

Project:
SAN MARCOS, CA 92078

Project Details:
1080.40 kW_{stc}, 783.0 kW AC

Engineering Approval:

REVISIONS		
DESCRIPTION	DATE	REV
30% COMPLETION	10/22/2015	A
100% COMPLETION	2/12/2016	B

Sheet Title:
PLOT PLAN

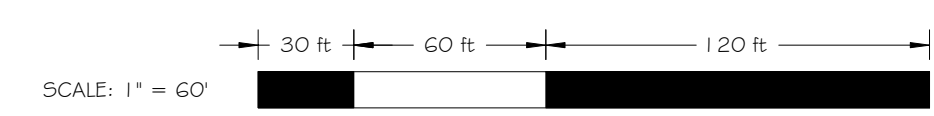
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T.1

Sheet Size:
ARCH D - 36" x 24"

DESIGN & DRAFTING BY:
RICHARD DOBBINS
PV-102216-01 1268

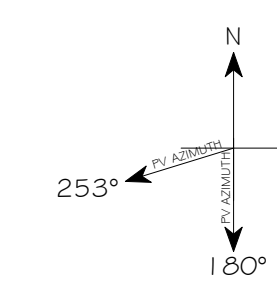


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JH

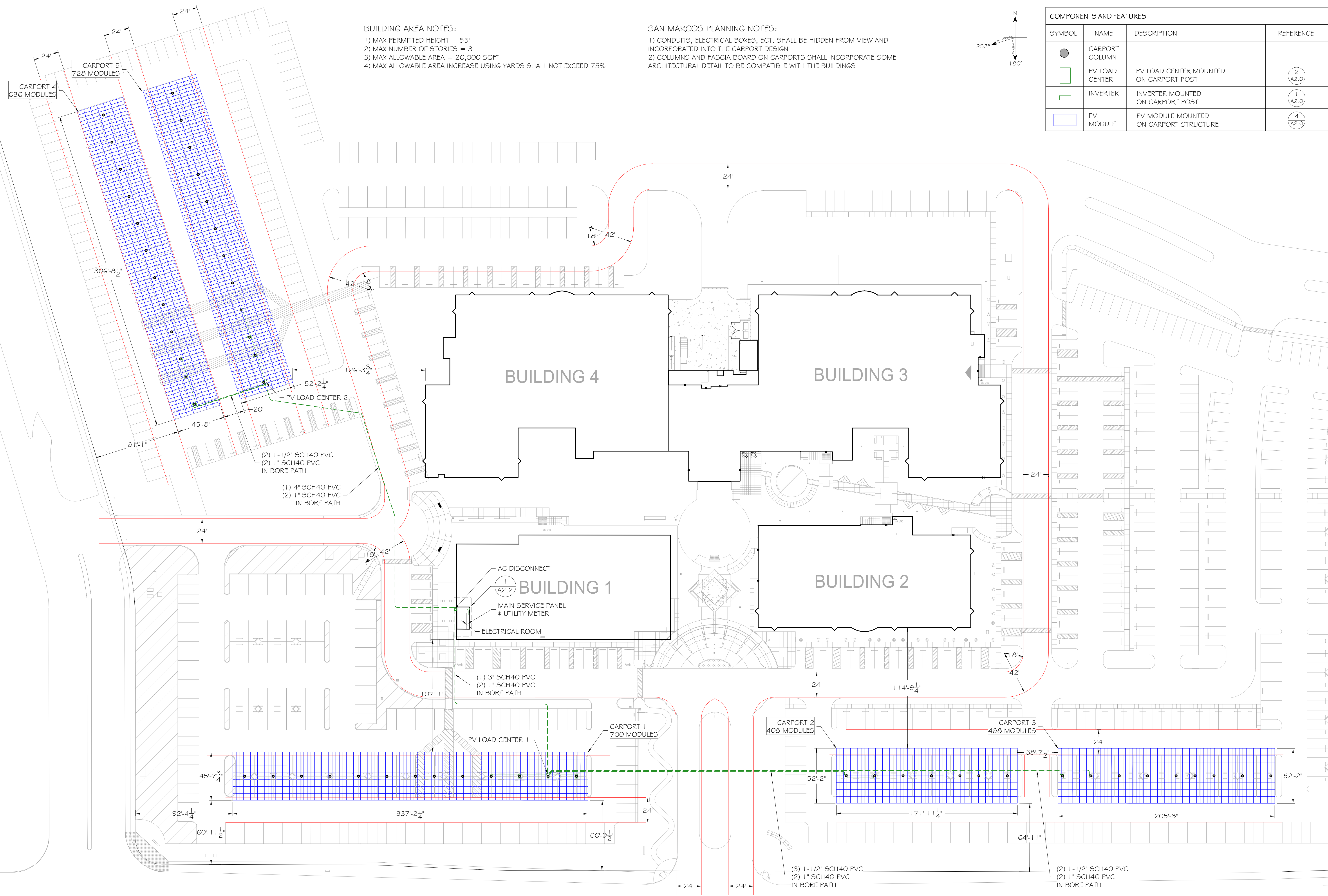


- BUILDING AREA NOTES:**
- 1) MAX PERMITTED HEIGHT = 55'
 - 2) MAX NUMBER OF STORIES = 3
 - 3) MAX ALLOWABLE AREA = 26,000 SQFT
 - 4) MAX ALLOWABLE AREA INCREASE USING YARDS SHALL NOT EXCEED 75%

- SAN MARCOS PLANNING NOTES:**
- 1) CONDUITS, ELECTRICAL BOXES, ECT. SHALL BE HIDDEN FROM VIEW AND INCORPORATED INTO THE CARPORT DESIGN
 - 2) COLUMNS AND FASCIA BOARD ON CARPORTS SHALL INCORPORATE SOME ARCHITECTURAL DETAIL TO BE COMPATIBLE WITH THE BUILDINGS



COMPONENTS AND FEATURES			
SYMBOL	NAME	DESCRIPTION	REFERENCE
●	CARPORT COLUMN		
□	PV LOAD CENTER	PV LOAD CENTER MOUNTED ON CARPORT POST	2 (A2.0)
□	INVERTER	INVERTER MOUNTED ON CARPORT POST	1 (A2.0)
■	PV MODULE	PV MODULE MOUNTED ON CARPORT STRUCTURE	4 (A2.0)



