

GENERAL REQUIREMENTS

1. CONTRACTOR IS RESPONSIBLE TO ENSURE ALL INSTALLATIONS ARE IN ACCORDANCE WITH GOVERNING CODES, STANDARDS, AND REGULATIONS.
2. ALL MATERIAL AND CONTRACTOR WORK MUST SATISFY LOCAL UTILITY REQUIREMENTS FOR NEW EQUIPMENT INSTALLATIONS.
3. CONTRACTOR TO REFER TO THE CONSTRUCTION SPECIFICATIONS PROVIDED BY THE LOCAL UTILITY FOR ADDITIONAL MATERIAL AND INSTALLATION DETAILS NOT SHOWN ON THESE DRAWINGS.
4. CONTRACTOR TO VERIFY ALL LAYOUTS, WIRING, AND INSTALLATIONS PRIOR TO ARRANGING A FINAL SITE INSPECTION.
5. CONTRACTOR TO SUBMIT AS-BUILT DRAWINGS SHOWING ANY FIELD MODIFICATIONS TO THE ENGINEER PRIOR TO DEMOBILIZING FROM SITE.
6. REFER TO CABLE AND TELEVISION UTILITY DESIGNS PROVIDED BY OTHERS TO VERIFY PLACEMENT OF THOSE FACILITIES. CONTRACTOR TO NOTIFY ENGINEER OF ANY DISCREPANCIES BETWEEN POWER, CABLE, AND TV LAYOUTS.

CONSTRUCTION NOTES

1. LOCATIONS OF EXISTING SHALLOW AND DEEP UTILITIES ARE APPROXIMATE.
2. OTHER SHALLOW OR DEEP UTILITIES NOT SHOWN ON THESE PLANS MAY BE PRESENT. VERIFY ALL LOCATES PRIOR TO STARTING WORK. DAYLIGHT TO VISUALLY VERIFY CROSSING EXISTING UTILITIES WITH NEW INFRASTRUCTURE.
3. INSTALL ALL CABLES UNDER ROADWAYS, LANES, AND SIDEWALKS IN MINIMUM 100mm PVC DB2 CONDUIT.
4. EXTEND ALL CONDUIT IN ROADWAY CROSSINGS FROM TRENCH LINE TO TRENCH LINE, WITH MINIMUM OF 300mm FROM BACK OF CURB OR BACK OF SIDEWALK (WHICHEVER IS GREATER).
5. ROAD CROSSINGS MUST BE PERPENDICULAR AT RIGHT ANGLES TO THE ROADWAY.
6. ROAD CROSSINGS TO BE 1.5m BELOW FINISHED GRADE WITH AT LEAST 1.1m OF COVERAGE OVER TOP OF BURIED CONDUIT.
7. CAP AND COIL CABLES AT UTILITY SPLICE OR CONNECTION POINTS. SPLICES TO BE COMPLETED BY UTILITY.

MINIMUM CLEARANCES

EPCOR CABLES: 3.0m TO WATER LINES; 2.0m TO ALL VALVES, HYDRANTS, CATCH BASINS, MANHOLES, SAN AND STORM LINES; 1.8m TO WATER AND CC VALVES; 1.0m FROM GAS LINES AND TREES

GUARDRAILS: 1.0m FROM GAS LINES AND TREES

TRANSFORMER DOORS: 3.0m FROM OTHER OBSTRUCTIONS

ROAD CROSSINGS: 3.0m FROM ANY FIRE HYDRANTS, MANHOLES, CATCH BASINS, AND VALVES; 1.5m FROM SERVICE PEDESTALS; 2.0m FROM CENTRE OF TRANSFORMERS.

TRENCHES: 3.0m FROM FIRE HYDRANTS, MANHOLES, CATCHBASINS, AND VALVES.

ALL EPCOR BENDS TO BE 36°.

UTILITY SERVICE

EPCOR REFERENCE: WR 071229

APPROX. SITE CONNECTED LOAD: 1,500 KW
ESTIMATED CEC DEMAND LOAD: 764 KW

SERVICE SIZE: 600/347V 3P 4W, 800A
UTILITY TRANSFORMER SIZED PER EPCOR
SINGLE UTILITY METER IN ADJACENT SHED C/W INSTRUMENT METERING PANEL.

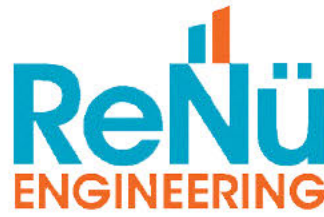
CABLE & LINE LEGEND

- P — EXISTING POWER, GENERAL PRIMARY CABLE ALIGNMENT
- - - EXISTING POWER, GENERAL SECONDARY CABLE ALIGNMENT
- - - EXISTING WATER LINE (PARTIALLY SHOWN ON LAYOUT)
- - - EXISTING STORM LINE (PARTIALLY SHOWN ON LAYOUT)
- - - EXISTING GAS LINE, PARTIAL (METER SERVICES NOT SHOWN)
- GAS — EXISTING GAS LINE, PARTIAL (METER SERVICES NOT SHOWN)
- PRIMARY POWER ALIGNMENT 100mm RPVC BY CONTRACTOR (CABLE BY EPCOR)
- - - SECONDARY POWER CABLE SIZED PER SINGLE LINE DIAGRAM

SYMBOL LEGEND

- EX EXISTING POWER, UTILITY TRANSFORMER
- UTILITY TRANSFORMER, NEW, ON 75-500kVA BASE C/W GROUND GRID AND GUARDRAILS
- MAIN DISTRIBUTION & UTILITY METERING ENCLOSURE
- PRIMARY PULL BOX, PER EPCOR SPECIFICATION

THIS DRAWING TO BE READ IN CONJUNCTION WITH THE PRECEDING REV 2 "ISSUED FOR PERMIT" AND THE CORRESPONDING "REVIEWED EPCOR CUSTOMER DRAWING" SIGNED BY UTILITY ON 21-JUL-2020.



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APE-GA PERMIT #P11651

#	DATE	ISSUED FOR
03	2020 10 26	CONSTRUCTION
02	2020 07 02	PERMIT
01	2020 04 22	PERMIT
00	2020 03 16	CLIENT REVIEW

PROJECT NO.
C20-826

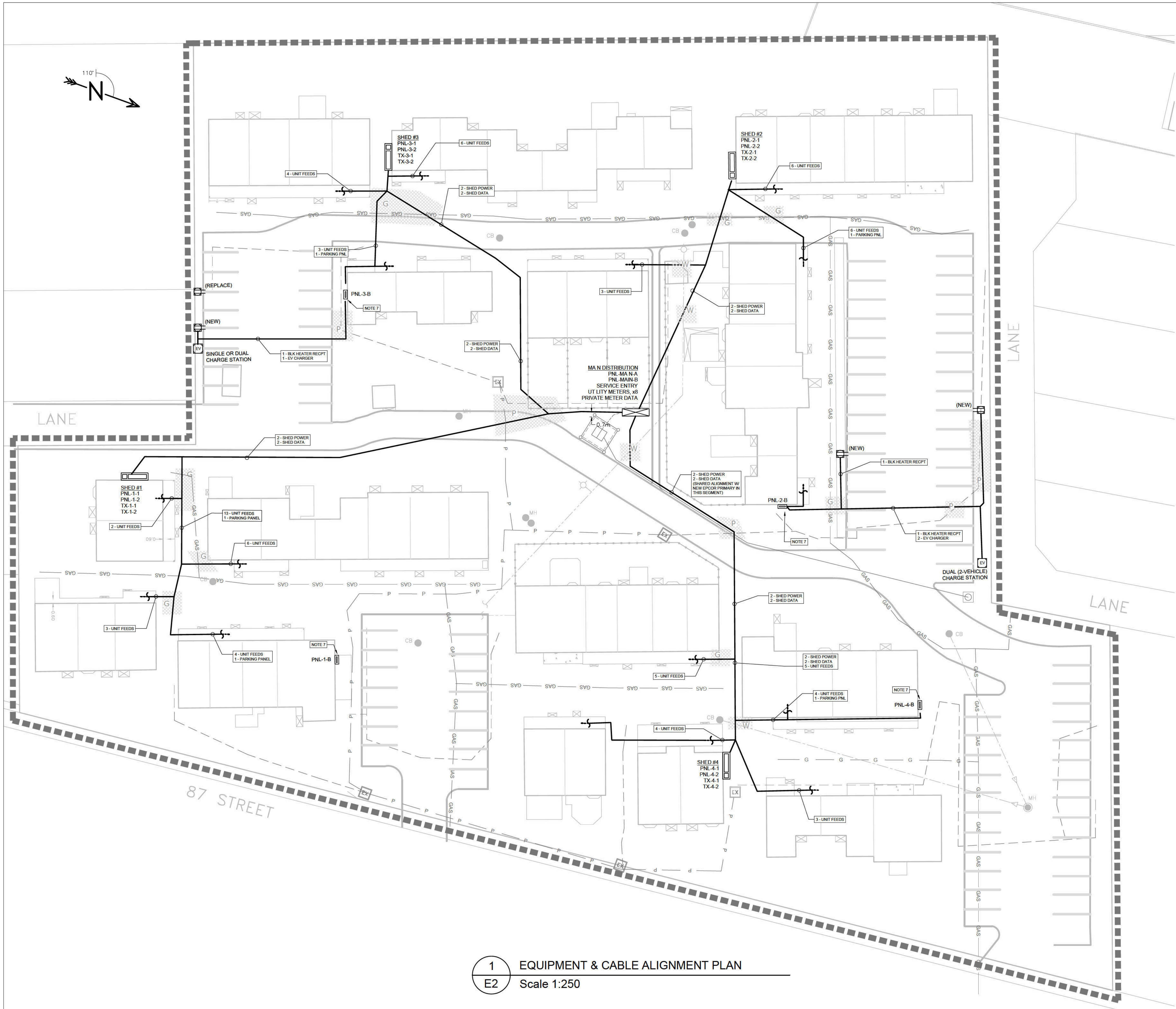
PROJECT
SUNDANCE CO-OP
POWER
DISTRIBUTION

LOCATION

DESCRIPTION
EPCOR SERVICING
SITE PLAN

SHEET SIZE
ARCH D

E1



DRAWING NOTES

1. VERIFY EQUIPMENT RATINGS ACROSS ALL RELEVANT DRAWINGS AND NOTIFY ENGINEER OF ANY DISCREPANCIES PRIOR TO PROCUREMENT AND/OR SITE CONSTRUCTION.
2. LOCATIONS OF EXISTING SHALLOW AND DEEP UTILITIES ARE APPROXIMATE. AREAS OF PROBABLE UTILITY CONFLICT (SEE LEGEND) IS APPROXIMATE AND NOT FOR USE IN SURVEYS.
3. OTHER SHALLOW OR DEEP UTILITIES NOT SHOWN ON THESE PLANS MAY BE PRESENT. VERIFY ALL LOCATES PRIOR TO STARTING WORK. DAYLIGHT TO VISUALLY VERIFY CROSSING EXISTING UTILITIES WITH NEW INFRASTRUCTURE.
4. NEW CONDUIT AND CABLE ALIGNMENTS TO BE INSTALLED USING A COMBINATION OF DIRECT DRILL, HYDROVAC, OPEN TRENCH, AND EXCAVATING MEANS. CONTRACTOR IS RESPONSIBLE TO COORDINATE WITH SITE GENERAL CONTRACTOR TO ENSURE CONTINUITY OF SCOPE BETWEEN VARIOUS SITE TRADES. NOTIFY THE ENGINEER AND OWNER REPRESENTATIVE OF ANY SCOPE DISCREPANCIES PRIOR TO PERFORMING THE WORK.
5. ADHERE TO CLEARANCES SHOWN ON DRAWING E1 THROUGHOUT CONSTRUCTION.
6. REFER TO SLD AND CABLE SCHEDULE FOR SIZE AND SPECIFICATIONS.
7. LOCATE AND INTERCEPT EXISTING CABLES TO PARKING LOT VEHICLE BLOCK HEATER RECEPTACLES. TERMINATE EXISTING CABLES IN NEW PANEL AND AS-BUILD PANEL SCHEDULE.

CONSTRUCTION SPECIFICATION

TO BE READ IN ADDITION TO OTHER PROJECT SPECIFICATIONS AND CONTRACT REQUIREMENTS.

1. NO NEW EQUIPMENT OR CONDUCTORS ARE TO BE INSTALLED ON THE DWELLING UNIT SIDE OF FENCES WHENEVER FEASIBLE. FOR ANY CONDUCTORS OR CONDUIT INSTALLED ON DWELLING SIDE OF FENCING, THE FOLLOWING SAFETY MEASURES SHOULD BE PERFORMED:
 - 1.1. CABLES INSTALLED IN CONDUIT WHEREVER FEASIBLE.
 - 1.2. RED MARKER TAPE ("DANGER") TO BE INSTALLED ABOVE ANY TRENCHED CONDUIT/CONDUCTORS DURING TRENCH BACKFILL.
 - 1.3. RESIDENTS OF AFFECTED DWELLING UNITS, AS WELL AS THE SITE OWNER REPRESENTATIVE, SHALL BE PROVIDED WITH:
 - 1.3.1. WRITTEN NOTICE AND A DIAGRAM SHOWING THE ALIGNMENT NEAR THE AFFECTED DWELLING.
 - 1.3.2. INSTRUCTIONS THAT NO NEW SITE IMPROVEMENTS OR LANDSCAPING OCCUR WITHIN 1.0m OF THE NEW EQUIPMENT OR CABLE ALIGNMENT WITHOUT PRIOR WRITTEN APPROVAL FROM SITE REPRESENTATIVES AND LINE LOCATES PERFORMED.

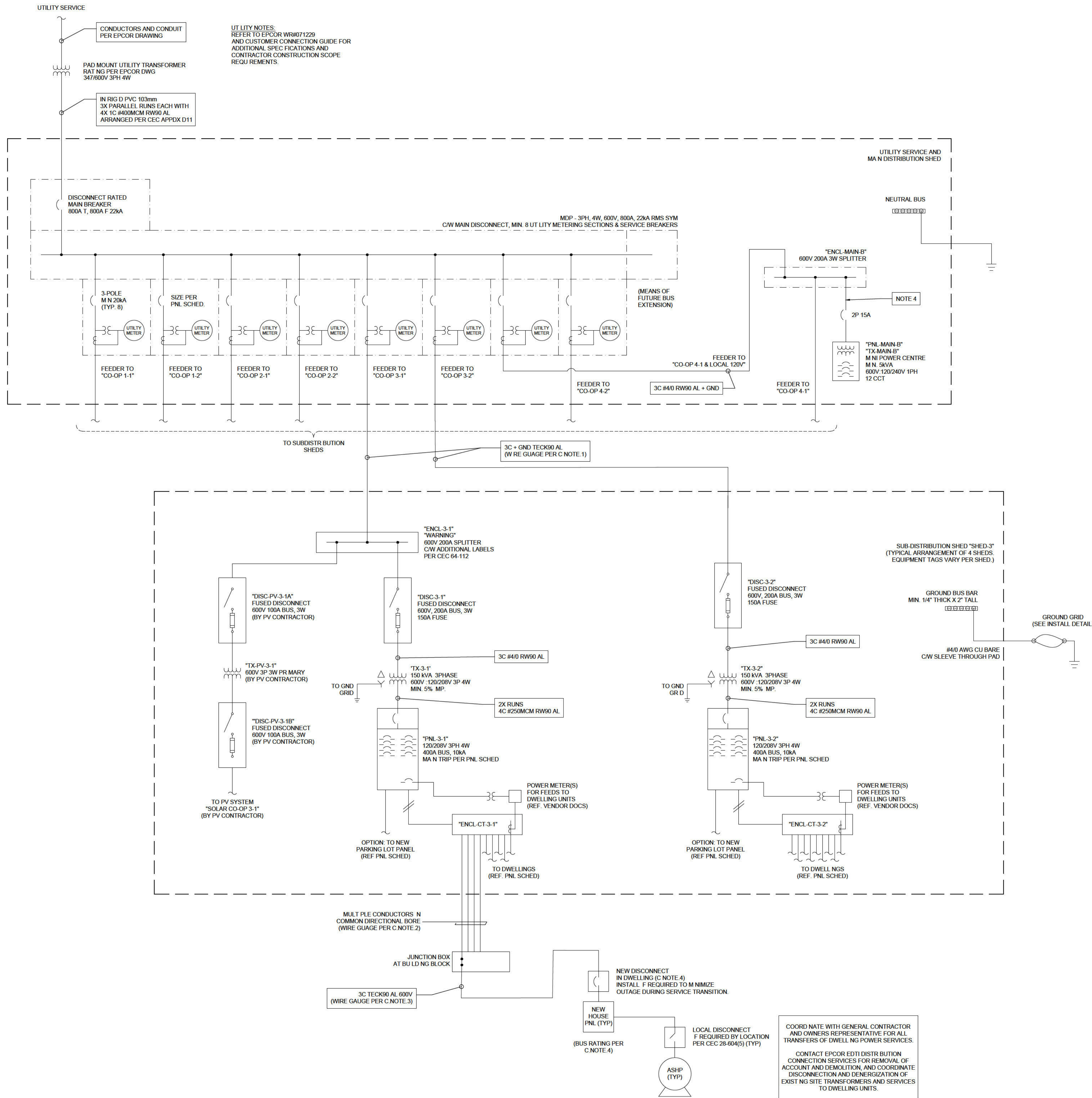
CABLE & LINE LEGEND

- P — EXISTING POWER, GENERAL PRIMARY CABLE ALIGNMENT
- S — EXISTING POWER, GENERAL SECONDARY CABLE ALIGNMENT
- - - - - EXISTING WATER LINE (PARTIALLY SHOWN ON LAYOUT)
- - - - - EXISTING STORM LINE (PARTIALLY SHOWN ON LAYOUT)
- - - - - EXISTING GAS LINE, PARTIAL (METER SERVICES NOT SHOWN)
- GAS — EXISTING GAS LINE, PARTIAL (METER SERVICES NOT SHOWN)
- P — PRIMARY POWER ALIGNMENT (SEE UTILITY SERVICE PLAN)
- NEW CABLE ALIGNMENT QTY & APPLICATION AS SHOWN REF. SLD AND DETAILS FOR SIZING

