.4. LIGHTING CIRCUITS CONTROLLED FROM DIMMER: PROVIDE SEPARATE NEUTRAL WIRE FOR EVERY CIRCUIT OR DIMMING CHANNEL; NEUTRAL WIRE SHALL BE MINIMUM 12 AWG.

2.8.5. SIZE WIRE FOR BRANCH CIRCUITS TO LIMIT VOLTAGE DROP FROM THE PANELBOARD TO THE FURTHEST RECEPTACLE AT 3% WITH A TEST CURRENT OF 80% OF BRANCH CIRCUIT BREAKER RATING.

2.8.6. BRANCH CIRCUIT WIRING GUIDELINES:
1. POWER CONDUCTORS SMALLER THAN 12 AWG NOT PERMITTED.
2. WIRE FOR 120 VOLT CONTROL CIRCUITS: MINIMUM 14 AWG.

2.8.7. WIRE FOR 120 VOLT CIRCUITS USING SHARED NEUTRALS, MINIMUM WIRE SIZES AS FOLLOWS:
1. 12 AWG FOR RUNS UP TO 23 M.
2. 10 AWG FOR RUNS OF 23 M TO 37 M.
3. RUNS IN EXCESS OF 37 M SHALL USE A WIRE SIZE THAT COMPLIES WITH THE REQUIREMENTS OF ITEM PART 2.4.5 ABOVE.

2.8.8. WIRE FOR 120 VOLT CIRCUITS USING SEPARATE NEUTRALS, MINIMUM WIRE SIZES AS FOLLOWS:
1. 12 AWG FOR RUNS UP TO 20 M.
2. 10 AWG FOR RUNS OF 20 M TO 35 M.
3. RUNS IN EXCESS OF 35 M SHALL USE A WIRE SIZE THAT COMPLIES WITH THE REQUIREMENTS OF ITEM PART 2.4.5 ABOVE.
4. HOMERUNS SHALL NOT BE LESS THAN 10 AWG.

2.8.9. WIRE FOR 347 VOLT LIGHTING CIRCUITS, MINIMUM WIRE SIZES AS FOLLOWS:
1. 12 AWG FOR RUNS UP TO 90 M.
2. 10 AWG FOR RUNS OF 90 M UP TO A DISTANCE THAT ENSURES COMPLIANCE WITH THE REQUIREMENTS OF ITEM PART 2.4.5 ABOVE.

2.8.10. WIRE FOR DC EMERGENCY LIGHTING CIRCUITS, MINIMUM SIZE AS FOLLOWS:
1. 10 AWG OR LARGER SIZE WHERE REQUIRED TO COMPLY WITH REQUIREMENTS OF ITEM PART 2.4.5 ABOVE; COORDINATE WITH EQUIPMENT MANUFACTURER'S WRITTEN RECOMMENDATIONS.

2.8.11. SIZE CONDUCTORS IN ACCORDANCE WITH THE CANADIAN ELECTRICAL CODE WHERE WIRE SIZES ARE NOT INDICATED ON THE DRAWINGS.

2.8.12. WIRING FOR FIRE ALARM, SECURITY, PAGING AND SIMILAR SYSTEMS SHALL MATCH BASE BUILDING WIRING, OR AS RECOMMENDED BY THE SYSTEM MANUFACTURER.

2.8.13. ALL WIRING INSTALLED IN UNDERGROUND CONDUIT SHALL BE SUITABLE FOR WET LOCATION. THIS INCLUDES LINE VOLTAGE, LOW VOLTAGE, TELEVISION, DATA, COMMUNICATION, AND ALL TYPES OF WIRING. WIRING SHALL ALSO BE SUITABLE TO EQUIPMENT MANUFACTURER'S REQUIREMENTS.