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SITE PLAN

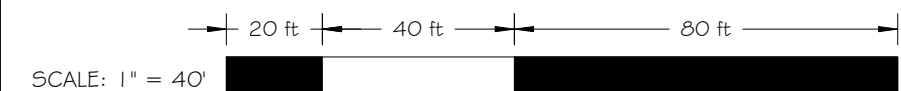
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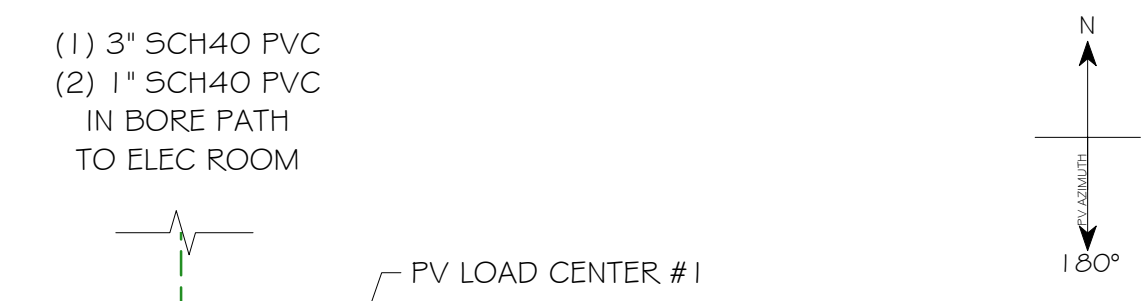
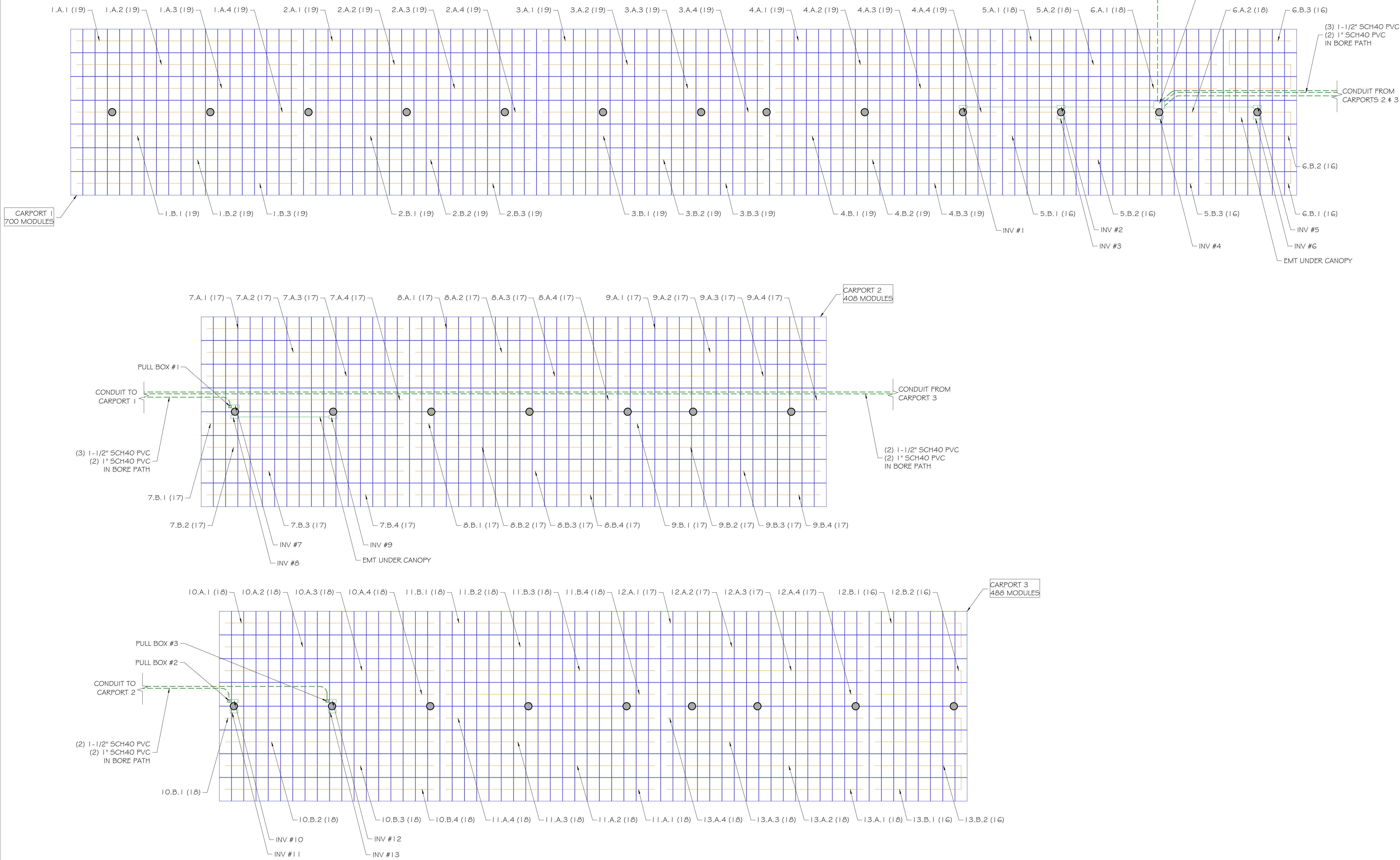
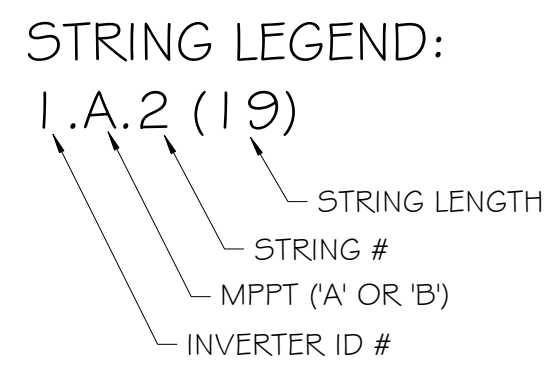
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SCALE: 1" = 12'

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**CARPORTS 1-3
PV LAYOUT**

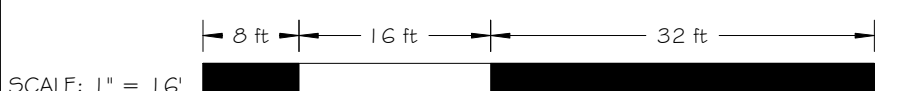
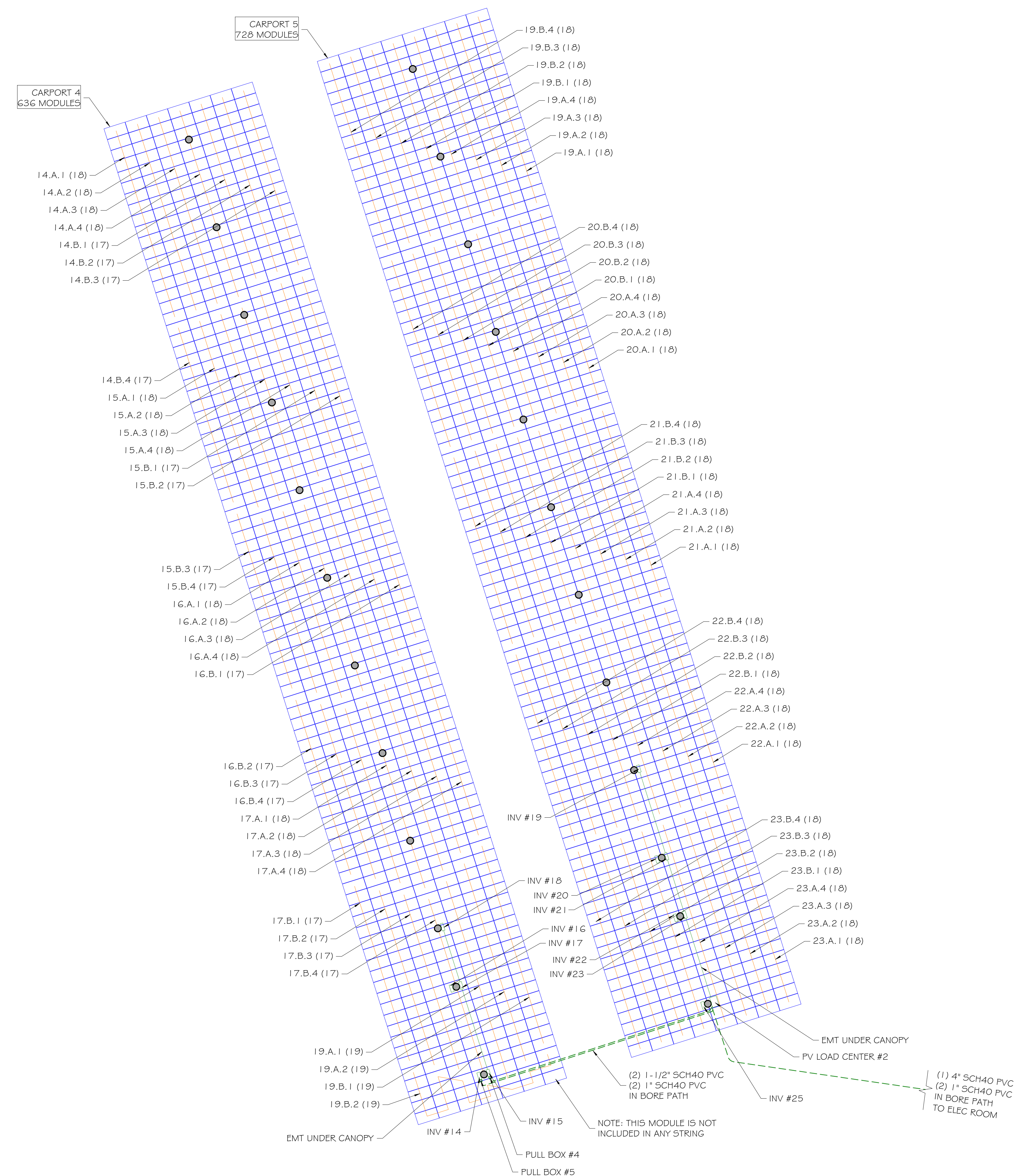
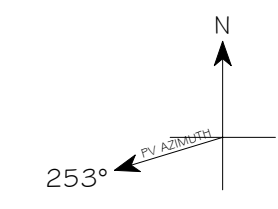
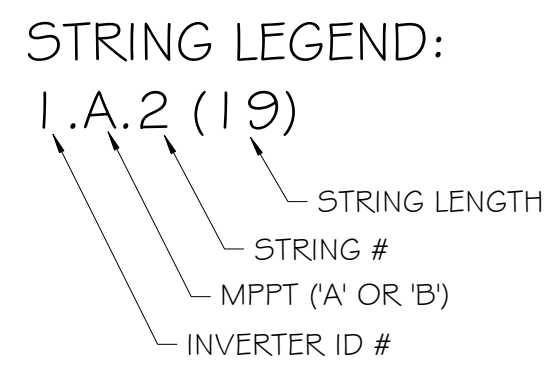
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CARPORTS 4-5
PV LAYOUT