SYMBOL LEGEND

- MAIN DISTRIBUTION SHED
- SHED, SUB-DISTRIBUTION 600V & 120/208V
- NEW PARKING PANEL (REF. INSTALL DETAILS)
- CONTINUATION OF CABLE ALIGNMENT
- EXISTING MANHOLE/CATCHBASIN (REF. SITE LOCATES & ORIGINAL DEEP UTILITY DESIGN DRAWINGS)
- CALLOUT FOR CONDUCTORS IN ALIGNMENT SEGMENT (REF. SLD AND SCHEDULES FOR DETAILS)
- APPROX. AREA OF PROBABLE UTILITY CONFLICT OR COORDINATION
 - "G" GAS, EXISTING
 - "W" WATER/STORM/SEWAGE
 - "P" POWER, EXISTING
 - "X" OTHER
- NEW DUPLEX RECEPTACLE, VEHICLE BLOCK HEATER (REF. INSTALL DETAILS)
- NEW EV CHARGE STATION (REF. INSTALL DETAILS)

1 EQUIPMENT & CABLE ALIGNMENT PLAN
E2 Scale 1:250



DRAWING NOTES

- VERIFY EQUIPMENT RATINGS ACROSS ALL RELEVANT DRAWINGS AND NOTIFY ENGINEER OF ANY DISCREPANCIES PRIOR TO PROCUREMENT AND/OR SITE CONSTRUCTION.
- EQUIPMENT TAG LABELING IS SHOWN AS TYPICAL CONVENTION. ACTUAL EQUIPMENT CONFIGURATION WITHIN A SUB-DISTRIBUTION SHED (IE. FOR "1-1" OR "2-2" SIDE EQUIPMENT) MAY VARY BASED ON SITE NEEDS. CONTRACTOR TO UPDATE EQUIPMENT TAGS AS NEEDED TO REFLECT AS-BUILT CONDITIONS AND MAINTAIN REDLINE WORKING DRAWINGS AS SPECIFIED.
- PHASES FOR 120V SHED "HOUSE PANEL" TO BE SELECTED TO OPTIMIZE LOAD BALANCE ON FEEDER. CONTRACTOR TO FIELD-SELECT MOST SUITABLE FEEDER AND PHASES BASED ON DOWNSTREAM AS-BUILT CONDITIONS TO BALANCE CONNECTED LOAD AS MUCH AS PRACTICAL. LAMACOID LABELS ON CELLS SHALL REFLECT AS-BUILT CONDITIONS.

CONSTRUCTION NOTES

- WIRE GAUGE FROM MAIN SHED TO SUBSHED TO BE:
 - SUITABLE FOR 144KVA, 140A 600V 3PH, DERATED PER CEC TABLE 5C
 - 4/0 AWG FOR MAX OF 2X 3C RUNS IN ONE BORE (6 CONDUCTORS)
 - 250MCM FOR MORE THAN 2X 3C RUNS IN ONE BORE (7+ CONDUCTORS)
- WIRE GAUGE FROM SUBSHED TO DWELLING BLOCK JUNCTION BOX TO BE:
 - FOR UNITS #1 AND #28, SUITABLE FOR 130A 208V 2P, DERATED PER CEC TABLE 5C
 - 4/0 AWG FOR MAX OF 2X 3C RUNS IN ONE BORE (6 CONDUCTORS)
 - 250MCM FOR MORE THAN 2X 3C RUNS IN ONE BORE (7+ CONDUCTORS)
 - FOR OTHER 57 TYPICAL UNITS, SUITABLE FOR 117A 208V 2P, DERATED PER CEC TABLE 5C
 - 3/0 AWG FOR MAX OF 2X 3C RUNS IN ONE BORE (6 CONDUCTORS)
 - 4/0 AWG FOR MORE THAN 2X 3C RUNS IN ONE BORE (7+ CONDUCTORS)
 - ALL ABOVE ARE TO A MAXIMUM OF 5 CABLES IN SAME BORE (INCLUDING ANY CONDUCTORS FOR PV SYSTEM). CONTACT ENGINEER FOR OTHER SCENARIOS ENCOUNTERED DURING CONSTRUCTION.
- WIRE GAUGE FROM DWELLING BLOCK JUNCTION BOX TO DWELLING UNIT PANEL TO BE:
 - FOR UNITS #1 AND #28,
 - #2/0 AWG
 - FOR OTHER 57 TYPICAL UNITS,
 - #1/0 AWG FOR LENGTH SHORTER THAN 35m
 - #2/0 AWG FOR LENGTHS 35m AND LONGER
- DISCONNECT AND SERVICE RATING TO BE 125A SERVICE FOR TYP. 57 UNITS AND 150A SERVICE FOR UNIT #1 & UNIT #28 (UNITS NUMBERED PER GENERAL CONTRACTOR'S LAYOUT)

DISTRIBUTION LOAD SUMMARY						
SHED	SOLAR CO-OP	# OF UNITS	# OF STALLS	# EV CHRG	DEMAND PER CEC (kW)	UTILITY LOAD (kW)
SHED 1	CO-OP 1-1	8	8	0	139.9	29.2
	CO-OP 1-2	7	0	0	121.2	21.0
SHED 2	CO-OP 2-1	9	0	0	142.1	27.0
	CO-OP 2-2	6	12	2	137.3	33.4
SHED 3	CO-OP 3-1	6	0	0	106.7	18.0
	CO-OP 3-2	7	9	2	143.6	34.5
SHED 4	CO-OP 4-1	8	0	0	134.0	24.0
	CO-OP 4-2	8	8	0	139.9	29.2
MAIN DISTRIBUTION (UTILITY SERVICE)		59	37	4	772.9	216.3

UTILITY LOAD BASIS:
ASSUMED 3.0kW/UNIT + 50%(EV+PARKING)

CEC DEMAND BASIS:
DOWNSTREAM DWELLING LOADS PER CEC 8-202(3)
+ 100%(OTHER DIST. PANEL LOADS)



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#	DATE	ISSUED FOR
03	2020.10.26	CONSTRUCTION
02	2020.07.02	PERMIT
01	2020.04.22	PERMIT
00	2020.03.16	CLIENT REVIEW

PROJECT NO.
C20-826

PROJECT
SUNDANCE CO-OP
POWER
DISTRIBUTION

LOCATION

DESCRIPTION
SINGLE LINE
DIAGRAM

SHEET SIZE
ARCH D

E3

PANEL SCHEDULE "PNL-1-1"															
RATING: 3PH, 4W, 120/208V, 400A				MAIN BREAKER: 400A TRIP					LOCATION: SHED 1, "SOLAR COOP 1-1"						
DESCRIPTION	A(kW)	B(kW)	C(kW)	BKR	CCT	A	B	C	CCT	BKR	A(kW)	B(kW)	C(kW)	DESCRIPTION	
UNIT FEED (i)	12.1	12.1		125A	1	■		2		125A		12.1	12.1	BLANK	
UNIT FEED (ii)	12.1		12.1	125A	3	■		4						UNIT FEED (vii)	
					5			■	6						
UNIT FEED (iii)		12.1	12.1	125A	7	■		8		125A	12.1	12.1		UNIT FEED (viii)	
					9		■		10						
UNIT FEED (iv)	12.1	12.1		125A	11			■	12	60A	3.9	2.6	3.9	PARKING 'PNL-4-B' (N.E. LOT)	
					13	■			■						14
					15		■		■						16
UNIT FEED (v)	12.1		12.1	125A	17				■	18				BLANK	
					19	■				■	20			BLANK	
UNIT FEED (vi)		12.1	12.1	125A	21		■		■	22				BLANK	
					23			■		■	24			BLANK	
CONNECTED kW/LINE															
	64.4	75.2	64.4	DEMAND kW LOAD: 139.9											

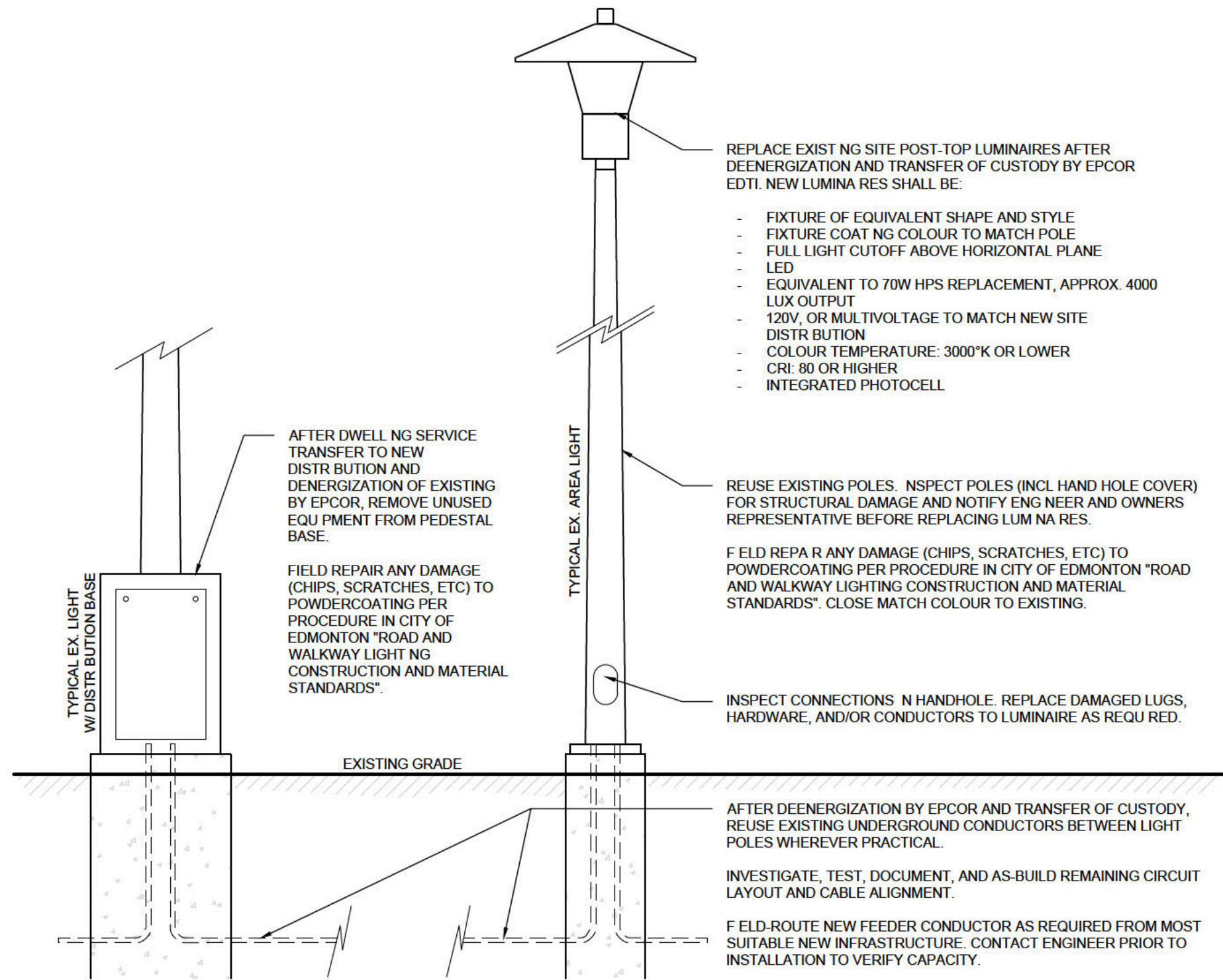
PANEL SCHEDULE "PNL-2-1"														
RATING: 3PH, 4W, 120/208V, 400A				MAIN BREAKER: 400A TRIP					LOCATION: SHED 2, "SOLAR COOP 2-1"					
DESCRIPTION	A(kW)	B(kW)	C(kW)	BKR	CCT	A	B	C	CCT	BKR	A(kW)	B(kW)	C(kW)	DESCRIPTION
UNIT FEED (i)	12.1	12.1		125A	1	■		2		125A	12.1	12.1		UNIT FEED (vii)
UNIT FEED (ii)	12.1		12.1	125A	3		■		4					
					5			■	6					
					7	■			8					UNIT FEED (viii)
UNIT FEED (iii)		12.1	12.1	125A	9			■	10	125A		12.1	12.1	UNIT FEED (ix)
					11			■	12					
UNIT FEED (iv)	12.1	12.1		125A	13	■			14					BLANK
					15			■	16					
UNIT FEED (v)	12.1		12.1	125A	17				18					BLANK
					19	■			20					
UNIT FEED (vi)		12.1	12.1	125A	21		■		22					BLANK
					23			■	24					
CONNECTED kW/LINE	72.6	72.6	72.6	DEMAND kW LOAD: 142.1										

PANEL SCHEDULE "PNL-3-1"														
RATING: 3PH, 4W, 120/208V, 400A				MAIN BREAKER: 400A TRIP					LOCATION: SHED 3, "SOLAR COOP 3-1"					
DESCRIPTION	A(kW)	B(kW)	C(kW)	BKR	CCT	A	B	C	CCT	BKR	A(kW)	B(kW)	C(kW)	DESCRIPTION
UNIT FEED (i)	12.1	12.1		125A	1	x			2	125A	12.1	12.1		UNIT FEED (iv)
UNIT FEED (ii)	12.1		12.1	125A	5			x	6	125A	12.1		12.1	UNIT FEED (v)
					7	x			8					
					9		x		10					
UNIT FEED (iii)		12.1	12.1	125A	11			x	12	125A		12.1	12.1	UNIT FEED (vi)
					13	x			14					
SHED DATA & COMMS	1.2			15A	13	x			14					BLANK
SHED HVAC (FUTURE)		1.2		15A	15	x			16					BLANK
BLANK					17			x	18					BLANK
BLANK					19	x			20					BLANK
BLANK					21		x		22					BLANK
BLANK					23			x	24					BLANK
CONNECTED kW/LINE		49.6	49.6	48.4	DEMAND kW LOAD: 106.7									