2.8.14. ALL WIRES IN CLASS 1, GROUP 1, ZONE 1 AND ZONE 2 AREAS MUST BE OIL AND GAS RESISTANT.

2.8.15. ALL PETROLEUM WIRING MUST BE COLOUR CODED AND/OR LABELED SUCH THAT WIRING IS EASILY IDENTIFIABLE.

2.8.16. ALL PETROLEUM WIRING MUST BE CONNECTED AS A CONTINUOUS RUN. NO SPLICES OR FIELD TERMINAL CONNECTORS CAN BE USED, OTHER THAN THOSE SPECIFIED BY PETROLEUM EQUIPMENT MANUFACTURER.

2.8.17. ELECTRICAL CONTRACTOR TO ALLOW FOR PLENUM RATED CABLING/CONDUIT IN ALL PLENUMS AS PER ARCHITECTURAL AND/OR MECHANICAL DRAWINGS. THIS WILL INCLUDE ANY CEILING SPACES BEING USED FOR RETURN AIR (I.E. FAN COIL UNITS, COMPARTMENT UNITS, ERVS). REFER TO MECHANICAL DRAWINGS AND COORDINATE WITH MECHANICAL CONTRACTOR. IF ANY CLARIFICATIONS ARE REQUIRED ON WHERE PLENUMS MAY BE PRESENT, AN RFI IS TO BE RAISED DURING TENDER.

2.9. WIRING DEVICES AND COVER PLATES

2.9.1. SPECIFICATION GRADE DEVICES SHALL BE USED.

2.9.2. COVER PLATES SHALL BE WHITE NYLON MOLDED, UNLESS NOTED OTHERWISE.

2.9.3. PROVIDE NAMEPLATE WITH CIRCUIT NUMBER ON ALL RECEPTACLES. WHERE THERE IS ONLY ONE RECEPTACLE ON A CIRCUIT. IDENTIFY AS "DED.CCT#...".

2.9.4. PROVIDE JUNCTION AND OUTLET BOXES WHERE NECESSARY FOR PROPER PULLING OF WIRES.

2.9.5. PROVIDE OUTLET BOX FOR LIGHTING SWITCHES, FIXTURES, RECEPTACLES, EACH WIRING DEVICE, AND COMMUNICATION OUTLET AND AS INDICATED.

2.9.6. USE ONE-PIECE ELECTRO-GALVANIZED STEEL BOXES.

2.9.7. PROVIDE GANG BOXES WHERE WIRING DEVICES ARE GROUPED. COMBINATION BOXES WITH BARRIERS WHERE OUTLETS FOR MORE THAN ONE SYSTEM ARE GROUPED.

2.9.8. SUPPORT BOXES INDEPENDENTLY OF CONNECTING CONDUITS.

2.9.9. DO NOT INSTALL OUTLET BOXES BACK-TO-BACK IN WALLS:
1. NON-ACOUSTIC WALLS: ALLOW MINIMUM 150 MM HORIZONTAL CLEARANCE BETWEEN BOXES.
2. ACOUSTICALLY RATED WALLS: OFFSET OUTLET BOXES BY 610 MM SEPARATED BY ONE STUD SPACE OR GYPSUM BOARD BAFFLE; COORDINATE WITH DIVISION 09 - GYPSUM BOARD ASSEMBLIES.
3. PARTY WALLS: OFFSET OUTLET BOXES BY 1000 MM SEPARATED BY TWO STUD SPACES AND GYPSUM BOARD BAFFLES.

2.9.10. ALLOW FOR A VARIATION OF 3050 MM FROM LOCATIONS SHOWN WITHOUT EXTRA COST; CONFIRM FINAL LOCATION BEFORE INSTALLATION.