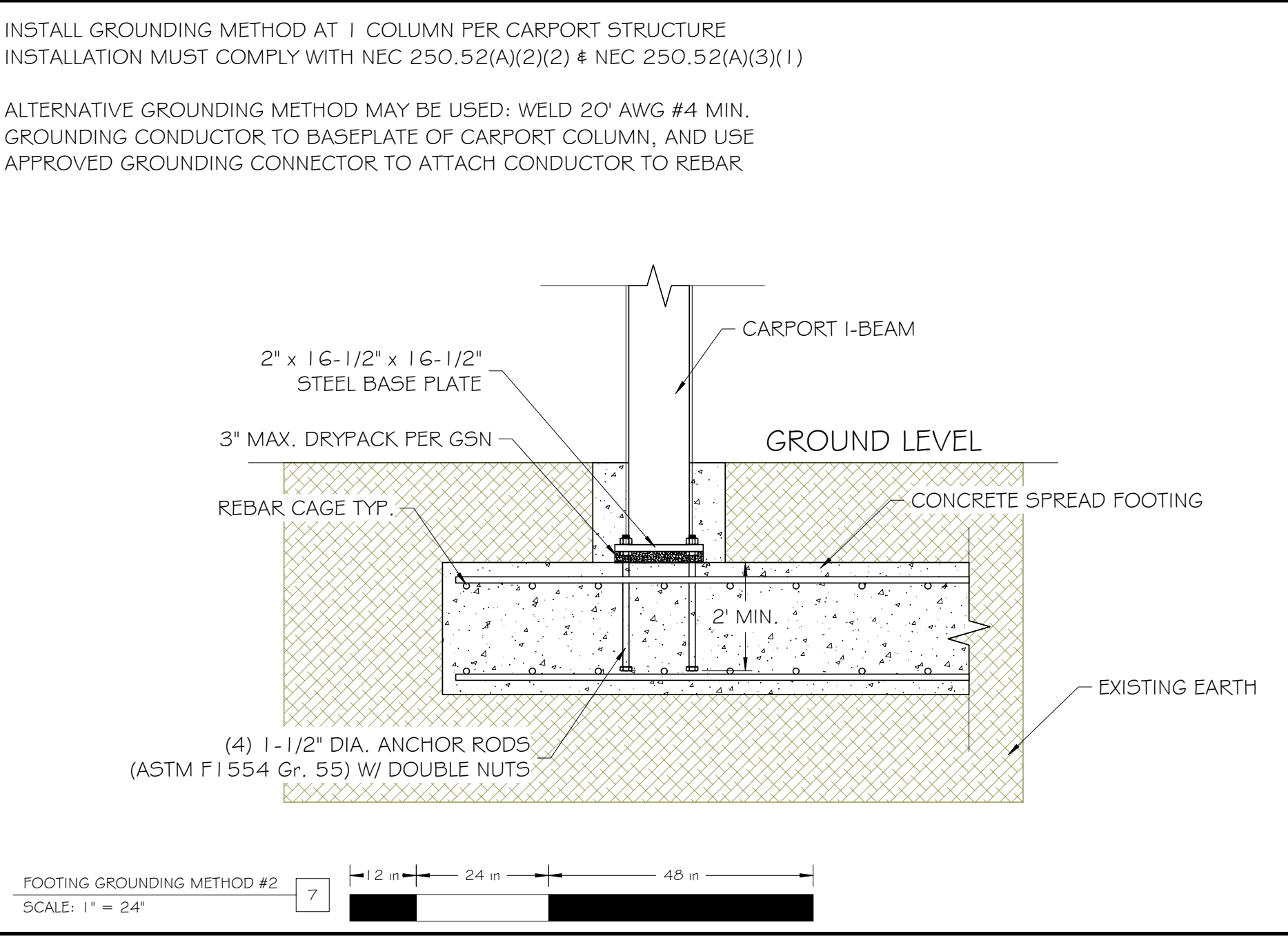
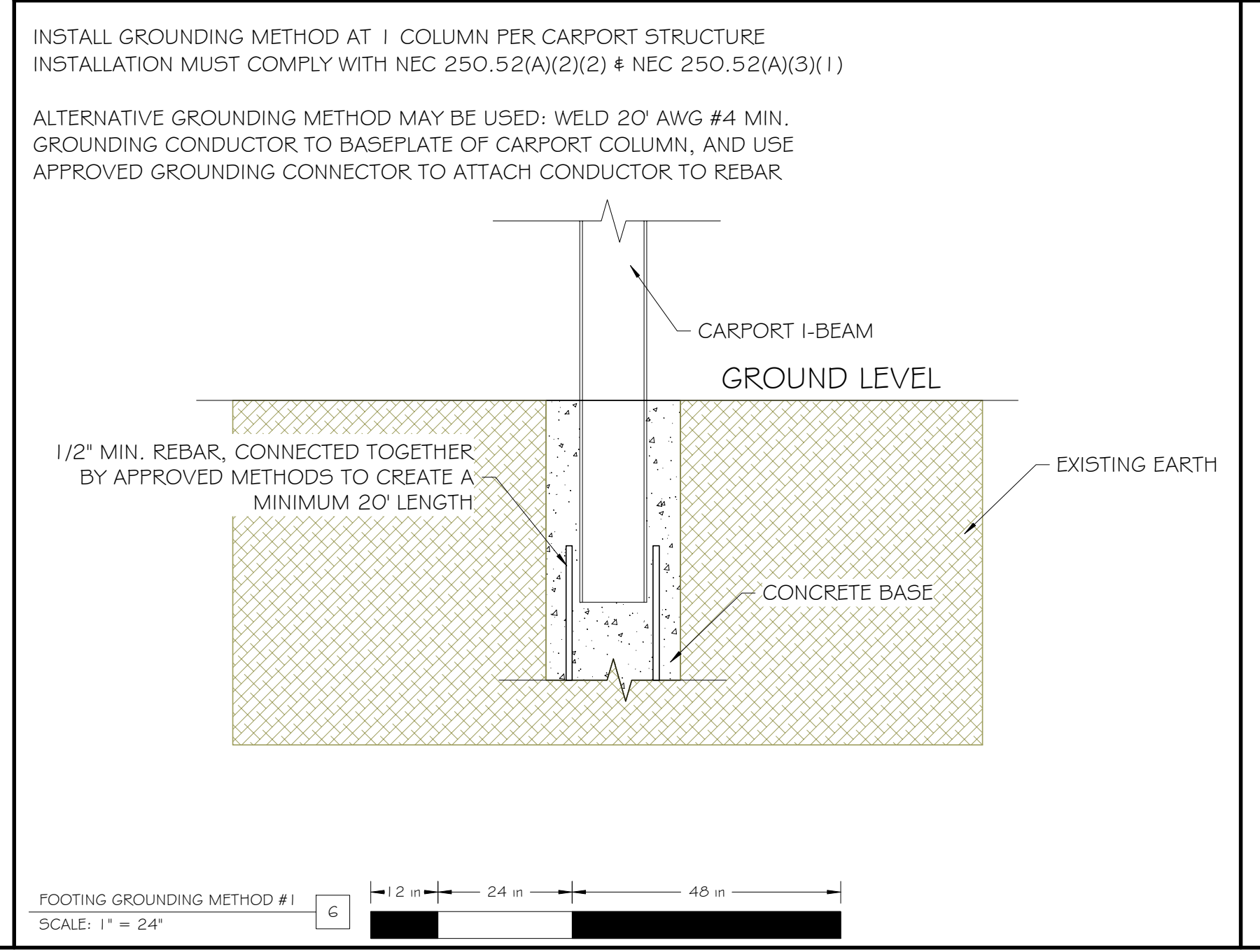