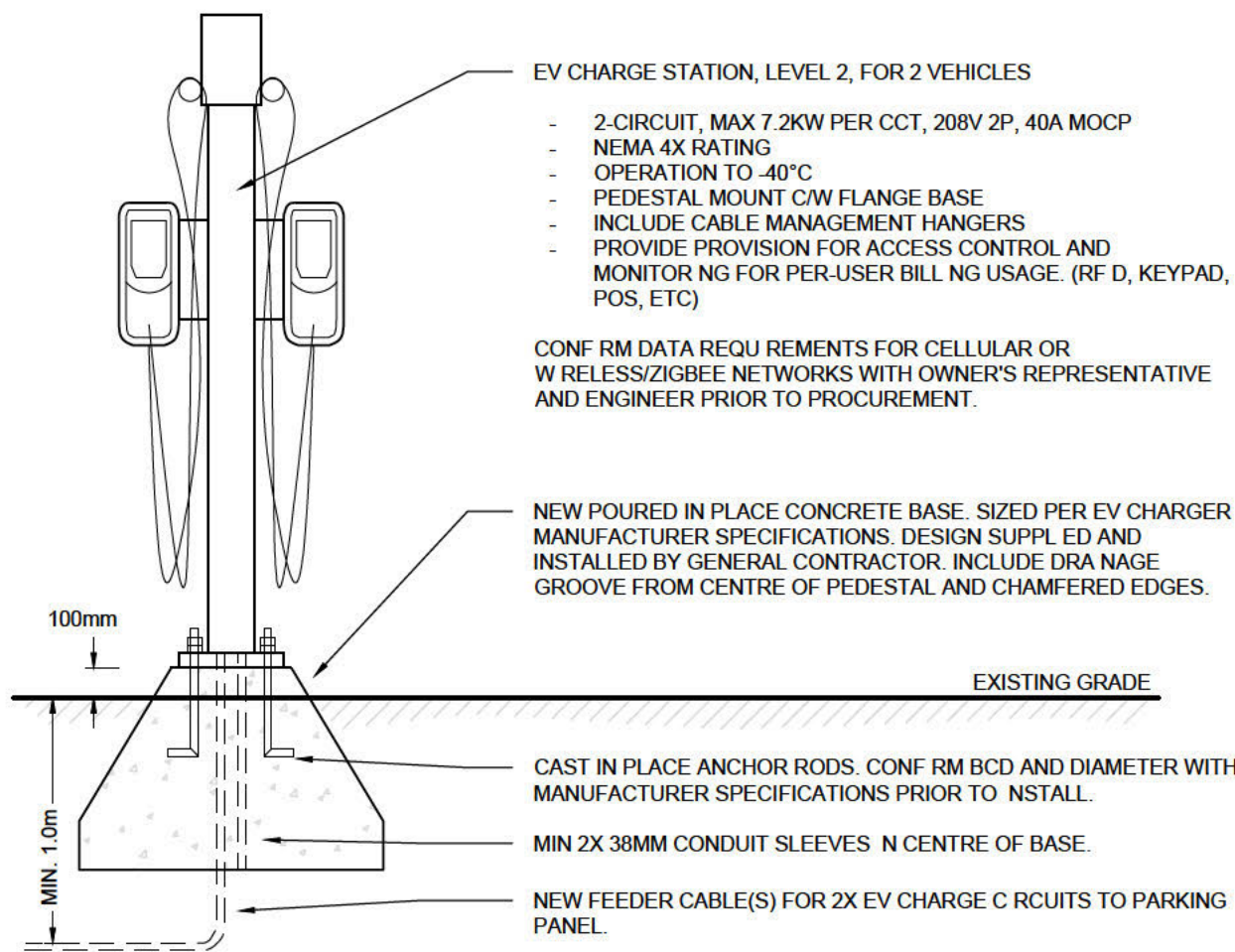
PANEL SCHEDULE "PNL-4-1"														
RATING: 3PH, 4W, 120/208V, 400A				MAIN BREAKER: 400A TRIP					LOCATION: SHED 4, SOLAR COOP 4-1					
DESCRIPTION	A(kW)	B(kW)	C(kW)	BKR	CCT	A	B	C	CCT	BKR	A(kW)	B(kW)	C(kW)	DESCRIPTION
UNIT FEED (i)	12.1	12.1		125A	1	■		2		125A	12.1	12.1		UNIT FEED (vi)
UNIT FEED (ii)	12.1		12.1	125A	3		■	4						
					5			■	6					
UNIT FEED (iii)	12.1	12.1	12.1	125A	7		■	8		125A	12.1	12.1		UNIT FEED (viii) UNIT #28 - 150A
					9			■	10					
UNIT FEED (iv)	12.1	12.1		125A	11			■	12					BLANK
					13	■			14					
SHED DATA & COMMS				1.2	15A	15		■	16	125A	12.1	12.1		UNIT FEED (v)
						17			■					
SHED HVAC	1.2			15A	19	■			20					BLANK
BLANK					21		■		22					BLANK
BLANK					23			■	24					BLANK
CONNECTED kW/LINE	63.1	72.6	63.1	DEMAND kW LOAD: 134.0										

PANEL SCHEDULE "PNL-1-2"														
RATING: 3PH, 4W, 120/208V, 400A				MAIN BREAKER: 400A TRIP					LOCATION: SHED 1, "SOLAR COOP 1-2"					
DESCRIPTION	A(kW)	B(kW)	C(kW)	BKR	CCT	A	B	C	CCT	BKR	A(kW)	B(kW)	C(kW)	DESCRIPTION
UNIT FEED (i)	12.1	12.1		125A	1	■		2		125A	12.1	12.1		UNIT FEED (v)
UNIT FEED (ii)	12.1		12.1	125A	3	■		4						
					5		■	6	150A					
UNIT FEED (iii)	12.1	12.1	125A	7			8							
				9	■	10	125A	12.1	12.1	UNIT FEED (vi)				
UNIT FEED (iv)	12.1	12.1	125A	11		■					12			
				13	■		14			BLANK				
SHED DATA & COMS			1.2	15A	17		■	18		15A			1.2	SHED HVAC
					19	■		20						
BLANK					21		■		22					BLANK
BLANK					23			■	24					BLANK
CONNECTED kW/LINE														
61.9 60.5 52.2 DEMAND kW LOAD: 121.2														

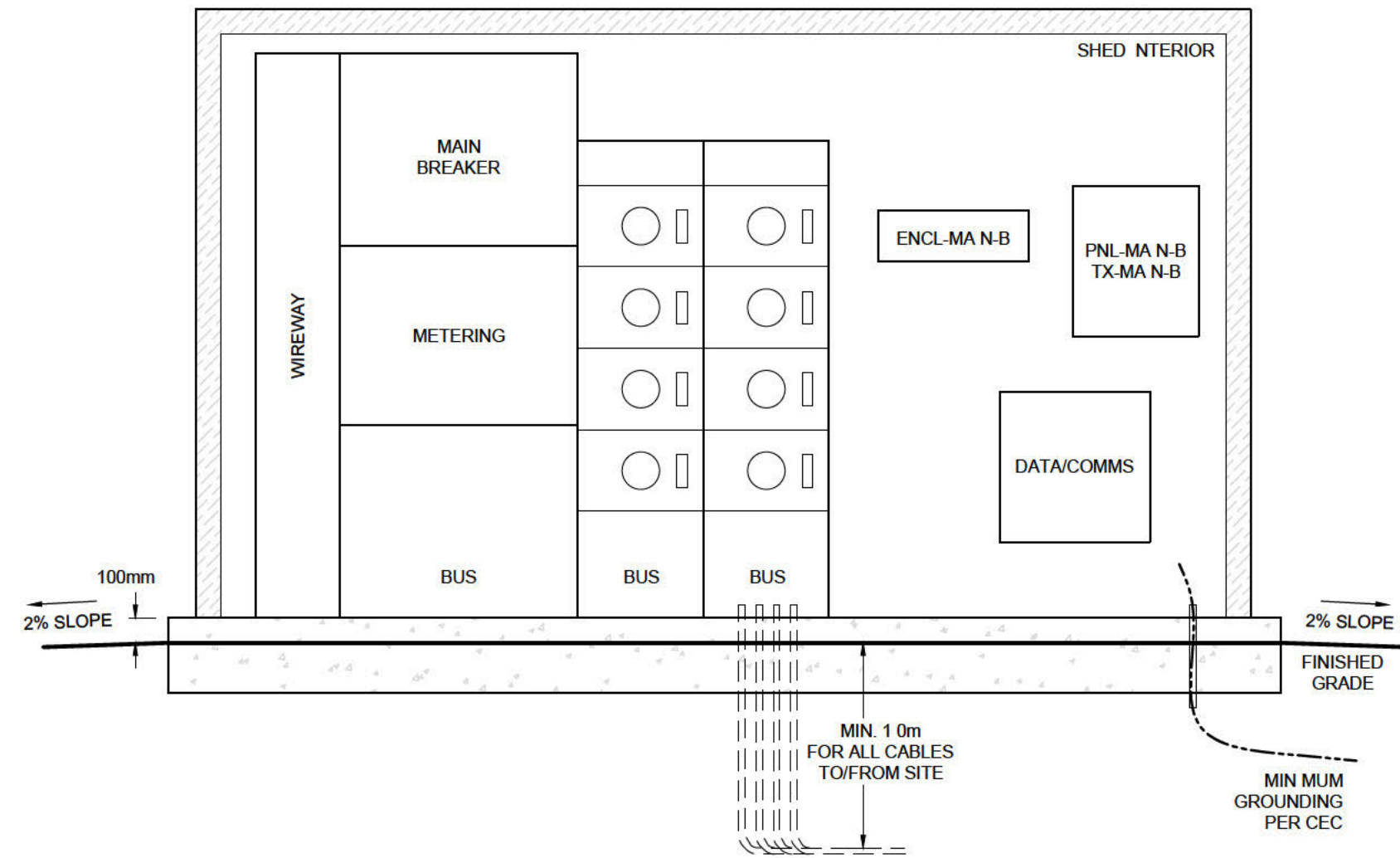
PANEL SCHEDULE "PNL-2-2"														
RATING: 3PH, 4W, 120/208V, 400A				MAIN BREAKER: 400A TRIP					LOCATION: SHED 2, "SOLAR COOP 2-2"					
DESCRIPTION	A(kW)	B(kW)	C(kW)	BKR	CCT	A	B	C	CCT	BKR	A(kW)	B(kW)	C(kW)	DESCRIPTION
UNIT FEED (i)	12.1	12.1		125A	1	■		2		125A	12.1	12.1		UNIT FEED (iv)
UNIT FEED (ii)	12.1		12.1	125A	3		■		4					
					5			■	6					
					7	■			8	125A	12.1		12.1	UNIT FEED (v)
UNIT FEED (iii)		12.1	12.1	125A	9		■		10	125A		12.1	12.1	UNIT FEED (vi)
					11			■	12					
SHED DATA & COMMS	1.2			15A	13	■			14	100A		10.3	10.3	PARKING 'PNL-2-B' (N.W. LOT)
SHED HVAC		1.2		15A	15		■	16						
BLANK					17			■	18					
BLANK					19	■			20					
BLANK					21	■			22					
BLANK					23		■	■	24					BLANK
CONNECTED kW/LINE		59.8	59.9	58.7	DEMAND kW LOAD: 137.3									



3 SITE LIGHTING REPLACEMENT
E5 SCALE: NTS

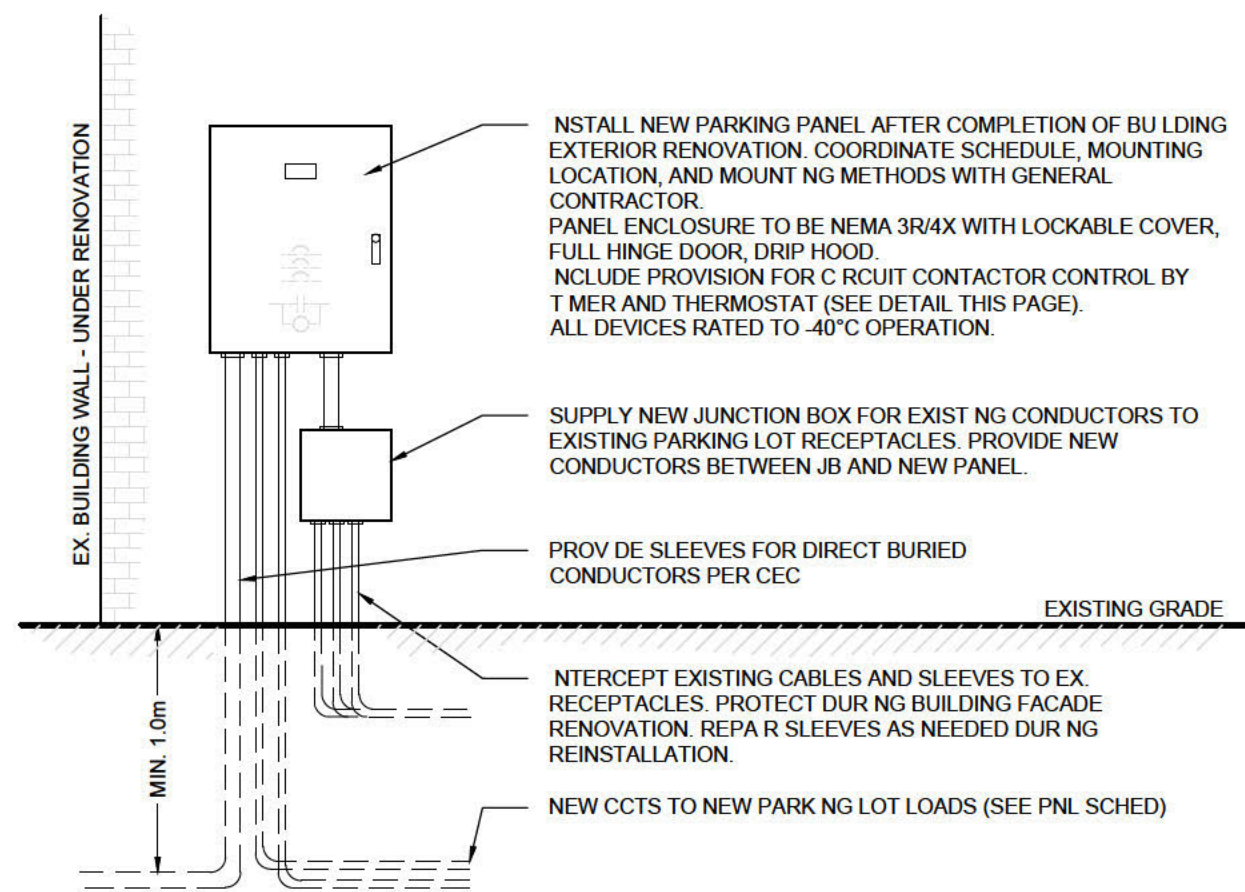


6 EV CHARGE STATION ELEVATION
E5 SCALE: NTS



- DETAIL NOTES:
- EQUIPMENT LAYOUT IS APPROXIMATE. REFER TO SLD, VENDOR/3RD PARTY SUPPLY DRAWINGS, AND GENERAL CONTRACTOR ILLUSTRATIONS.
 - PROVIDE ALL EQUIPMENT SHOP DRAWINGS (DETAILING DIMENSIONS AND WEIGHTS) TO GENERAL CONTRACTOR. CONCRETE PAD AND SHED STRUCTURAL DESIGN IS PERFORMED BY GENERAL CONTRACTOR. VERIFY SHED STRUCTURE CONFORMS TO LOCAL CODE REQUIREMENTS AND CEC CLEARANCES PRIOR TO INSTALLING EQUIPMENT. NOTIFY GC AND ENGINEER OF ANY UNRESOLVED REQUIREMENTS.
 - CONCRETE PAD AND BASE PREP TO BE DESIGN SUPPLIED AND INSTALLED BY GENERAL CONTRACTOR. VERIFY WITH GC PRIOR TO INSTALLATION THAT CONCRETE PAD DESIGN WILL SUPPORT EQUIPMENT LOADS AND NOT BE SUBJECT TO DIFFERENTIAL SETTLING. COORDINATE WITH GC FOR LOCATIONS OF RISERS, PENETRATIONS, AND CUT OUTS. ALL CABLES TO BE IN PVC SLEEVE. DIRECT CONTACT OF CABLES WITH CONCRETE IS NOT ALLOWED.
 - BOND ALL EQUIPMENT, ENCLOSURES, SUPPORTS, ETC AS LISTED IN SPECIFICATIONS.
 - ALL EQUIPMENT TO BE RATED TO -40°C OPERATION AND MINIMUM NEMA 3R ENCLOSURES. NOTIFY ENGINEER IF EQUIPMENT REQUIRES ADDITIONAL HEATING, COOLING, OR VENTILATION.
 - REFER TO TELUS DRAWINGS FOR INFORMATION AND COORDINATION WITH TELUS SYSTEM UPGRADES.
 - REFER TO PV SYSTEM DRAWING BY SOLAR CONTRACTOR FOR INFORMATION AND COORDINATION WITH PV POWER AND DATA SYSTEMS.
 - REFER TO PRIVATE METERING PROVIDER DRAWINGS FOR INFORMATION AND COORDINATION WITH INSTRUMENT AND DATA NETWORK REQUIREMENTS.