2.9.11. MOUNTING HEIGHTS FROM FINISHED FLOOR TO CENTRE LINE OF DEVICE, UNLESS INDICATED OTHERWISE, SHALL BE:

LOCATION AND DISTANCE	
- OUTLET BOXES ABOVE COUNTERS OR SPLASH BACKS	225 MM ABOVE COUNTER
- OUTLET BOXES ABOVE BASE BOARD HEATERS AND RADIATION CABINETS	200 MM ABOVE ENCLOSURE
- GENERAL RECEPTACLES, TV AND COMMUNICATIONS OUTLET BOXES	400 MM
- RECEPTACLES IN MECHANICAL AND SHOP AREAS; WASHER AND DRYER OUTLET BOXES	950 MM
- SWITCHES, DIMMERS, PUSH BUTTONS	1150 MM
- WALL MOUNTED COMMUNICATIONS OUTLET BOXES, FIRE ALARM PULL STATIONS	1350 MM
- END OF LINE RESISTORS	1800 MM
- PANEL BOARDS, ANNUNCIATOR PANELS, ETCETERA	1900 MM TO TOP OF PANEL
- FIRE ALARM BELLS, SPEAKERS, CLOCKS (HEIGHTS AS ABOVE OR IN BOTTOM OF NEAREST BLOCK OR BRICK COURSE).	2300 MM

2.9.12. USE GANG PLATES WHERE TWO OR MORE OUTLETS ARE LOCATED TOGETHER:

2.9.13. ALIGN ALL COVER PLATES PARALLEL AND PERPENDICULAR TO BUILDING LINES.

2.9.14. PROVIDE BLANK COVER PLATES FOR BOXES WITHOUT WIRING DEVICES.

2.9.15. WHERE LIGHTING DIMMERS ARE SHOWN, USE SEPARATE SINGLE GANG BOXES ONLY.

2.10. PHOTOVOLTAIC (PV) POWER SYSTEM

2.10.1. PRODUCT DATA:
1. PROVIDE MANUFACTURER'S PRINTED PRODUCT LITERATURE, SPECIFICATIONS, AND DATA SHEETS, AND INCLUDE PRODUCT CHARACTERISTICS, PERFORMANCE CRITERIA, PHYSICAL SIZE, FINISH, AND LIMITATIONS.
2. PROVIDE COMPLETE PHOTOVOLTAIC POWER CALCULATIONS SHOWING AMP HOURS PRODUCED, ROOFTOP PANEL LAYOUTS, ELECTRICAL WIRING SCHEMATIC AND SINGLE LINE DIAGRAM.

2.10.2. DESCRIPTION OF SYSTEM:
1. PROVIDE ALL MATERIAL, EQUIPMENT, AND SERVICES NECESSARY FOR A COMPLETE AND OPERATIONAL PV ARRAY SYSTEM.
2. THE PV SYSTEM SHALL PROVIDE AT LEAST 22kW OF POWER DURING PEAK OPERATION.
3. PROVIDE ONLY NEW EQUIPMENT WHICH BEARS THE ULC OR CSA LABELS.
4. PROVIDE ALL REQUIRED EQUIPMENT AND METERING TO TORONTO HYDRO DISTRIBUTION GENERATION REQUIREMENTS.

2.10.3. PRODUCTS:
1. SOLAR PANELS
   - CELL EFFICIENCY SHALL BE BETWEEN 14 AND 18% NORMAL.
   - CELL STRUCTURE SHALL BE MONOCRYSTALLINE.
   - EACH CELL SHALL BE SQUARE IN SHAPE.
   - CELL COLOUR SHALL BE BLUE.
   - PEAK POWER OUTPUT SHALL BE 400W OR GREATER.
   - PHOTOVOLTAIC ARRAY SUPPORT STRUCTURES AND NECESSARY APPURTENANCES FOR MOUNTING THE ARRAY SHALL BE PROVIDED. EACH MODULE MUST BE CAPABLE OF BEING REPLACED WITHOUT DISRUPTING THE OPERATION OF THE REMAINDER OF THE SYSTEM.
   - CONNECTIONS BETWEEN THE MODULES AND COMBINER BOX SHALL CONSIST OF FLEXIBLE CONDUITS WITH LIQUID-TIGHT FITTINGS AND UL-LISTED WIRE RATED FOR 90ºC WET CONDITIONS.
   - TRADE CONTRACTOR SHALL ARRANGE THE ARRAY PANELS IN SERIES AND/OR PARALLEL AS DETERMINED BY THE INVERTER TO ENSURE TOLERANCES ARE NOT EXCEEDED.
2. INVERTER
   - THE INVERTER SHALL CONTROL AND REGULATE THE OUTPUT OF THE PV ARRAY. THE CONT