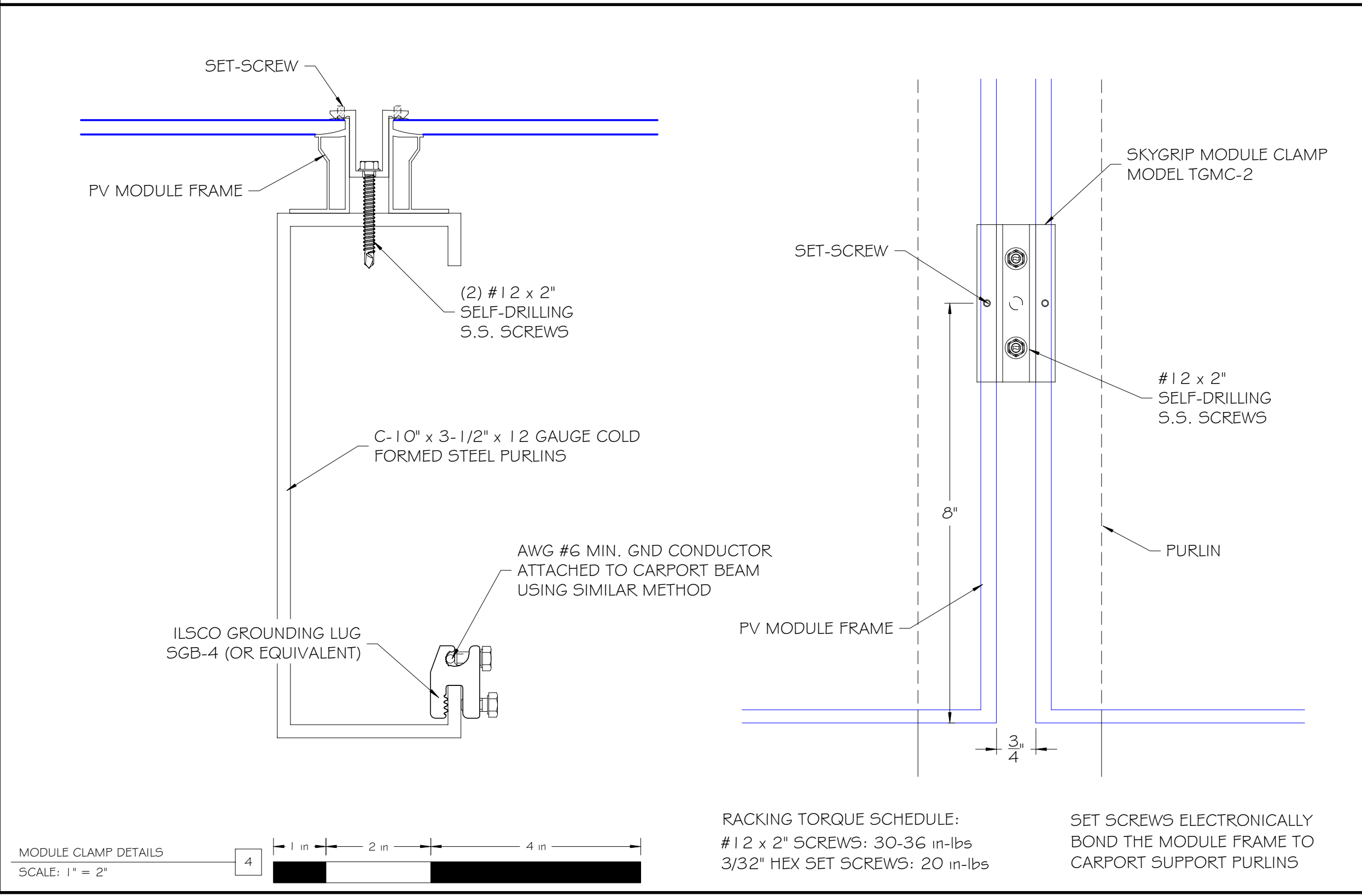
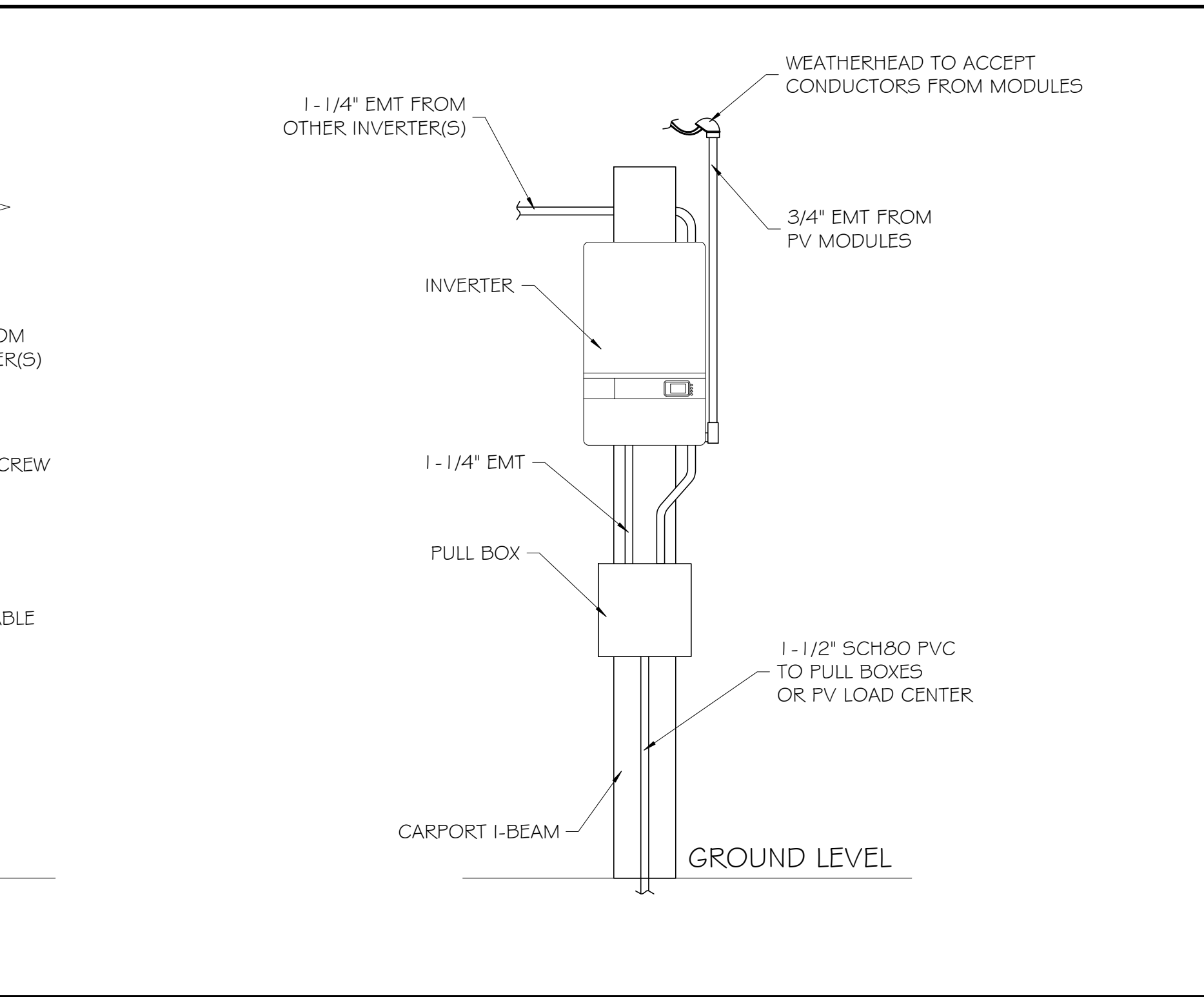