1 MAIN DISTRIBUTION SHED ELEVATION
E5 SCALE: NTS



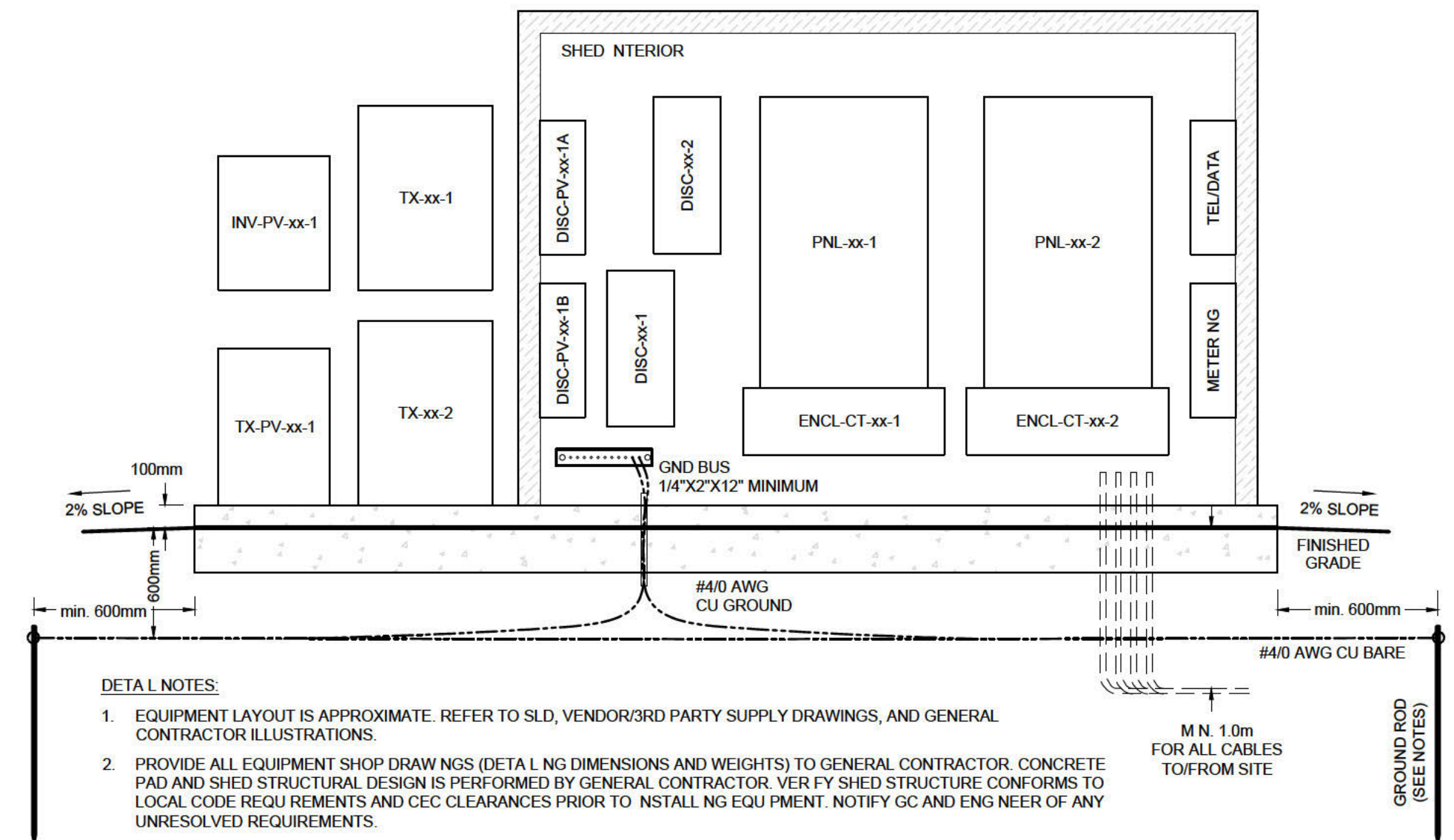
4 PARKING PANEL REPLACEMENT
E5 SCALE: NTS

ON HOLD

REFER TO PRIVATE METERING PROVIDER DRAWINGS AND DATA NETWORK REQUIREMENTS PROVIDED BY THIRD PARTY SERVICE PROVIDER.

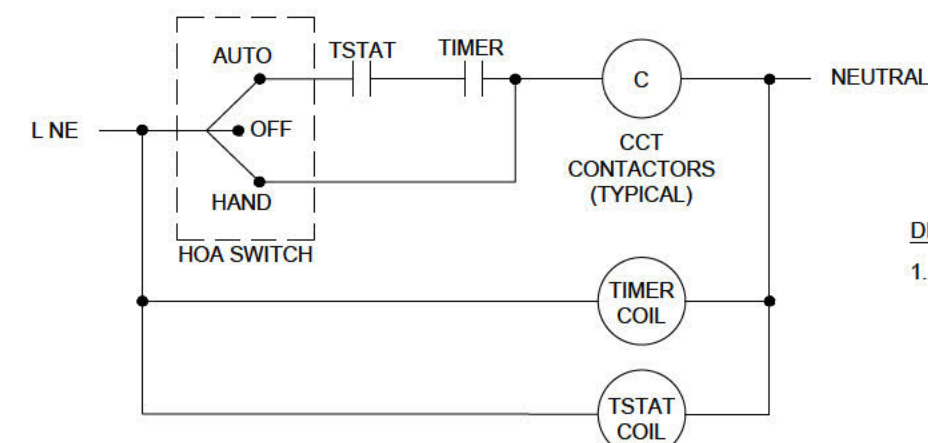
COORDINATE CONSTRUCTION ACTIVITIES WITH GENERAL CONTRACTOR AND THIRD PARTY SERVICE PROVIDERS' INSTALLERS NOTIFY ENGINEER OF DISCREPANCIES BETWEEN 3RD PARTY DOCUMENTS AND THIS DRAWING SET.

7 METERING NETWORK BLOCK DIAGRAM
E5 SCALE: NTS



- DETAIL NOTES:
- EQUIPMENT LAYOUT IS APPROXIMATE. REFER TO SLD, VENDOR/3RD PARTY SUPPLY DRAWINGS, AND GENERAL CONTRACTOR ILLUSTRATIONS.
 - PROVIDE ALL EQUIPMENT SHOP DRAWINGS (DETAILING DIMENSIONS AND WEIGHTS) TO GENERAL CONTRACTOR. CONCRETE PAD AND SHED STRUCTURAL DESIGN IS PERFORMED BY GENERAL CONTRACTOR. VERIFY SHED STRUCTURE CONFORMS TO LOCAL CODE REQUIREMENTS AND CEC CLEARANCES PRIOR TO INSTALLING EQUIPMENT. NOTIFY GC AND ENGINEER OF ANY UNRESOLVED REQUIREMENTS.
 - CONCRETE PAD AND BASE PREP TO BE DESIGN SUPPLIED AND INSTALLED BY GENERAL CONTRACTOR. VERIFY WITH GC PRIOR TO INSTALLATION THAT CONCRETE PAD DESIGN WILL SUPPORT EQUIPMENT LOADS AND NOT BE SUBJECT TO DIFFERENTIAL SETTLING. COORDINATE WITH GC FOR LOCATIONS OF RISERS, PENETRATIONS, AND CUT OUTS. ALL CABLES TO BE IN PVC SLEEVE. DIRECT CONTACT OF CABLES WITH CONCRETE IS NOT ALLOWED.
 - INSTALL GROUND GRID USING MINIMUM TWO 19mmx3m COPPER CLAD GROUND RODS INTERCONNECTED WITH BARE #4/0 CU. PROVIDE 2 TALS OF CU INTO GROUND BUS. INTERCONNECT NG CU BURIED @ 600MM BELOW GRADE. MAINTAIN 3M SPACING BETWEEN RODS.
 - GROUND RESISTANCE SHALL NOT EXCEED 5 OHMS. TEST AS OUTLINED IN SPECIFICATIONS. INSTALL ADDITIONAL GROUND ELECTRODES (MAINTAINING SPACING, UP TO 4 M RECTANGULAR LAYOUT) OR SOIL TREATMENT TO ACHIEVE MINIMUM GROUND RESISTANCE. PROVIDE TEST REPORT N OAM MANUAL.
 - BOND ALL EQUIPMENT, ENCLOSURES, SUPPORTS, ETC AS LISTED IN SPECIFICATIONS.
 - ALL EQUIPMENT TO BE RATED TO -40°C OPERATION AND MINIMUM NEMA 3R ENCLOSURES. NOTIFY ENGINEER IF EQUIPMENT REQUIRES ADDITIONAL HEATING, COOLING, OR VENTILATION.
 - REFER TO TELUS DRAWINGS FOR INFORMATION AND COORDINATION WITH TELUS SYSTEM UPGRADES.
 - REFER TO PV SYSTEM DRAWING BY SOLAR CONTRACTOR FOR INFORMATION AND COORDINATION WITH PV POWER AND DATA SYSTEMS.
 - REFER TO PRIVATE METERING PROVIDER DRAWINGS FOR INFORMATION AND COORDINATION WITH INSTRUMENT AND DATA NETWORK REQUIREMENTS.

2 SUBDISTRIBUTION SHED ELEVATION
E5 SCALE: NTS



- DETAIL NOTES:
- TIMER AND TEMPERATURE CONTROL FOR BLOCK HEATER RECEPTACLE CIRCUITS ONLY. OTHER PANEL CCTS TO BE UNCONTROLLED.

5 BLOCK HEATER RECEPTACLE CONTROL
E5 SCALE: NTS

ON HOLD

REFER TO PV SYSTEM DRAWINGS AND DATA NETWORK REQUIREMENTS AS PROVIDED BY SOLAR CONTRACTOR.

COORDINATE CONSTRUCTION ACTIVITIES WITH GENERAL CONTRACTOR AND PV SYSTEM INSTALLER NOTIFY ENGINEER OF DISCREPANCIES BETWEEN 3RD PARTY DOCUMENTS AND THIS DRAWING SET.

8 PV DATA NETWORK BLOCK DIAGRAM
E5 SCALE: NTS

1. CONTRACT REQUIREMENTS

1.1. SUMMARY OF CONSTRUCTION OUTCOMES

- 1.1.1. A POWER DISTRIBUTION SYSTEM UPGRADE TO AN EXISTING MULTI-FAMILY RESIDENTIAL SITE (CO-OP MODEL), INSTALLING A NEW CUSTOMER (CO-OP) OWNED DISTRIBUTION SYSTEM TO EXISTING RESIDENTIAL DWELLING UNITS, SO AS TO ACCOMMODATE NEW MECHANICAL EQUIPMENT CONTEMPLATED FOR EACH DWELLING. AFTER FULL SYSTEM COMPLETION AND PROJECT TURNOVER, THE ORIGINAL UTILITY-MAINTAINED POWER DISTRIBUTION EQUIPMENT WILL BE DECOMMISSIONED AND REMOVED FROM SITE WHERE PRACTICAL. WORK DONE IN CONJUNCTION WITH OTHER VARIOUS SITE MAINTENANCE AND UPGRADES.
- 1.1.2. THE ABOVE IS PROVIDED AS AN EXAMPLE SUMMARY OF THE SCOPE OF WORK AND IS NOT FOR CONSTRUCTION OR CONTRACT PURPOSES.

1.2. CONTRACT PRICE

- 1.2.1. DETAILS OF CONTRACT SUM ARE COORDINATED WITH SITE GENERAL CONTRACTOR. CONTACT THE ENGINEER FOR ADDITIONAL INFORMATION OR ASSISTANCE IN REVIEWING CONTRACT AMOUNTS.
- 1.2.2. CASH ALLOWANCE FOR PROVISIONAL SCOPES (PC SUMS)
- 1.2.2.1. PROVISIONAL SCOPES REPRESENT KNOWN WORK THAT IS NOT GUARANTEED IN THE CONTRACT BUT THAT WHICH MAY COME TO BE REQUIRED. USE OF CASH ALLOWANCES IS NOT PERMITTED UNLESS APPROVED BY OWNER OR ENGINEER. THE FINAL CONTRACT PRICE WILL BE ADJUSTED BY WRITTEN ORDER TO REMOVE AN EXCESS OR PROVIDE A DEFICIT TO EACH CASH ALLOWANCE.
- 1.2.2.2. THE ELECTRICAL CONSTRUCTION CONTRACT SHALL INCLUDE A MEANS FOR THE FOLLOWING CASH ALLOWANCES (IE: PRIME COST SUMS).

(A) LOAD BALANCE MONITORING AND MAINTENANCE

\$8,000 TO SUPPORT LOAD REBALANCING IN SHED DISTRIBUTION PANELS, AFTER CONSTRUCTION, USING DATA FROM METERING AND ANY FEEDBACK FROM UTILITY MEASUREMENTS.

AT A MINIMUM, CONTRACTOR SHALL PLAN TO REVIEW ACTUAL LOADING DATA AFTER 1, 3, AND 6 MONTHS OF FULL SYSTEM USAGE, AND IF REQUIRED, RETURN TO SITE TO REWIRE LOADS AS REQUIRED TO OBTAIN BALANCED PHASE LOADING UNDER ACTUAL SYSTEM USE.

AT ANY SITE VISIT RESULTING FROM ABOVE, CONTRACTOR SHALL INSPECT NON-GROUNDED, NEUTRAL AND GROUND CONDUCTORS AT POINTS OF UNBALANCED LOADS, AND NOTIFY BOTH THE SITE PROJECT REPRESENTATIVE AND THE ENGINEER OF ANY REQUIRED MAINTENANCE ACTIVITIES.

(B) POWER FOR THIRD-PARTY INTEGRATION

\$2,500 TO COVER COSTS OF TIME AND EXPENSES FOR THE SUPPLY AND INSTALLATION OF ADDITIONAL MATERIALS, FASTENERS, FITTINGS, ETC. TO SUPPORT INTEGRATION OF 3RD PARTY SYSTEMS (INCLUDING POWER SUPPLIES NEEDED FOR CUSTOMER-METERING, CATV/TEL/FIBRE, AND PV DATA NETWORK).

- 1.3. THE CONTRACT DOCUMENTS ARE COMPLEMENTARY TO EACH OTHER. TREAT DISCREPANCIES BETWEEN THEM AS REQUIREMENT TO ADHERE TO THE MORE STRINGENT CONDITIONS OR EXPENSIVE PRODUCT. CONTACT ENGINEER IF DISCREPANCIES OR OMISSIONS ARE FOUND.

- 1.4. THIS DRAWING SET IS TO BE USED IN CONJUNCTION WITH THE SPECIFICATION, CONTRACT GENERAL REQUIREMENTS, AND GOVERNING CODES. BY COMMENCING THE PERFORMANCE OF THIS WORK, THE CONTRACTOR WARRANTS THAT THEY HAVE REVIEWED AND AGREE WITH THE RELEVANT DRAWINGS, CODES, STANDARDS, AND REQUIREMENTS. THESE INCLUDE BUT ARE NOT LIMITED TO:

- 1.4.1. THE DRAWINGS IN THIS SET;
- 1.4.2. THESE SPECIFICATIONS;
- 1.4.3. THE CONTRACT CONDITIONS AND AGREEMENTS BETWEEN THE GENERAL CONTRACTOR AND THE OWNER;
- 1.4.4. THE CANADIAN ELECTRICAL CODE (CEC);
- 1.4.5. LOCAL BUILDING CODES; AND
- 1.4.6. THE NECB

1.5. COORDINATION WITH OTHER DIVISIONS

- 1.5.1. EXAMINE THE DRAWINGS AND SPECIFICATIONS OF ALL OTHER DIVISIONS (IE: TRADES, DISCIPLINES, ETC) AND BECOME FULLY FAMILIAR WITH THEIR WORK. BEFORE COMMENCING WORK, OBTAIN A RULING ANY DISCREPANCIES OR CONFLICTS THAT MAY EXIST. FULLY UNDERSTAND THE EXTEND THE FUNCTIONS OF MULTI-DISCIPLINE SYSTEMS SPECIFIED AND HAVE NO DOUBTS WITH REGARD TO THE EXTENT OF THE CONTRACT SCOPE.
- 1.5.2. COORDINATE WITH ALL DIVISIONS INSTALLING NEW EQUIPMENT AND SERVICES IMPACTING THIS CONTRACT, AND ENSURE THERE ARE NO SYSTEM CONFLICTS.
- 1.5.3. EXAMINE PREVIOUSLY CONSTRUCTED WORK AND IDENTIFY ANY CONDITIONS WHICH MAY IMPACT THE PROPER COMPLETION OF THIS CONTRACT.
- 1.5.4. WHERE CONTRACT SCOPE INTERFERENCE OR OVERLAP OCCURS, THE OWNER'S REPRESENTATIVE MUST APPROVE RELOCATION OF EQUIPMENT AND MATERIALS REGARDLESS OF INSTALLATION SEQUENCE.