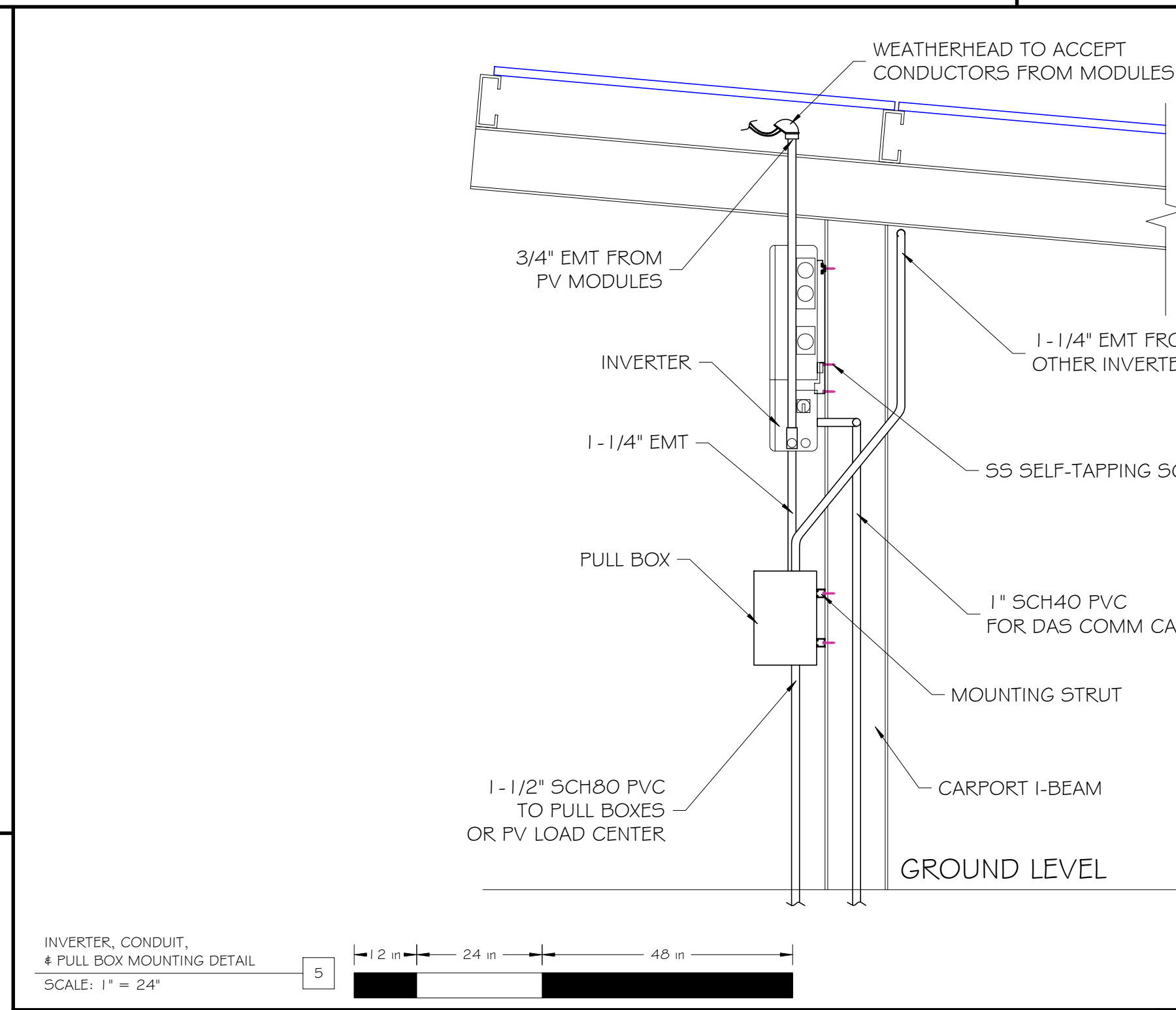
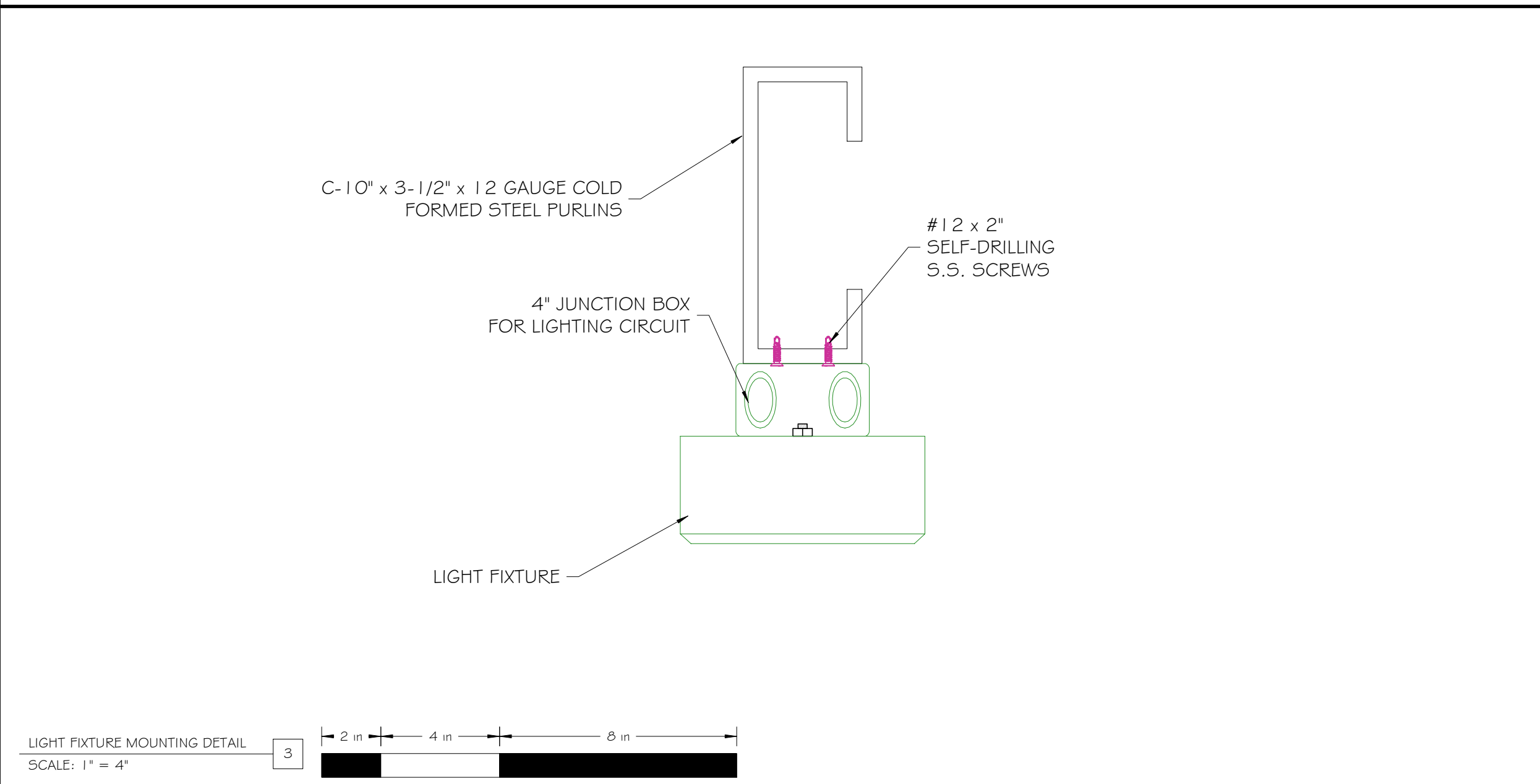
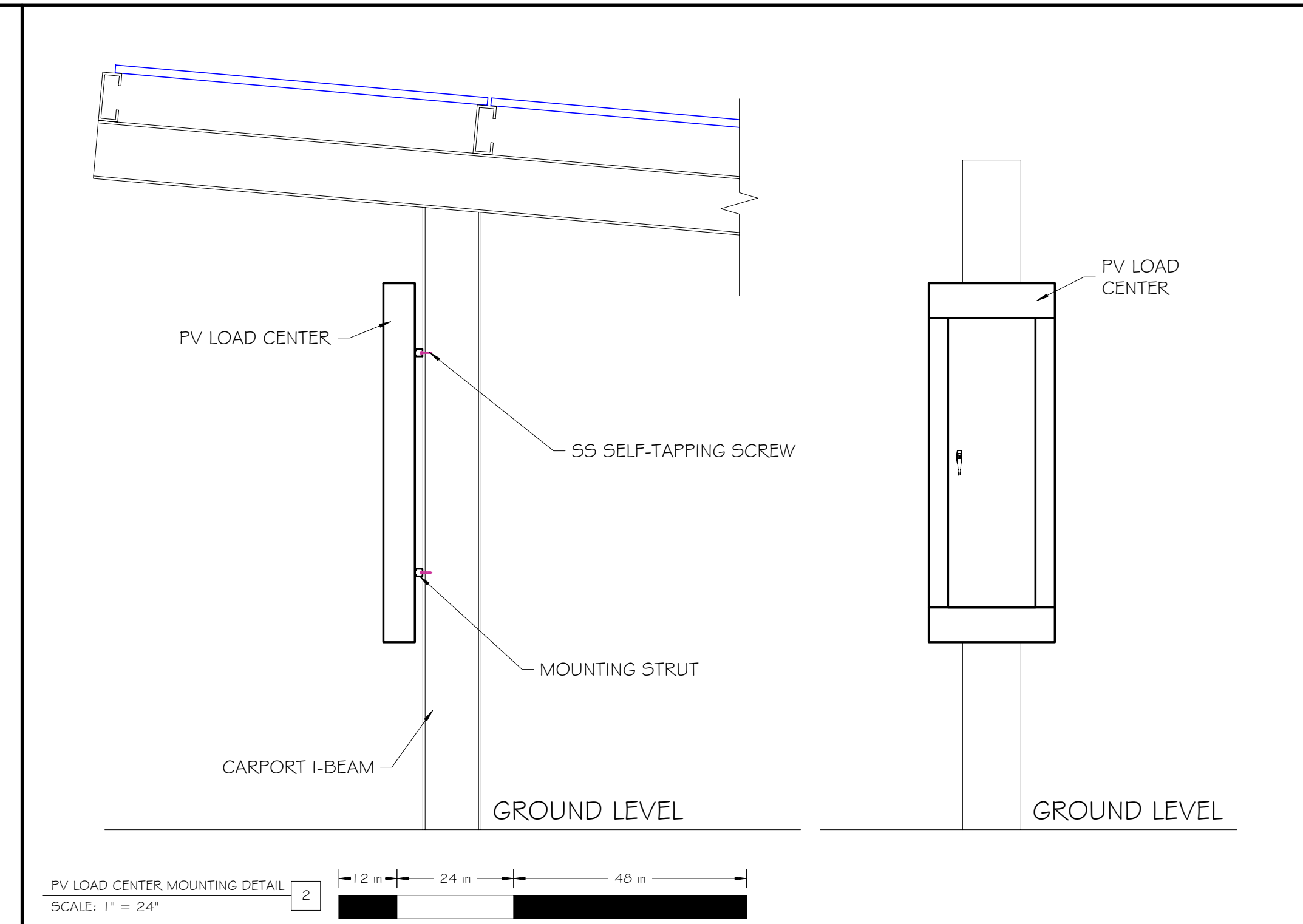