1.6. RESPONSIBILITY FOR REVIEW OF DOCUMENTS

- 1.6.1. CONTRACTOR REPRESENTS THAT HE AND ALL HIS SUBCONTRACTORS HAVE THOROUGHLY REVIEWED THE DRAWINGS, SPECIFICATIONS AND CONTRACT DOCUMENTS AND THAT THEY ARE SUITABLE FOR SUBMITTING A VALID BID. CONTRACTOR SHALL SUBMIT A WRITTEN DESCRIPTION OF ALL DEFICIENCIES AND AMBIGUITIES IN THE CONTRACT DOCUMENTS TO THE OWNER WITHIN 30 DAYS OF SIGNING THE CONTRACT. CHANGE ORDERS FOR SUCH AMBIGUITIES NOT INCLUDED IN CONTRACTOR'S DESCRIPTION WILL NOT BE ALLOWED.

1.7. RESPONSIBILITY FOR SITE EXAMINATION

- 1.7.1. EXAMINE THE SITE OF WORK AND BECOME FAMILIAR WITH ALL FEATURES AND CHARACTERISTICS AFFECTING THIS WORK BEFORE SUBMITTING A BID. NO ADDITIONAL COMPENSATION WILL BE GIVEN FOR EXTRA WORK DUE TO EXISTING CONDITIONS WHICH SHOULD HAVE BEEN DISCOVERED DURING SUCH SITE EXAMINATION. REPORT ANY UNSATISFACTORY CONDITIONS PRIOR TO TENDERING WHICH MAY ADVERSELY AFFECT THE PROPER COMPLETION OF THIS WORK.

1.8. RESPONSIBILITY FOR SUBCONTRACT MANAGEMENT

- 1.8.1. ALL SUBCONTRACTORS AND SUPPLIERS MUST SUBMIT, THROUGH THE GENERAL CONTRACTOR TO THE ENGINEER, A STATEMENT ON THEIR INDIVIDUAL LETTERHEAD STATIONERY, SIGNED BY AN AUTHORIZED SIGNATORY OF THE SUBCONTRACTOR, THAT EACH INDIVIDUAL SUBCONTRACTOR OR SUPPLIER:
- 1.8.1.1. HAS RECEIVED OR REVIEWED A FULL SET OF APPROVED PLANS AND SPECIFICATIONS FOR THE PROJECT;
- 1.8.1.2. IS AWARE THAT ITEMS CONCERNING THEIR PARTICULAR TRADE MAY BE SHOWN AND/OR DETAILED IN OTHER TRADES OR SECTIONS OF THE PLANS AND SPECIFICATIONS, AND
- 1.8.1.3. WILL COMPLY WITH SAID PLANS, SPECIFICATIONS AND ALL APPLICABLE CODES AND PERMIT REQUIREMENTS.

1.9. RESPONSIBILITY FOR PURPOSEFUL SUBMITTALS

- 1.9.1. THE CONTRACTOR ACKNOWLEDGES ITS RESPONSIBILITY TO BE FAMILIAR WITH THE CONTRACT DOCUMENTS. TIME SPENT REVIEWING REQUESTS FOR INFORMATION ("RFI") IN WHICH THE INFORMATION REQUESTED IS CLEARLY INCLUDED IN THE DRAWINGS OR SPECIFICATIONS WILL BE CHARGED TO THE

CONTRACTOR AT THE CONSULTANT'S RATE OF \$125/HOUR AND WILL BE DEDUCTED FROM THE CONTRACTOR'S NEXT PROGRESS PAYMENT. THE CONTRACT SUM WILL BE REDUCED BY THE TOTAL OF ALL SUCH CHARGES.

- 1.9.2. CONTRACTOR ACKNOWLEDGES ITS RESPONSIBILITY TO SUBMIT ACCURATE SHOP DRAWINGS AND OTHER REQUIRED SUBMITTALS AS OUTLINED IN THIS SPECIFICATION. INCORRECT SUBMITTALS WILL BE RETURNED TO THE CONTRACTOR NOTING THE DEFICIENCIES. IF THE DEFICIENCIES ARE NOT CORRECTED IN THE NEXT SUBMITTAL, ANY TIME SPENT ON RE-REVIEWS WILL BE CHARGED TO THE CONTRACTOR AT THE CONSULTANT'S RATE OF \$125/HOUR AND DEDUCTED FROM ITS NEXT PROGRESS PAYMENT. THE CONTRACT SUM WILL BE REDUCED BY THE TOTAL OF ALL SUCH CHARGES.

1.10. GUARANTEE & WARRANTY

- 1.10.1. ALL ELECTRICAL EQUIPMENT AND SYSTEMS INSTALLED AND CONNECTED SHALL BE GUARANTEED FREE OF DEFECTIVE MATERIAL AND WORKMANSHIP FOR A PERIOD ONE YEAR WITH TIME STARTED FROM DATE OF SUBSTANTIAL COMPLETION (OR SYSTEM START-UP, IF LATER THAN SUBSTANTIAL COMPLETION), ANY DEFECTS SHALL BE REMEDIED WITHOUT COST TO OWNER DURING THIS PERIOD.
- 1.10.2. PROVIDE DOCUMENTS OF GUARANTEE/WARRANTY IN THE O & M MANUALS, STATING COMMENCEMENT OF WARRANTY PERIOD. ANY MANUFACTURER'S EXTENDED WARRANTY(S) SHALL BE PROVIDED AS PART OF THESE DOCUMENTS, AND DRAWN TO THE OWNER'S NOTICE ON TURNOVER OF MANUALS.
- 1.10.3. IF A SPECIFIC SYSTEM'S START-UP IS EARLIER OR LATER THAN THE DATE OF SUBSTANTIAL COMPLETION, PROVIDE DOCUMENTATION SHOWING THE LATER COMMENCEMENT OF SYSTEM'S WARRANTY PERIOD, THIS DOCUMENTATION TO BE INSERTED INTO O & M MANUALS ALONGSIDE THE ABOVE DOCUMENTS.

2. CONTRACTOR GENERAL REQUIREMENTS

- 2.1. PROVIDE ALL LABOUR, MATERIALS, TOOLS, EQUIPMENT, AND TRANSPORTATION REQUIRED FOR THE COMPLETE INSTALLATION AND TESTING OF ALL SYSTEMS DESCRIBED HEREIN.
- 2.2. ALL ELECTRICAL WORK TO BE CARRIED OUT BY QUALIFIED, LICENSED ELECTRICIANS OR APPRENTICES AS PER THE CONDITIONS OF THE PROVINCIAL ACT RESPECTING MANPOWER VOCATIONAL TRAINING AND QUALIFICATION. EMPLOYEES REGISTERED IN A PROVINCIAL APPRENTICESHIP PROGRAM SHALL BE PERMITTED UNDER THE DIRECT SUPERVISION OF A QUALIFIED LICENSED ELECTRICIAN TO PERFORM SPECIFIC TASKS (AS DETERMINED BASED ON THE LEVEL OF TRAINING ATTAINED AND THE DEMONSTRATED ABILITY TO PERFORM SPECIFIC DUTIES).
- 2.3. COMPLY WITH SAFETY CODES ACT AND RULES AND REGULATIONS, INCLUDING THE CANADIAN ELECTRICAL CODE (CEC).
- 2.4. CONTRACTOR TO PROVIDE THIRTY (30) DAY ONSITE RESPONSE FOR ANY EQUIPMENT OR SYSTEM FAILURES. ONCE REPAIRS ARE COMPLETED AND THE FACILITY IS OPERATIONAL, THE 30 DAY TIME FRAME SHALL RESTART FROM ZERO (0).
- 2.5. OBTAIN EXACT DIMENSIONS AND COORDINATE PLACEMENT OF ELECTRICAL CONDUIT, DEVICES AND FITTINGS FROM ARCHITECTURAL, STRUCTURAL, MECHANICAL, GENERAL CONTRACTOR, AND VENDOR DRAWINGS. MAKE ANY NECESSARY ADJUSTMENTS TO ACCOMMODATE STRUCTURAL AND ARCHITECTURAL CONDITIONS WITHOUT ADDITIONAL CHARGE.
- 2.6. MATERIAL RATINGS, INCLUDING BUT NOT LIMITED TO OPERATING TEMPERATURE RANGES AND ENCLOSURE INGRESS PROTECTION (IP) RATINGS, SHALL SUIT THE LOCATION AND MEANS OF INSTALLATION. IN THE EVENT OF A DISCREPANCY BETWEEN A SPECIFIED COMPONENT'S RATING AND THE SUITABLE RATING REQUIRED FOR SAFE AND RELIABLE OPERATION OF THE MATERIAL, NOTIFY THE ENGINEER OF THE DISCREPANCY PRIOR TO COMMENCING WORK.
- 2.7. MATERIALS ARE TO BE NEW, NOT INFERIOR TO THE QUALITY SPECIFIED, AND CONFORM TO STANDARDS ISSUED BY CSA, ULC, OR ANY OTHER CANADIAN STANDARDS AGENCY.

- 2.7.1. WHERE MATERIALS ARE SPECIFIED BY TECHNICAL DESCRIPTION, PROVIDE THE BEST COMMERCIAL QUALITIES AVAILABLE FOR THE PURPOSE.
- 2.7.2. MAINTAIN UNIFORMITY OF MANUFACTURE, TYPE, AND STYLE WITHIN A PARTICULAR GROUP OR CLASS OF EQUIPMENT THROUGHOUT THE WORK.
- 2.7.3. ALL WORK AND MATERIALS COVERED BY THESE SPECIFICATIONS SHALL BE SUBJECT TO ANY AND ALL TIMES BY THE ENGINEER OR THE OWNER'S REPRESENTATIVE. IF THE INSPECTION FINDS ANY MATERIAL THAT DOES NOT CONFORM TO THESE SPECIFICATIONS, ELECTRICAL CONTRACTOR SHALL, WITHIN THREE (3) DAYS AFTER BEING NOTIFIED BY THE ENGINEER OR OWNER, REMOVE THE MATERIAL FROM THE PREMISES AND IS NOT ENTITLED TO ANY ADDITIONAL CHARGE.

- 2.8. NO DEVIATIONS FROM THE DRAWINGS SHALL BE PERMITTED WITHOUT WRITTEN PERMISSION FROM THE ENGINEER.
- 2.9. LOCATING DEVICES 3 METERS OR LESS FROM POSITION SHOWN ON DRAWINGS SHALL NOT ENTITLE CONTRACTOR TO ANY EXTRA CHARGES.
- 2.10. PROTECT ALL FINISHED AND UNFINISHED WORK AND EQUIPMENT

- 2.10.1. ANY DAMAGE BY THIS CONTRACTOR IS TO BE REPAIRED AT NO EXPENSE TO OWNER.
- 2.10.2. PROTECT EXPOSED LIVE EQUIPMENT DURING CONSTRUCTION FOR WORKING AND PUBLIC PERSONNEL SAFETY. SHIELD WITH GROUNDING METAL PROTECTIVE PIECES AND MARK ENERGIZED PARTS "ENERGIZED ELECTRICAL EQUIPMENT".
- 2.10.3. RECEIVE AND PROTECT ELECTRICAL EQUIPMENT PROVIDED BY OWNER.
- 2.10.4. ALL NEWLY INSTALLED EQUIPMENT TO BE LEFT CLEAN AND IN NEW CONDITION AT THE COMPLETION OF THE PROJECT.
- 2.11. NO CONSIDERATION WILL BE GIVEN TO REQUESTS FOR EXTRAS OR EQUIPMENT SUBSTITUTION DUE TO LATE ORDERING OF MATERIAL, INCLUDING DELAYS DUE TO REJECTION OF SHOP DRAWINGS.

3. SHOP DRAWINGS SUBMITTALS

- 3.1. SUPPLY SHOP DRAWINGS FOR AT LEAST THE FOLLOWING ITEMS OR ITEM TYPES:
- 3.1.1. DISTRIBUTION AND SUB-DISTRIBUTION PANELS, PANEL-BOARDS, DISCONNECT SWITCHES, TRANSFORMERS, SURGE PROTECTION DEVICES, CIRCUIT BREAKERS, FUSES, AND THEIR CHARACTERISTICS, INSTRUMENT TRANSFORMERS, PROTECTIVE RELAYS, ETC., AND COMPLETE PROTECTION AND COORDINATION STUDY.
- 3.1.2. MOTOR CONTROL EQUIPMENT, INCLUDING STARTERS, CONTACTORS, OVERLOAD HEATERS, CONTROL RELAYS, TIME-DELAY RELAYS, MOTOR CIRCUIT AND CONTROL FUSES AND BREAKERS, PILOT LIGHTS.
- 3.1.3. CONTROL TRANSFORMERS, AND SELECTOR SWITCHES.
- 3.1.4. ALL LIGHT FIXTURES INCLUDING INTERIOR / EXTERIOR AND CONTROLS, IE: LV SWITCHING / SENSORS / EMERGENCY
- 3.1.5. ALL LOW VOLTAGE SYSTEMS' COMPONENTS.
- 3.1.6. WIRING AND CABLING DEVICES INCLUDING RECEPTACLES, SWITCHES, FLOOR BOXES, POWER POLES, CABLE TRAY, DATA RACKS, UPS SYSTEMS, AND DISCONNECT SWITCHES.
- 3.1.7. FIRESTOPPING SYSTEM AND DETAILS (SEE FIRE STOPPING SECTION BELOW).
- 3.2. ALL SHOP DRAWINGS SHALL BE ORIGINAL MANUFACTURERS' DATA SHEETS AND INFORMATION, NO SCREEN CAPTURES, BLANK CATALOG PAGES, OR POOR QUALITY REPRODUCTIONS WILL BE ACCEPTED. ELECTRONIC PDF SUBMISSIONS ARE PERMISSIBLE AND PREFERRED. IF SHOP DRAWINGS ARE SUBMITTED IN PAPER FORMAT PROVIDE A MINIMUM OF 3 SETS OF EACH SHOP DRAWING.

- 3.3. SHOP DRAWINGS SHALL BEAR THE NAME OF THE MANUFACTURER AND/OR MANUFACTURER'S REPRESENTATIVE.
- 3.4. INCLUDE ONLY INFORMATION RELATIVE TO THE EQUIPMENT FOR WHICH THE SHOP DRAWING IS SUBMITTED. WHERE EQUIPMENT CHOICES EXIST ON CUT-SHEETS, INDICATE THE PROPOSED EQUIPMENT WITH ARROWS OR HIGHLIGHTING. ADDITIONALLY, PROVIDE A LIST OF THE SUBMITTED EQUIPMENT WITH A SUMMARY OF THE SPECIFIC ORDER CODE.
- 3.5. SUBMIT SHOP DRAWINGS TO RELEVANT UTILITIES AND AUTHORITIES FOR APPROVAL PRIOR TO SUBMISSION TO THE ENGINEER.
- 3.6. ALL SHOP DRAWINGS SUBMITTED TO THE ENGINEER MUST BEAR THE APPROVALS OF THE CONTRACTOR AND, IF RELEVANT, THE UTILITY. WORK SHALL NOT PROCEED WITH ITEMS UNTIL ENGINEER'S REVIEWS ARE COMPLETE AND STAMPED SHOP DRAWINGS ARE RETURNED.
- 3.6.1. ENGINEER'S REVIEW IS ONLY FOR ASCERTAINING CONFORMANCE WITH THE GENERAL DESIGN CONCEPT. IT DOES NOT INDICATE APPROVAL OF DESIGN DETAIL IMPLIED BY THE SHOP DRAWINGS. RESPONSIBILITY FOR SAID DESIGN, ERRORS AND OMISSIONS IN THE SHOP DRAWINGS SHALL REMAIN WITH ELECTRICAL CONTRACTOR AND THEIR SUB-TRADES.
- 3.6.2. ELECTRICAL CONTRACTOR IS RESPONSIBLE FOR DIMENSIONS AND COORDINATION RELATED TO FABRICATION OR CONSTRUCTION TECHNIQUES, COMPLIANCE WITH THE CANADIAN ELECTRICAL CODE, AND COORDINATION OF THE WORK WITH ALL SUB-TRADES.
- 3.7. SHOP DRAWINGS TO CLEARLY STATE EQUIPMENT TAG / DESIGNATION.
- 3.8. CONTRACTOR ACKNOWLEDGES ITS RESPONSIBILITY TO SUBMIT COMPLETE SHOP DRAWINGS AND OTHER REQUIRED SUBMITTALS. INCOMPLETE SUBMITTALS WILL BE RETURNED TO THE CONTRACTOR UNREVIEWED. NO TIME EXTENSIONS OR COST INCREASES WILL BE ALLOWED FOR DELAYS CAUSED BY RETURN OF INCOMPLETE SUBMITTALS.