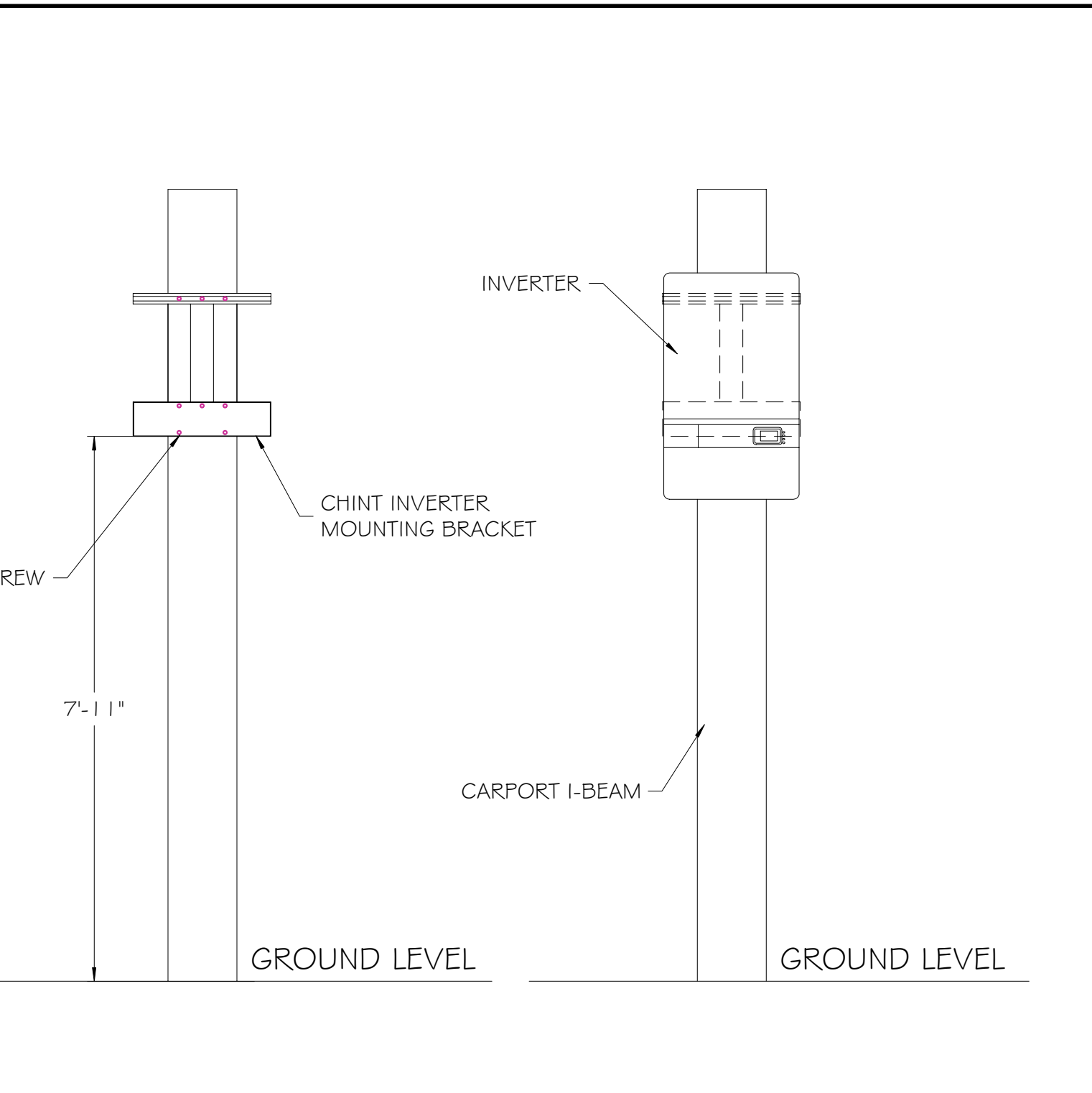
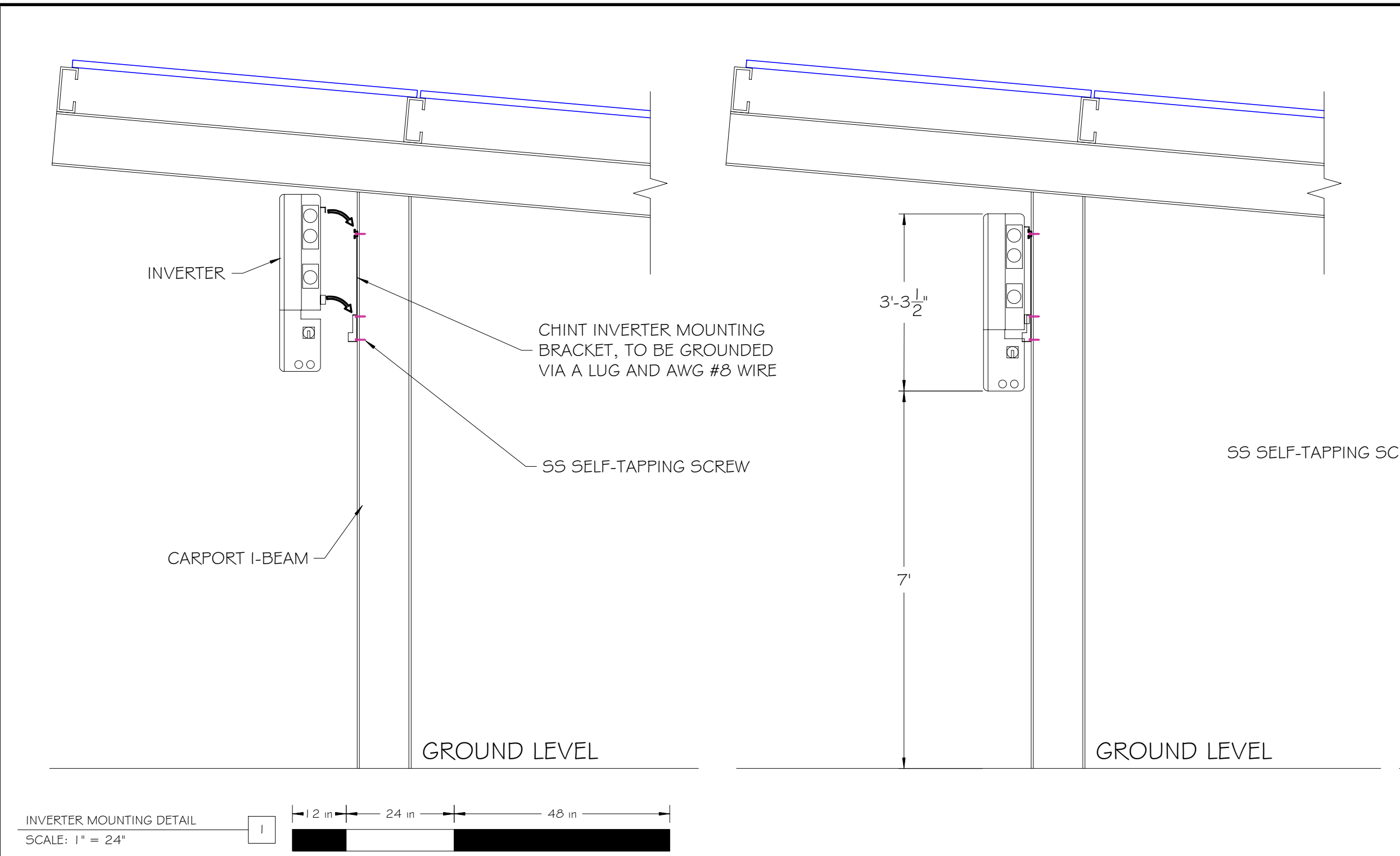
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Sheet Title:
CONSTRUCTION DETAILS I