4. ALTERNATES

- 4.1. NO ALTERNATES WILL BE ALLOWED WITHOUT WRITTEN APPROVAL OF ACCEPTANCE ON ALTERNATE SUBMITTALS FROM THE ENGINEER PRIOR TO CLOSE OF TENDER.
- 4.2. CONTRACTOR MAY REQUEST PERMISSION FOR A SUBSTITUTION OF ANY ITEM, SUBJECT TO THE FOLLOWING CONDITIONS:
- 4.2.1. SUBMIT REQUESTS IN WRITING TO THE ENGINEER.
- 4.2.2. STATE WHETHER THE USE OF THE SUBSTITUTION WILL REQUIRE ALTERATION TO ANY PART OF THE WORKS. IF THE SUBSTITUTION IS ADOPTED, CARRY OUT ANY SUCH ALTERATION WITHOUT EXTRA CHARGE. IN THE CASE WHERE THE AFFECTED WORKS ARE PART OF ANOTHER SUBCONTRACT, OBTAIN COST FROM THE OTHER SUB-CONTRACTOR FOR SUCH ALTERATION AND INCLUDE IT IN THE COST OF THE SUBSTITUTION.
- 4.2.3. NO CLAIM SHALL ARISE FROM ANY REJECTION, NOR, UNLESS OTHERWISE AGREED, SHALL ADOPTION OF A SUBSTITUTION BE GROUND FOR ANY CLAIM FOR VARIATION TO COST OR TIME.
- 4.2.4. CONTRACTOR'S REQUEST FOR SUBSTITUTIONS WILL BE RECEIVED AND CONSIDERED WHEN EXTENSIVE REVISIONS TO CONTRACT DOCUMENTS ARE NOT REQUIRED AND CHANGES ARE IN KEEPING WITH GENERAL INTENT OF CONTRACT DOCUMENTS, AND WHEN TIMELY, FULLY DOCUMENTED AND PROPERLY SUBMITTED, ALL AS JUDGED BY ARCHITECT/ENGINEER.
- 4.2.5. NO WORK INVOLVING ANY REQUEST FOR SUBSTITUTION SHALL BE COMMENCED, OR MATERIALS ORDERED, UNTIL CONTRACTOR HAS RECEIVED WRITTEN EVIDENCE OF THE APPROVAL OF THE REQUEST BY THE ARCHITECT/ENGINEER.

5. PERMITS, CERTIFICATES, AND FEES

- 5.1. OBTAIN, PAY FOR, AND SUBMIT ALL PERMITS AND NECESSARY DOCUMENTS (INCLUDING DRAWING APPROVALS BY THE ELECTRICAL INSPECTION AUTHORITY) NECESSARY FOR THE ELECTRICAL WORK TO COMMENCE.
- 5.2. ON COMPLETION OF THE WORK, SUBMIT A CERTIFICATE OF ACCEPTANCE FROM THE INSPECTION AUTHORITY TO THE ENGINEER.

6. CLEANLINESS AND CLEANING

- 6.1. MAINTAIN ORDERLY CONDITIONS AT EACH WORK LOCATION, AND PARTICIPATE WITH THE GENERAL CONTRACTOR'S REQUIREMENTS FOR AN OVERALL NEAT AND ORDERLY WORK SITE.
- 6.2. MAINTAIN A CLEAN AND NON-HUMID ENVIRONMENT FOR THE INSTALLATION OF ELECTRICAL EQUIPMENT. DO NOT ALLOW AN ENVIRONMENT THAT IS DETRIMENTAL TO THE ELECTRICAL EQUIPMENT INTEGRITY.
- 6.3. PROTECT PERMANENT EQUIPMENT FROM ENVIRONMENTAL CONDITIONS SUCH AS DUST, DEBRIS, RAIN, MUD, SNOW, ACCIDENTAL CONTACT, ETC. CLEAN EQUIPMENT AND REPLACE IF NECESSARY PRIOR TO INSTALLATION.
- 6.4. DO THE FOLLOWING PRIOR TO INTERIM ACCEPTANCE OF THE WORK, AS REQUIRED TO REMOVE ALL CONSTRUCTION DUST AND DEBRIS:
- 6.4.1. CLEAN OUT ALL CABINETS AND ENCLOSURES WITH VACUUM FIRST, FOLLOW WITH COMPRESSED AIR AND WIPE DOWN WITH A DRY RAG.
- 6.4.2. WIPE ALL INSULATORS WITH CLEAN, DRY RAGS.
- 6.4.3. CLEAN ALL LUMINAIRES WITH VACUUM OR CLEAN DRY RAGS.

7. UTILITY COORDINATION

- 7.1. CONTRACTOR TO COORDINATE WITH AND EXPEDITE APPLICABLE SHALLOW UTILITIES (POWER, CATV, TEL) THROUGHOUT THE DURATION OF THE CONTRACT AS NEEDED.
- 7.1.1. COORDINATION INCLUDES ACTIVITIES RELATED TO ENERGIZATION, RELOCATION, DECOMMISSIONING, SITE MEETINGS, ETC.

8. REDLINE MARK-UPS

- 8.1. MAINTAIN AT THE JOB SITE, ONE SET OF FULL-SIZE PRINTS ON WHICH IS RECORDED, DAY-BY-DAY: ALL OUTLETS, CONDUIT, FIXTURES, AND EQUIPMENT AS INSTALLED; TOGETHER WITH ANY CHANGES MADE TO THE WORK SHOWN IN RED INK.
- 8.1.1. RECORD CHANGES DAILY TO MAINTAIN ACCURACY.
- 8.2. UNDERGROUND SERVICES AND TRENCHES TO BE DIMENSIONED RELATIVE TO THE STRUCTURE AND DEPTH BELOW GRADE TO THE TOP OF THE RACEWAY.
- 8.3. CLEARLY DIMENSION AND MARK ALL CONCEALED CONDUITS AND/OR OTHER EQUIPMENT TO ENSURE EASE OF LOCATING AT FUTURE DATE.
- 8.4. SUBMIT RECORD DRAWINGS 15 DAYS AFTER COMPLETION OF WORK.

9. ENGINEER FIELD REVIEWS

- 9.1. CONTACT THE ENGINEER FOR FIELD REVIEWS AT THE FOLLOWING STAGES OF CONSTRUCTION: ROUGH-IN, SUBSTANTIAL COMPLETIONS, COMPLETION OF DEFICIENCIES (IF REQUIRED)
- 9.2. PROVIDE FIVE (5) WORKING DAYS NOTICE FOR ALL REVIEWS
- 9.3. THE FOLLOWING ITEMS ARE TO BE COMPLETED PRIOR TO SUBSTANTIAL INSPECTION:
- 9.3.1. IF APPLICABLE, CONNECTION OF FIRE ALARM SYSTEM TO CENTRAL MONITORING AGENCY VIA ULC APPROVED DIALER TO BE COMPLETE AND OPERATIONAL WITH STATEMENT FROM MONITORING AGENCY.

- 9.3.2. ALL DEVICES NOT INSTALLED MUST HAVE WIRING TERMINATED INSIDE A JUNCTION BOX C/W COVER.
- 9.3.3. ALL ELECTRICAL EQUIPMENT TO HAVE COVERS AND DOORS INSTALLED.
- 9.4. FAILURE TO INFORM THE ENGINEER OF CONSTRUCTION PROGRESS AS DESCRIBED ABOVE MAY RESULT IN THE ENGINEER BEING UNABLE TO ISSUE AN "ASSURANCE OF PROFESSIONAL REVIEW AND COMPLIANCE" (SCHEDULE 'C') TO THE LOCAL BUILDING AUTHORITY WHICH IS REQUIRED FOR OCCUPANCY.

10. IDENTIFICATION AND LABELING

- 10.1. ALL ITEMS OF NEW ELECTRICAL EQUIPMENT SUCH AS POWER, LIGHTING, SIGNAL, TELEPHONE PANELS, DISCONNECT SWITCHES, MANUAL AND AUTOMATIC CONTROL DEVICES, ETC., SHALL HAVE NAMEPLATES.
- 10.1.1. THESE NAMEPLATES SHALL BE, UNLESS OTHERWISE SPECIFIED, BLACK PLASTIC LAMACOID WITH ENGRAVED WHITE LETTERING MIN. 10mm HIGH. NAMEPLATES SHALL BE NEAT AND UNIFORM IN APPEARANCE.
- 10.2. NAMEPLATES SHALL INDICATE THE USE AND VOLTAGE OF EQUIPMENT, AS SPECIFIED AND SHOWN ON THE DRAWINGS.
- 10.2.1. PANELS: VOLTAGE, PHASE, IDENTIFICATION
- 10.2.2. SIGNAL PANELS: SYSTEM NAME
- 10.2.3. MANUAL CONTROLS: NAME OF EQUIPMENT CONTROLLED
- 10.2.4. AUTOMATIC CONTROLS: IDENTIFY AS ON SCHEMATIC DIAGRAMS
- 10.3. BRANCH CIRCUIT PANELBOARDS SHALL HAVE ACCURATE TYPED CIRCUIT DIRECTORIES BEHIND CLEAR PLASTIC, ON THE INSIDE OF THE PANEL DOOR.
- 10.4. IDENTIFY #4/0 AWG WIRING AND SMALLER BY CONTINUOUS INSULATION COLOUR. IDENTIFY WIRING LARGER THAN #4/0 BY CONTINUOUS INSULATION COLOUR OR BY COLOUR BANDING TAP APPLIED AT EACH TERMINATION. COLOUR CODING TO CONFIRM WITH CANADIAN ELECTRICAL CODE AND SHALL BE MAINTAINED THROUGH EACH SYSTEM.
- 10.5. IDENTIFY PANEL AND CIRCUIT NUMBER FOR ALL RECEPTACLES WITH TYPEWRITTEN SELF ADHESIVE LABEL. LABEL SHALL HAVE BLACK FONT WITH TRANSPARENT BACKGROUND.

11. TESTING AND STARTUP

- 11.1. INSULATION RESISTANCE TESTING (MEG OHMMETER TEST):
- 11.1.1. MEG OHMMETER CIRCUITS, FEEDERS AND COMPONENTS UP TO 350 V WITH A 500 V INSTRUMENT.
- 11.1.2. MEG OHMMETER 350-600 V CIRCUITS, FEEDERS AND COMPONENTS WITH A 1000 V INSTRUMENT.
- 11.1.3. CHECK RESISTANCE TO GROUND BEFORE ENERGIZING.
- 11.1.4. PROVIDE INSTRUMENTS, METERS, EQUIPMENT AND PERSONNEL REQUIRED TO CONDUCT TESTS DURING AND AT CONCLUSION OF PROJECT.
- 11.1.5. RECORD RESULTS AND SUBMIT FOR REVIEW BY THE ENGINEER.
- 11.2. GROUND GRID TESTING
- 11.2.1. MEASURE GROUND RESISTANCE OF GROUND GRIDS WITH EARTH TEST MEG OHMMETER TO VERIFY COMPLIANCE WITH THE LATEST EDITION OF CSA C22.2 NO. 0.4 "BONDING OF ELECTRICAL EQUIPMENT" AND CANADIAN ELECTRICAL CODE.
- 11.2.2. RECORD RESULTS AND SUBMIT FOR REVIEW BY THE ENGINEER.
- 11.3. GROUND IMPEDANCE TESTING
- 11.3.1. PERFORM GROUND-IMPEDANCE MEASUREMENTS UTILIZING THE FALL-OF-POTENTIAL METHOD PER ANSI/IEEE STANDARD 81 "IEEE GUIDE FOR MEASURING EARTH RESISTIVITY, GROUND IMPEDANCE, AND EARTH SURFACE POTENTIALS OF A GROUND". INSTRUMENTATION UTILIZED SHALL BE AS DEFINED IN SECTION 12 OF THE ABOVE GUIDE AND SHALL BE SPECIFICALLY DESIGNED FOR GROUND IMPEDANCE TESTING.
- 11.3.2. CONFIRM GROUND IMPEDANCE DOES NOT EXCEED MINIMUM SPECIFIED FOR PROJECT. SUPPLY AND INSTALL ADDITIONAL GROUNDING EQUIPMENT AS REQUIRED TO MEET THE MINIMUM REQUIREMENTS.
- 11.3.3. RECORD RESULTS AND SUBMIT FOR REVIEW BY THE ENGINEER.
- 11.4. SYSTEM ENERGIZATION AND STARTUP
- 11.4.1. COORDINATE WITH EPCOR EDTI DISTRIBUTION CONNECTION SERVICES PRIOR TO DE-ENERGIZING EXISTING DWELLING SERVICES OR ENERGIZING NEW FEEDERS TO DWELLING UNITS.
- 11.4.2. MINIMIZE OUTAGES TO EXISTING DWELLING UNITS BY PLANNING CONSTRUCTION ACTIVITIES WITH GENERAL CONTRACTOR, OWNER'S REPRESENTATIVE, AND RELEVANT UTILITY AND INSPECTIONS PERSONNEL.

12. OPERATION AND MAINTENANCE MANUALS

- 12.1. PROVIDE TWO (2) HARDCOPY SETS AND TWO (2) ELECTRONIC COPIES (PDF FORMAT) OF O & M MANUALS FOR THE ELECTRICAL EQUIPMENT COVERED UNDER THESE SPECIFICATIONS. ELECTRONIC SET TO BE SUBMITTED IN A MANNER SPECIFIED BY THE OWNER.
- 12.2. MANUALS SHALL CONSIST OF MANUFACTURERS' AND GENERAL MAINTENANCE SCHEDULES, ON TYPED OR PRINTED SHEETS, AND MOUNTED IN A HARD COVER THREE-POST BINDER. ONE (1) COPY OF THESE MANUALS SHALL BE SUBMITTED TO THE ENGINEER FOR APPROVAL PRIOR TO THE FINAL ISSUE.
- 12.3. MANUALS SHALL COVER A MINIMUM OF THE FOLLOWING MAJOR ELECTRICAL SYSTEMS: DISTRIBUTION, LIGHTING, VOICE/DATA, FIRE ALARM, POWER, EMERGENCY LIGHTING AND CONTROLS.
- 12.4.1. ALSO INCLUDE LIGHT FIXTURE TYPE DESIGNATIONS, C/W: NAME OF MANUFACTURER, CATALOGUE # OF FIXTURE, CATALOGUE # OF LAMPS FOR REPLACEMENTS; CATALOGUE # OF BALLASTS OR LED DRIVER FOR REPLACEMENTS
- 12.5. OPERATING INSTRUCTIONS SHALL INCLUDE:
- 12.5.1. SAFETY PRECAUTIONS
- 12.5.2. STARTUP, ADJUSTMENT, OPERATING, LUBRICATING, AND SHUTDOWN PROCEDURES
- 12.5.3. WIRING DIAGRAMS, CONTROL DIAGRAMS, CONTROL SEQUENCE, AND STARTUP / SHUTDOWN SEQUENCE FOR EACH PRINCIPAL SYSTEM.
- 12.5.4. PROCEDURES TO BE FOLLOWED IN EVENT OF EQUIPMENT FAILURE.
- 12.5.5. OTHER ITEMS OF INSTRUCTION AS RECOMMENDED BY MANUFACTURER OF EACH SYSTEM OR ITEM OF EQUIPMENT.
- 12.5.6. RECOMMENDATIONS FOR ANNUAL MAINTENANCE INSPECTIONS, INCLUDING GROUND GRID INTEGRITY, BALANCED SYSTEM LOADING, SIGNS OF EQUIPMENT MOISTURE, CORROSION, HEATING, ETC.
- 12.6. PROVIDE THE FOLLOWING HEADINGS FOR EACH SYSTEM: "NAME OF SYSTEM", "OPERATING INSTRUCTIONS", "MAINTENANCE INSTRUCTIONS", "TROUBLE SHOOTING GUIDE".
- 12.7. THE O & M MANUAL SHALL ALSO INCLUDE ALL SPECIFIED WARRANTIES, THE NAME, ADDRESS, AND TELEPHONE NUMBER OF THE COMPANY PROVIDING THE WARRANTY, OPERATION PROCEDURES, AND THE MANUFACTURERS' RECOMMENDED MAINTENANCE PROCEDURES

(CONTINUED ON NEXT SHEET)



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APECA PERMIT #P11651

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02	2020.07.02	PERMIT
01	2020.04.22	PERMIT
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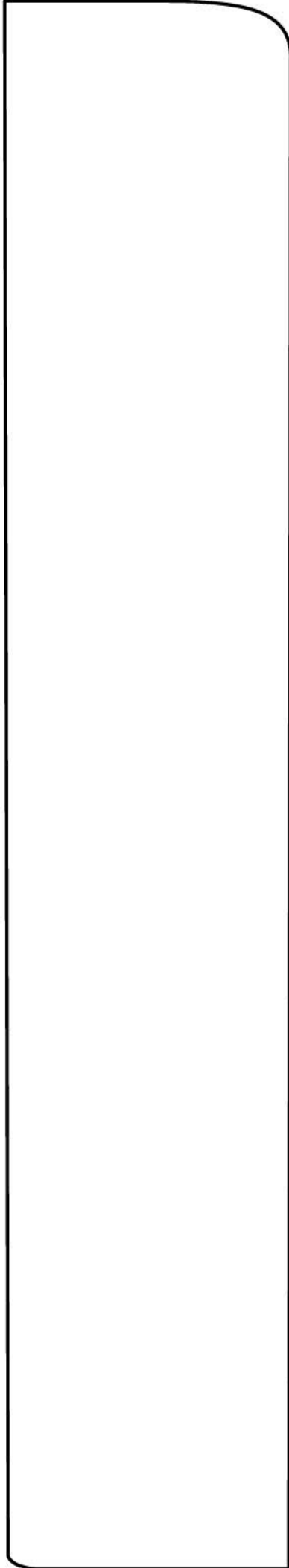
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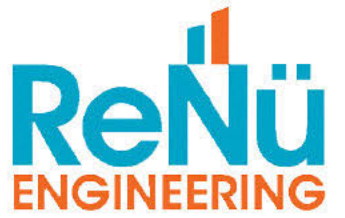
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13.	<u>EXCAVATION, BACKFILLING ETC</u>	16.7.	ALL CONDUITS, JUNCTION BOXES IN FINISHED AREAS TO BE CONCEALED. CONFIRM WITH ENGINEER, WHERE AND IF SURFACE MOUNT CONDUIT AND JUNCTION BOXES WILL BE ALLOWED. ELECTRICAL CONTRACTOR TO COORDINATE WITH GENERAL CONTRACTOR TO PROVIDE LABOR FORCE DURING ALL CONCRETE SLAB AND MASONRY INSTALLATIONS. USE ONLY APPROVED MASON BOXES AND FITTINGS.	19.4.3.	MINIMUM EFFICIENCY OF 96.5%.	23.3.	PANELBOARDS SHALL CONSIST OF DEAD-FRONT ASSEMBLIES OF MOULDED CASE CIRCUIT BREAKERS IN CODE GAUGE SHEET METAL ENCLOSURES C/W DOOR, LATCH, LOCK, AND KEYS. LOCKS SHALL BE KEYED ALIKE. PANELS SHALL BE FACTORY PAINTED. UNUSED BREAKER SPACE TO BE C/W BLANK PLATES. DRIP HOODS ARE REQUIRED ON ALL SURFACE MOUNTED EQUIPMENT.
13.1.	PRIOR TO COMMENCING ANY UNDERGROUND WORK, ESTABLISH LOCATION OF EXISTING BURIED SERVICES AND EQUIPMENT. CLEARLY MARK SUCH LOCATIONS TO PREVENT DISTURBANCE DURING WORK.	16.8.	IT IS THE RESPONSIBILITY OF THE ELECTRICAL CONTRACTOR TO PROVIDE AND INSTALL ANY SPECIALTY RECESSED FITTINGS OR PLATES AS SHOWN AS DETAILS IN THE ELECTRICAL DRAWINGS. CONTRACTOR MAY CONTRACT OUT THE MANUFACTURER OF THESE FITTINGS.	19.4.4.	PROVIDE 4 PRIMARY 2.5% FULL CAPACITY TAPS (2 ABOVE AND 2 BELOW NORMAL VOLTAGE), VOLTAGE REGULATION AT 4% OR BETTER.	23.4.	PANELBOARD MAIN BUS SHALL BE OF PLATED COPPER OR ALUMINIUM; OF AMPERAGE SIZES AS INDICATED ON THE SINGLE LINE DIAGRAM. MAIN LUGS SHALL BE SUITABLE FOR EITHER COPPER OR ALUMINIUM FEEDER CONDUCTORS.
13.1.1.	ANY UTILITIES WITHIN 3m OF PROPOSED GROUND WORK SHALL BE DAYLIGHTED TO PREVENT POTENTIAL CONFLICTS.	16.9.	ALL INTERIOR JUNCTION BOXES TO BE CAST METAL, RIGID PVC, ALUMINUM OR STEEL. USE OF PLASTIC BOXES TO BE APPROVED BY THE ENGINEER.	19.4.5.	UNLESS OTHERWISE REQUIRED TO SUIT THE OPERATING ENVIRONMENT SHOWN ON DRAWINGS, AT A MINIMUM THE ENCLOSURE TO BE COMPLETE WITH DRIP COVER, LOUVERED SLOTS SLOPED DOWNWARD AND OUTWARD TO PREVENT MOISTURE INGRESS, AND REMOVABLE FRONT AND REAR COVERS HELD IN PLACE BY SCREWS.	23.5.	CIRCUIT BREAKERS SHALL BE MOULDED CASE, BOLT-ON, 10KA RMS SYMMETRICAL INTERRUPTING CAPACITY OR HIGHER WHERE REQUIRED TO MEET TRANSFORMER RATING. (SWITCHING DUTY IF REQUIRED.)
13.2.	ALL ELECTRICAL UNDERGROUND WORK REQUIRING EXCAVATING, TRENCHING, ETC, SHALL BE THE RESPONSIBILITY OF THE ELECTRICAL CONTRACTOR.	16.10.	ALL CONDUITS TO BE INSTALLED PARALLEL TO BUILDING LINES UNLESS OTHERWISE STATED.	19.5.	INSTALL FLOOR-MOUNTED, UNLESS OTHERWISE NOTED, ON 100mm CONCRETE HOUSE-KEEPING BASES, COMPLETE WITH APPROVED ASTM VIBRATION ISOLATION DAMPENERS.	23.6.	NEUTRAL BUS TO BE FULL CAPACITY SOLID NEUTRAL INSULATED FROM THE ENCLOSURE. NEUTRAL BUS TO BE COMPLETE WITH ONE BRANCH LUG FOR EACH 1-POLE BRANCH CIRCUIT POSITION.
13.3.	ALL UNDERGROUND WORK TO BE COORDINATED WITH UTILITY COMPANY AND GENERAL CONTRACTOR.	17.	<u>CONDUCTORS AND CABLES</u>	19.6.	PRIMARY AND SECONDARY CONNECTIONS FOR DISTRIBUTION TO BE LIQUIDTIGHT FLEX TO PREVENT TRANSMISSION OF VIBRATION TO BUILDING STRUCTURE.	23.7.	A GROUNDING BUS SHALL BE PROVIDED IN EACH PANEL. GROUNDING BUS SHALL HAVE ONE LUG FOR EACH 1-POLE BRANCH CIRCUIT POSITION.
13.4.	UNLESS OTHERWISE AUTHORIZED BY THE ENGINEER, DO NOT EXCAVATE MORE THAN 30m OF TRENCH (OR EQUIVALENT EXCAVATION AREA) IN ADVANCE OF INSTALLATION OPERATIONS, AND DO NOT LEAVE OPEN MORE THAN 15m OPEN AT END OF THE DAY'S OPERATIONS.	17.1.	CONDUCTORS SHALL BE SIZED IN ACCORDANCE TO THE CANADIAN ELECTRICAL CODE, MINIMUM CONDUCTOR SIZE SHALL BE #12AWG COPPER UNLESS SPECIFIED OTHERWISE. ALL CONDUCTORS TO BE COPPER, SUBSTITUTION OF ALUMINIUM IS ACCEPTABLE FOR CONDUCTORS SIZED 250KCMIL OR LARGER.	20.	<u>WIRING DEVICES</u>	23.8.	PANELS TO BE ORDERED WITH BREAKERS PRE-INSTALLED. INCLUDE MINIMUM OF 5 SPARE 15A SINGLE POLE BREAKERS IN EACH BRANCH CIRCUIT PANELBOARD WHETHER SHOWN OR NOT ON THE PANEL SCHEDULE.
13.5.	TRENCHES SHALL HAVE 6 INCHES (150MM) OF CLEAN SCREENED SAND ABOVE AND BELOW CONDUITS. SAND SHALL BE COMPACTED TO 90% PROCTOR DENSITY.	17.2.	ALL WIRING SHALL BE RW90 X-LINK, 600V INSULATION UNLESS INDICATED OTHERWISE. UNDERGROUND WIRE SHALL BE RWU90 X-LINK -40°C.	20.1.	<u>OUTLET BOXES</u>	23.9.	MEASURE INDIVIDUAL PHASE LOADING TO ENSURE PANELBOARD LOADS ARE BALANCED WITHIN 5%. ADJUST BRANCH CIRCUIT CONNECTIONS AS REQUIRED TO OBTAIN BEST BALANCE OF CURRENT BETWEEN PHASES AND RECORD CHANGES.
13.6.	TRENCHES SHALL BE IDENTIFIED WITH METALLIC TRACEABLE MARKING TAPE NO DEEPER THAN 24" (610MM) BELOW FINAL GRADE.	17.3.	CONTROL CABLE FOR CLASS 2 REMOTE CONTROL AND SIGNAL CIRCUITS:	20.1.1.	INSTALL ALL OUTLET BOXES FLUSH WITH THE FINISHED SURFACE WHERE CONDUIT IS CONCEALED.	23.10.	MEASURE PHASE VOLTAGES AT LOADS AND ADJUST TRANSFORMER TAPS TO WITHIN 2% OF RATED VOLTAGE EQUIPMENT.
13.7.	WHERE UNDERGROUND CONDUITS REQUIRE PROTECTION, PROVIDE MINIMUM 3 INCHES (75MM) OF CONCRETE ENCASEMENT. ELECTRICAL CONTRACTOR TO CONFIRM THE REQUIREMENTS OF ENCASEMENT WITH UTILITY COMPANY AND LOCAL INSPECTION DEPARTMENT PRIOR TO BACKFILLING.	17.3.1.	CONDUCTOR: COPPER	20.1.2.	MAINTAIN INTEGRITY OF VAPOUR BARRIERS FOR ALL OUTLET BOXES MOUNTED IN EXTERIOR WALLS.	23.11.	EQUIPMENT TO BE EATON, SCHNEIDER, OR SIEMENS. ALL SUPPLIERS OR ALTERNATE SUPPLIERS MUST SUBMIT CATALOG CUT SHEETS AND A MATERIAL LIST PRIOR TO TENDER CLOSE.
13.8.	INSTALL UNDERGROUND CONDUCTORS GREATER THAN #1/0 AWG PER CEC TABLE D11	17.3.2.	INSULATION: 300V INSULATION, RATED 90°C	20.1.3.	BACK BOXES FOR CEILING MOUNTED DEVICES SHALL BE SUPPORTED UTILISING NON-COMBUSTIBLE SUPPORTS.	23.12.	WHERE A SURGE PROTECTIVE DEVICE (SPD) IS INDICATED IT SHALL BE INCORPORATED AS PART OF THE PANELBOARD ENCLOSURE.
13.9.	COMPACT NATIVE BACKFILL MATERIALS TO A MINIMUM DENSITY OF 98% STANDARD PROCTOR.	17.4.	AC90 CABLE	20.1.4.	JUNCTION BOXES SHALL BE A MINIMUM OF 100MM X 100MM SIZED TO ACCOMMODATE CONDUCTORS AND DEVICES PER CEC.		
13.10.	IT IS THE RESPONSIBILITY OF THE ELECTRICAL CONTRACTOR TO NOTIFY THE UTILITY'S INSPECTION DEPARTMENT PRIOR TO BACKFILLING.	17.4.1.	CONDUCTOR: COPPER	20.1.5.	WHERE A NUMBER OF OUTLET BOXES ARE SHOWN IN THE SAME VICINITY (I.E. RECEPTACLES AND VOICE/DATA OUTLETS IN OFFICES), MOUNT OUTLET BOXES TO WITHIN 2" (50MM) OF EACH OTHER.		
13.11.	PRIOR TO COMMENCING ANY WORK, THE ELECTRICAL CONTRACTOR IS RESPONSIBLE FOR REVIEWING ALL MECHANICAL / ELECTRICAL SERVICES INCLUDING DEEP SERVICE TO AVOID ANY POSSIBLE CONFLICT. REFER TO MECHANICAL AND CIVIL DRAWINGS PRIOR TO STARTING WORK.	17.4.2.	ALUMINIUM INTERLOCKING ARMOUR	20.1.6.	OUTLET BOXES IN METAL STUD WALLS SHALL BE SOLIDLY ANCHORED ON TWO SIDES OF THE BOX TO THE WALL SYSTEM TO ENSURE THE BOX WILL NOT MOVE WITHIN THE WALL.		
13.12.	RESTORE TRAVELLED AREAS TO PRE-EXCAVATION STRUCTURE.	17.4.3.	INSULATION: 600V OR HIGHER	20.1.7.	BOXES TO BE IBERVILLE OR EQUIVALENT: OCTAGON #54171; SQUARE #52171 OR #72171		
13.13.	CLEAN AND REINSTATE AREAS AFFECTED BY WORK AS DIRECTED. REPLACE ASPHALT IF REQUIRED.	17.5.	TECK 90 CABLE	20.1.8.	FLUSH MOUNTED SWITCHES, RECEPTACLES, ETC.: #52171 WITH MATCHING PLASTER COVER FOR SINGLE OR TWO-GANG OUTLETS. FOR LARGER OUTLETS UTILISE GSB SOLID TYPE. FOR MASONRY OR CAST IN PLACE USE MBD TYPE BOXES.		
14.	<u>FIRE STOPPING</u>	17.5.1.	PROVIDE PROTECTION FOR EXPOSED CABLES WHERE SUBJECT TO DAMAGE. CABLES PROHIBITED TO PENETRATE CONCRETE SLABS WITHOUT SLEEVES.	20.1.9.	SURFACE MOUNTED SWITCHES, RECEPTACLES, ETC.: #52171 C/W BC83** COVERS		
14.1.	THE ELECTRICAL CONTRACTOR, IN COORDINATION WITH THE GENERAL CONTRACTOR, IS RESPONSIBLE FOR THE INSTALLATION OF ALL FIRE STOPPING SYSTEMS RELATING TO ELECTRICAL PENETRATIONS THROUGH FIRE RATED CEILINGS, WALL OR ASSEMBLIES.	17.5.2.	SUPPORT VERTICAL RUNS ON CHANNELS C/W SPACERS AND CLAMPS.	20.2.	<u>RECEPTACLES</u>		
14.2.	THE FIRE STOPPING SYSTEM UTILIZED, SHALL MAINTAIN AN EFFECTIVE BARRIER AGAINST THE SPREAD OF FLAMES, SMOKE AND HOT GASES AND SHALL HAVE PASSED THE CAN4-SH5-M APPROVED TESTING PROCEDURE.	17.5.3.	SUPPORT CABLES MINIMUM ONE DIAMETER APART. MAINTAIN EQUAL SPACING ACROSS SUPPORTS.	20.2.1.	SPEC GRADE, EQUIVALENT TO THOSE MANUFACTURED BY PASS & SEYMOUR 5262. RECEPTACLES SHALL BE IMPACT RESISTANT THERMOPLASTIC. WHITE IN COLOUR.		
15.	<u>GROUNDING AND BONDING</u>	17.5.4.	UTILIZE ONLY APPROVED TECK CONNECTORS AND FITTINGS WHEN TERMINATING CABLES	20.2.2.	GFCI RECEPTACLES SHALL BE SPECIFICATION GRADE EQUIVALENT TO THOSE MANUFACTURED BY PASS & SEYMOUR 1597.		
15.1.	<u>GROUND RESISTANCE</u>	17.6.	<u>INSTALLATION</u>	20.2.3.	ALL RECEPTACLES SHALL BE OF THE SAME MANUFACTURER AND FINISH THROUGHOUT.		
15.1.1.	GROUNDING SYSTEM RESISTANCE TO GROUND SHALL NOT EXCEED 5 OHMS. MAKE ANY MODIFICATIONS OR ADDITIONS TO THE GROUNDING ELECTRODE SYSTEM NECESSARY FOR COMPLIANCE WITHOUT ADDITIONAL COST TO THE CONTRACT SUM. FINAL TESTS SHALL ENSURE THAT THIS REQUIREMENT IS MET.	17.6.1.	PROVIDE AND INSTALL CONDUCTORS FOR POWER AND LIGHTING AND CONTROLS AS SHOWN ON THE DRAWINGS AND SPECIFIED HEREIN. THIS SHALL CONSIST OF INDIVIDUAL CONDUCTORS OR MULTI-CONDUCTOR CABLES IN RACEWAYS OR OTHERWISE AS SHOWN.	20.3.	<u>SWITCHES</u>		
15.2.	PROVIDE SYSTEM GROUND EITHER VIA CONNECTION TO METAL WATER MAIN IN ADVANCE OF WATER METER OR VIA GROUND ROD NETWORK IN ACCORDANCE WITH CEC SECTION 10 AND ANY DETAILS SHOWN IN THESE DRAWINGS.	17.6.2.	UNLESS OTHERWISE NOTED, ALL WIRING TO BE INSTALLED IN CONDUIT.	20.3.1.	SWITCHES SHALL BE AS SPECIFIED IN THE LIGHTING SCHEDULE		
15.3.	PROVIDE AN EARTH ROD INSPECTION BOX EQUIVALENT TO ERITECH PIT-03 OVER ONE OF THE RODS IN THE GROUND GRID TO ALLOW ACCESS TO THE GRID FOR TESTING.	17.6.2.	AC90 CABLE IS PERMITTED ONLY FOR FINAL DROPS TO LUMINAIRES IN LENGTHS NOT EXCEEDING 2 METERS (EXCLUDING VERTICAL DROPS TO SUSPENDED FIXTURES) AND FOR RUNS CONCEALED IN METAL OR WOOD FRAME PARTITIONS CONTAINING ONLY ONE CIRCUIT.	20.4.	SURFACE MOUNTED DEVICES SHALL BE FITTED WITH CADMIUM PLATED SHEET STEEL PLATES WITH ROLLED EDGES IN SERVICE ROOMS.		
15.4.	BURIED GROUNDING CONDUCTORS (TO WATER MAIN, BURIED RODS, INTER-ROD) SHALL BE #6 AWG BARE COPPER OR AS SHOWN ON DRAWINGS, WHICHEVER IS LARGER. USE APPROVED CONNECTION METHOD ONLY, REFER TO LOCAL INSPECTION DEPARTMENT AND UTILITY SERVICE PROVIDER REQUIREMENTS.	17.7.	<u>VOLTAGE REGULATION</u>	20.5.	MULTI-GANG PLATES SHALL BE ONE PIECE CONSTRUCTION.		
15.5.	FROM TWO POINTS ON GROUND GRID, PROVIDE 2 X #6 BARE GROUND CONDUCTORS TO MAIN GROUND BUS IN THE ELECTRICAL ROOM. PROVIDE A 53MM PVC SLEEVE TO INTERFACE FROM BELOW GRADE INTO THE ELECTRICAL ROOM.	17.7.1.	BRANCH CIRCUIT CONDUCTOR SIZES SHALL BE #12 AWG OR LARGER BASED ON THE ROUTING OF CONDUIT AND RUN LENGTHS AS SHOWN ON THE DRAWINGS, AND IN ORDER TO COMPLY WITH THE CANADIAN ELECTRICAL CODE, PART 1, WHICH ALLOWS A MAXIMUM 3% VOLTAGE DROP FOR BRANCH CIRCUITS.	20.6.	WEATHERPROOF PLATES SHALL BE EXTRA HEAVY DUTY WHILE IN USE TYPE, EQUAL TO PASS & SEYMOUR WUICED10		
15.6.	FROM MAIN GROUND BUS, CONNECT 1 X #6 INSULATED GROUND CONDUCTOR IN 21 MM CONDUIT TO METALLIC WATER AND GAS PIPING.	17.7.2.	ALL VOLTAGE DROP CALCULATIONS TO BE BASED ON THE CANADIAN ELECTRICAL CODE, PART 1, AND UTILIZING A CURRENT OF 80% OF THE CIRCUIT PROTECTIVE DEVICE SPECIFIED.	20.7.	ALL FLUSH SWITCHES AND RECEPTACLES SHALL BE FITTED WITH STANDARD SIZE, COVERS. COVERS SHALL BE IMPACT RESISTANT THERMOPLASTIC, HAVE BEVELED EDGES AND BE WHITE IN COLOUR.		
15.7.	BOND ALL ELECTRICALLY POWERED EQUIPMENT TO GROUND USING SUITABLE CONNECTORS. EQUIPMENT BONDING CONDUCTORS SHALL BE SIZED ACCORDING TO CEC TABLE 16A.	17.7.3.	WHEN EXACT RUN LENGTHS ARE DETERMINED FOR ALL BRANCH CIRCUITS, AND PRIOR TO INSTALLATION OF THE CONDUCTORS, ENSURE THAT THE MAXIMUM VOLTAGE DROP (BASED ON 80% OF CIRCUIT PROTECTIVE DEVICE) DOES NOT EXCEED 3%. INCREASE WIRE SIZE FROM #12 AWG, IF NECESSARY, TO ENSURE THAT THE 3% VOLTAGE DROP IS NOT EXCEEDED.	20.8.	COVERS SHALL FIT TIGHT TO THE WALL AND TO THE WIRING DEVICES.		
15.8.	BONDING CONDUCTORS: GREEN INSULATION, SIZED PER TABLE 16A, SIZED FOR OVER-CURRENT DEVICE PROTECTING THE CIRCUIT. CONNECT TO GROUNDING BUSHINGS ON CONDUIT, TO LUGS ON BOXES, TUBS AND OTHER ENCLOSURES. CONNECTION TO NEUTRAL MADE ONLY AT SERVICE ENTRANCE AND AT SECONDARY OF DISTRIBUTION TRANSFORMER.	18.	<u>MOTORS AND MOTOR CONTROL</u>	20.9.	MOUNTING HEIGHTS SHALL BE AS SHOWN ON THE DRAWINGS		
15.9.	INSTALL BONDING CONDUCTORS IN ALL CONDUITS; SIZED PER CEC TABLE 16A.	18.1.	LOW VOLTAGE CONTROL WIRING TO BE THE RESPONSIBILITY OF THE MECHANICAL CONTRACTOR. LINE VOLTAGE (120V OR GREATER) WIRING TO BE THE RESPONSIBILITY OF THE ELECTRICAL CONTRACTOR. COORDINATE EQUIPMENT REQUIREMENTS WITH MECHANICAL CONTRACTOR. ELECTRICAL CONTRACTOR TO SUPPLY AND INSTALL PIPE, WIRING, FITTINGS, SUPPORTS ETC. FOR A COMPLETE INSTALLATION. DEVICES SUCH AS 120V THERMOSTATS OR SPEED CONTROLLERS TO BE SUPPLIED BY MECHANICAL CONTRACTOR, INSTALLED BY ELECTRICAL CONTRACTOR.	20.9.1.	IN LOCATIONS WHERE BARRIER FREE ACCESS IS REQUIRED, USE ADA COMPLIANT OR OTHER APPROVED MOUNTING HEIGHTS.		
15.10.	PROVIDE GROUNDING BUS BAR C/W LUGS AT SERVICE ENTRANCE POINT AND AT ALL TELEPHONE/TELEVISION CABLE BACKBOARDS, COMMUNICATIONS CABINETS, AND DATA RACKS. BOND ALL WALL OR FREE STANDING DATA RACKS TO GROUND WITH #6 GREEN INSULATED GROUND WIRE.	18.2.	INSTALL DISCONNECT SWITCHES AT ALL MOTORS. HORSEPOWER RATED, SUITABLE FOR ENVIRONMENT ENCOUNTERED.	21.	<u>LIGHTING</u>		
15.11.	INSTALL GROUNDING BUSHINGS, GROUNDING STUDS AND GROUNDING JUMPERS AT ALL DISTRIBUTION CENTRES, PULLBOXES, MOTOR CONTROL CENTRES, PANELBOARDS WHERE SEPARATE GROUNDING CONDUCTORS ARE INDICATED OR REQUIRED.	18.3.	REFER TO MECHANICAL DRAWINGS FOR CONTROL REQUIREMENTS.	21.1.	INSTALLATION OF ALL LIGHT FIXTURES TO BE COORDINATED WITH GENERAL CONTRACTOR. THE ELECTRICAL CONTRACTOR IS RESPONSIBLE FOR PROVIDING ANY NECESSARY BACK BOXES, FLUSH TRIM RING, PLASTER RINGS AND BOLT PATTERNS AS NEEDED PRIOR TO FIXTURE INSTALLATION.		
15.12.	INSTALL #6 AWG GROUND CONDUCTOR TO EACH CABLE TRAY FROM NEAREST GROUND BUS. INSTALL #6 AWG BARE COPPER GROUND FOR FULL LENGTH OF TRAY. BOND TO TRAY PER CEC SECTION 10.	18.4.	PROVIDE 120 VOLT CONTROL CIRCUITS FOR CONTROL TRANSFORMERS. CONFIRM LOCATIONS AND QUANTITIES WITH MECHANICAL CONTRACTOR.	21.2.	REFER TO ELECTRICAL DRAWINGS AND FIXTURE SCHEDULE FOR FIXTURE CATALOGUE NUMBERS, MANUFACTURER, LAMP REQUIREMENTS AND INSTALLATION NOTES.		
15.13.	BOND ALL METAL PARTS OF BUILDING STRUCTURE, MECHANICAL EQUIPMENT AND ALL METALLIC PIPING TO GROUND.	18.5.	CONFIRM LOAD, VOLTAGE, AND PHASE OF ALL EQUIPMENT WITH MECHANICAL CONTRACTOR PRIOR TO ROUGH-IN AND ORDERING OF EQUIPMENT.	21.3.	LUMINAIRES RECESSED IN SUSPENDED CEILING GRIDS ARE TO BE SUPPORTED INDEPENDENTLY OF THE GRID. DO NOT SUPPORT LUMINAIRES OVER 5KG FROM OUTLET BOXES.		
16.	<u>RACEWAYS AND JUNCTION BOXES</u>	18.6.	REFER TO MECHANICAL DRAWINGS FOR SCOPE OF MECHANICAL CONTROL WIRING WHEN A BUILDING MANAGEMENT SYSTEM (BMS) IS SPECIFIED.	21.4.	RECESSED FIXTURES IN FIRE RATED CEILINGS OR ASSEMBLIES TO BE INSTALLED IN COORDINATION WITH THE GENERAL CONTRACTOR AND INSTALLED IN A MANNER TO MAINTAIN THE INTEGRITY OF THE FIRE RATING. UTILIZE FIRE RATED BACK BOXES OR HOUSINGS WHERE NECESSARY.		
16.1.	CONDUITS TO CONSIST OF RIGID STEEL, ELECTRIC METALLIC TUBING (EMT), RIGID PVC, FLEXIBLE METAL CONDUIT OR LIQUID-TIGHT FLEXIBLE CONDUIT.	18.7.	CONTROL EQUIPMENT, TIME CLOCKS, GAS DETECTOR SYSTEMS, SUMMER SWITCHES TO BE SUPPLIED BY THE MECHANICAL CONTRACTOR, WIRED, INSTALLED AND CONNECTED BY THE ELECTRICAL CONTRACTOR. CONFIRM OPERATION INTERLOCKS REQUIRED AND WIRE FOR DAMPER MOTORS, AIR PROVING SWITCHES ETC.	21.5.	STORAGE OF LIGHT FIXTURES ON SITE TO BE THE RESPONSIBILITY OF BOTH THE GENERAL AND ELECTRICAL CONTRACTOR. FIXTURES TO BE STORED IN A SAFE, SECURE PLACE FREE FROM DAMAGE. NO EXTRAS WILL BE ISSUED FOR DAMAGED OR MISSING FIXTURES.		
16.2.	DIRECT BURIED CONDUITS TO BE RIGID PVC OR DB2 PVC ONLY. CONDUITS INSTALLED IN CONCRETE SLAB TO BE RIGID PVC.	18.8.	PROVIDE FIRE ALARM SHUT DOWN INTERLOCKS, DUCT DETECTORS, STAIRWELL HVAC, MUA AND EXHAUST REQUIREMENTS AS SHOWN ON THE DRAWINGS.	21.6.	INSTALLATION OF ALL FIXTURES TO BE COORDINATED WITH MECHANICAL EQUIPMENT. ELECTRICAL CONTRACTOR TO INFORM THE ENGINEER OF ANY CONFLICTS OR RE-POSITIONING OF THE FIXTURES PRIOR TO INSTALLATION.		
16.3.	ALL BURIED CONDUITS TO ADAPT TO RIGID PVC, EMT, OR RIGID STEEL WHEN INSTALLED ABOVE GROUND OR CONCRETE SLAB.	18.9.	PROVIDE ROOM SWITCHES FOR ALL EXHAUST FANS WHETHER SHOWN ON DRAWINGS OR NOT, UNLESS FAN CONTROL REQUIREMENTS ARE PROVIDED BY MECHANICAL DRAWINGS, ENGINEER OR BUILDING OWNER.	22.	<u>POWER DISTRIBUTION</u>		
16.4.	MINIMUM SIZE OF CONDUIT TO BE 21MM (3/4")	19.	<u>TRANSFORMERS</u>	22.1.	NOTIFY UTILITY COMPANY PRIOR TO COMMENCING WORK ON SITE. INSTALLATION TO BE PROVIDED IN ACCORDANCE TO UTILITY AND LOCAL JURISDICTION REQUIREMENTS. SUBMIT DRAWINGS AND SPECIFICATIONS TO THE UTILITY IF REQUESTED.		
16.5.	MINIMUM SIZE OF DIRECT BURIED OR IN SLAB CONDUIT TO BE 27MM (1")	19.1.	THIS SECTION EXCLUDES TRANSFORMERS THAT ARE SUPPLIED, INSTALLED, OR SPECIFIED BY UTILITY HAVING JURISDICTION. ADDITIONALLY, TRANSFORMERS INSTALLED IN MOTOR CONTROL CENTRES, CDP, ETC, TO BE INSTALLED PER MANUFACTURER SPECIFICATIONS.	22.2.	CONFIRM SERVICE ENTRY POINT WITH UTILITY PRIOR TO TRENCHING.		
16.6.	PROVIDE WATER-TIGHT FITTINGS, CONDUIT AND JUNCTION BOXES FOR ALL EXTERIOR INSTALLATIONS AND DAMP LOCATIONS.	19.2.	ON TRANSFORMERS 300KVA AND LARGER, PROVIDE A TEMERATURE GUAGE RADING CORE AND COIL TEMPERATURE. GUAGE TO HAVE ALARM CONTACTS.	22.3.	SUPPLY AND INSTALL ALL APPROPRIATE METER SOCKETS TO UTILITY COMPANY REQUIREMENTS.		
16.7.	ALL EMT STRAPS, COUPLINGS AND CONNECTORS TO BE STAINLESS STEEL UNLESS OTHERWISE APPROVED BY THE ENGINEER.	19.3.	TRANSFORMER IMPEDANCE FOR ALL UNITS RATED AT 225KVA AND BELOW TO BE BETWEEN 4.5% AND 5.5%. TRANSFORMER IMPEDANCE FOR ALL UNITS RATED ABOVE 225KVA UP TO 450KVA TO BE BETWEEN 5% AND 8%.	22.4.	SERVICE DISCONNECTING MEANS SHALL BE RATED FOR SERVICE ENTRANCES AND WHERE INTEGRAL TO PANELBOARD OR SWITCHGEAR SHALL BE INSTALLED IN A SEPARATE COMPARTMENT.		
16.8.	ALL UNDERGROUND CONDUITS TO BE FREE OF DEBRIS, ROCKS AND DIRT PRIOR TO INSTALLATION OF CONDUCTORS. PIPES TO BE "SWABBED" CLEAN AND PROPERLY CAPPED OFF IF INSTALLED FOR FUTURE USE. MARK ON AS-BUILT DRAWINGS, EXACT LOCATION OF ALL UNDERGROUND CONDUITS.	19.4.	DRY TYPE 600V/ AND BELOW	23.	<u>PANELBOARDS</u>		
		19.4.1.	UNITS 30kVA AND SMALLER SHALL HAVE EPOXY ENCAPSULATED WINDINGS.	23.1.	PROVIDE AND INSTALL BRANCH CIRCUIT PANELBOARDS WHERE AND AS SHOWN ON THE DRAWINGS.		
		19.4.2.	TO BE TYPE ANN, DELTA PRIMARY, GROUNDED STAR SECONDARY, AIR COOLED, COPPER WOUND, NATURAL CIRCULATION IN VENTILATED ENCLOSURE. CLASS H INSULATION WITH RATE OF RISE NOT EXCEDING 150°C UNDER FULL LOAD IN A MAXIMUM 40°C AMBIENT.	23.2.	ALL PANELBOARDS SHALL BE BY ONE MANUFACTURER AND SHALL BE OF THE BOLT-ON CIRCUIT BREAKER TYPE.		





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03	2020.10.26	CONSTRUCTION
02	2020.07.02	PERMIT
01	2020.04.22	PERMIT
00	2020.03.16	CLIENT REVIEW
#	DATE	ISSUED FOR

PROJECT NO.
C20-826

PROJECT
SUNDANCE CO-OP
POWER
DISTRIBUTION

LOCATION

DESCRIPTION
SPECIFICATIONS
SHEET 2 OF 2

SHEET SIZE
ARCH D

E7