Sheet Number:
A2.0

Sheet Size:
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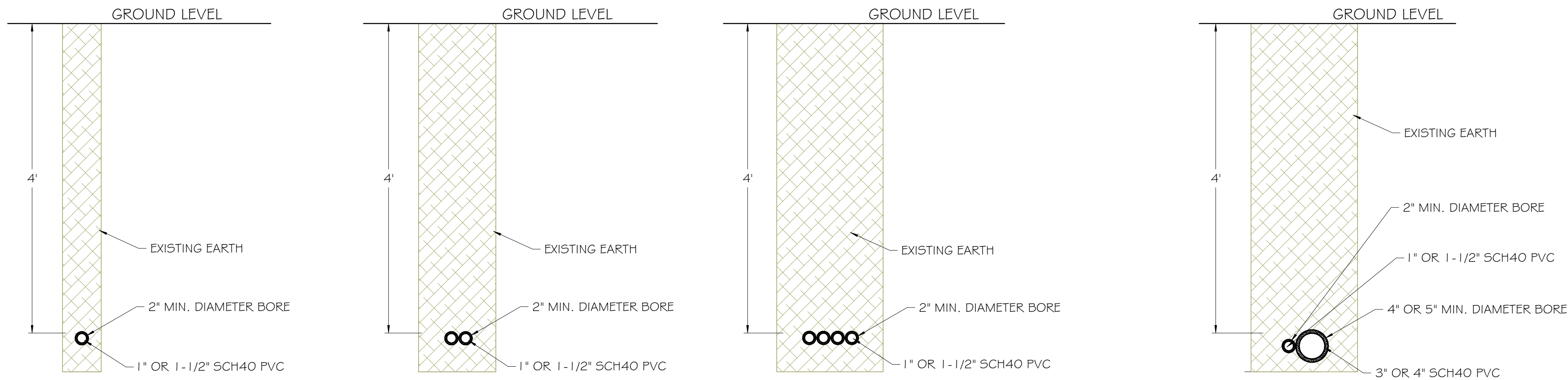
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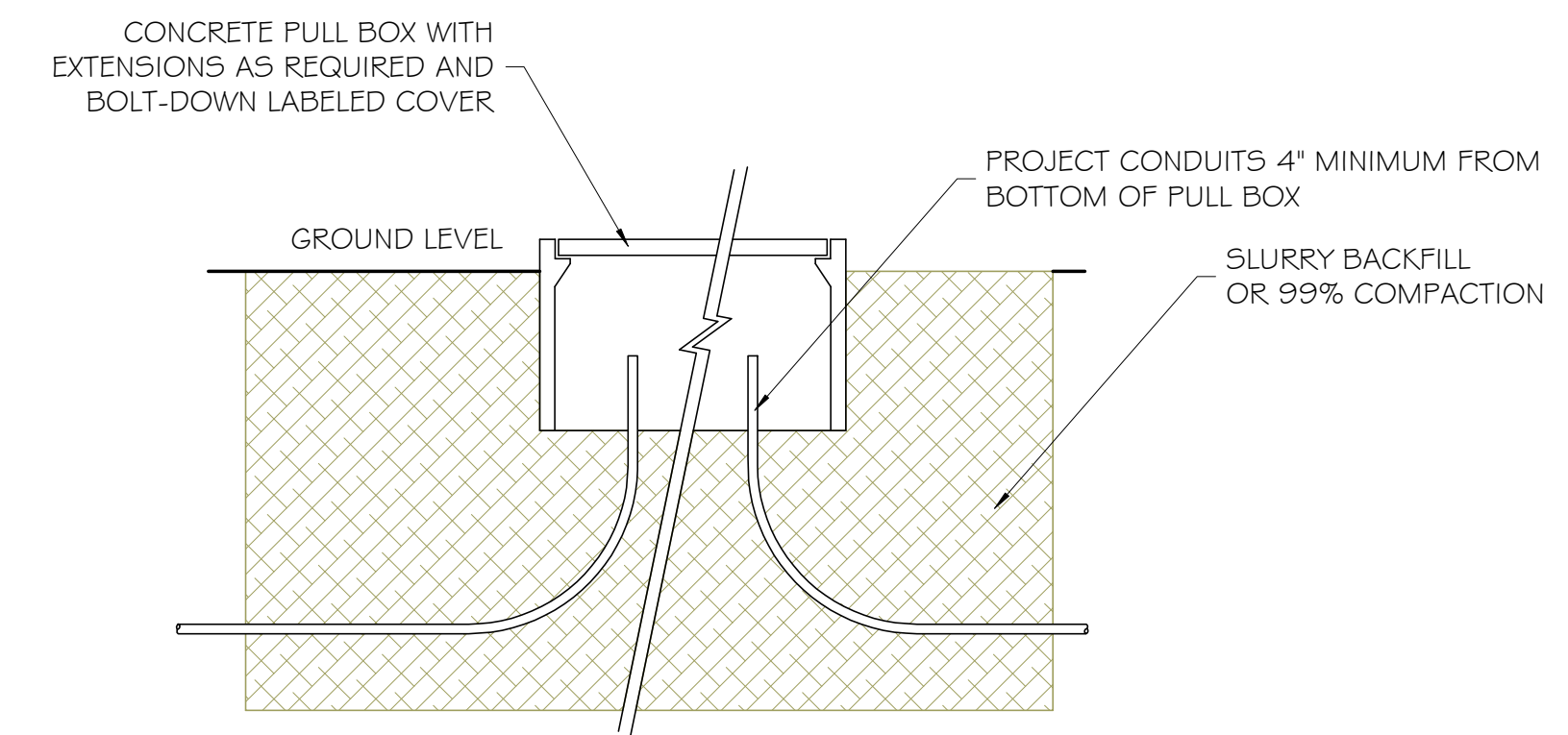
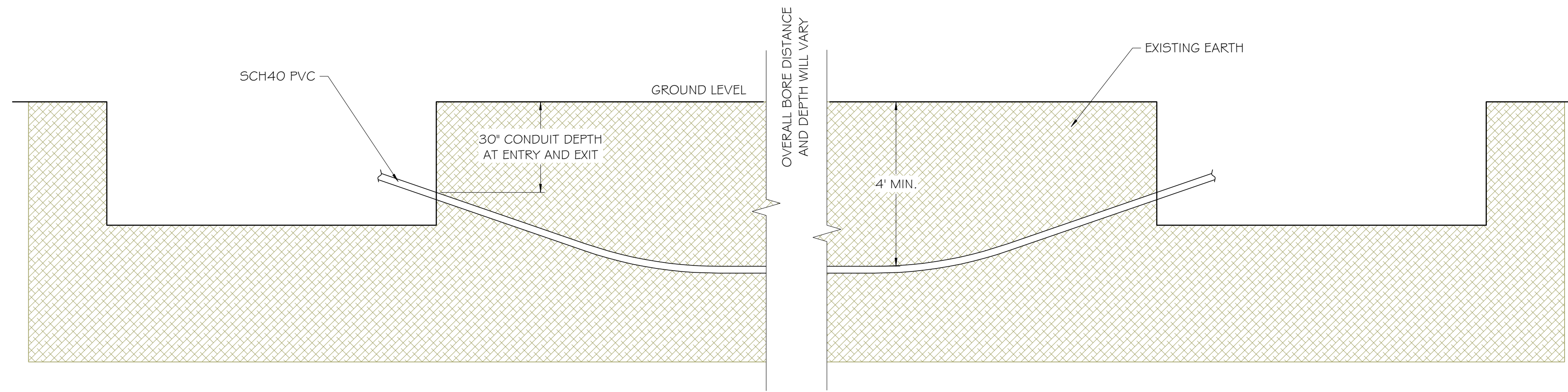


INVERTERS TO PV LOAD CENTER
NOTE: 3 INVERTER OUTPUT CIRCUITS MAX. PER CONDUIT

PV LOAD CENTER
TO AC DISCONNECT

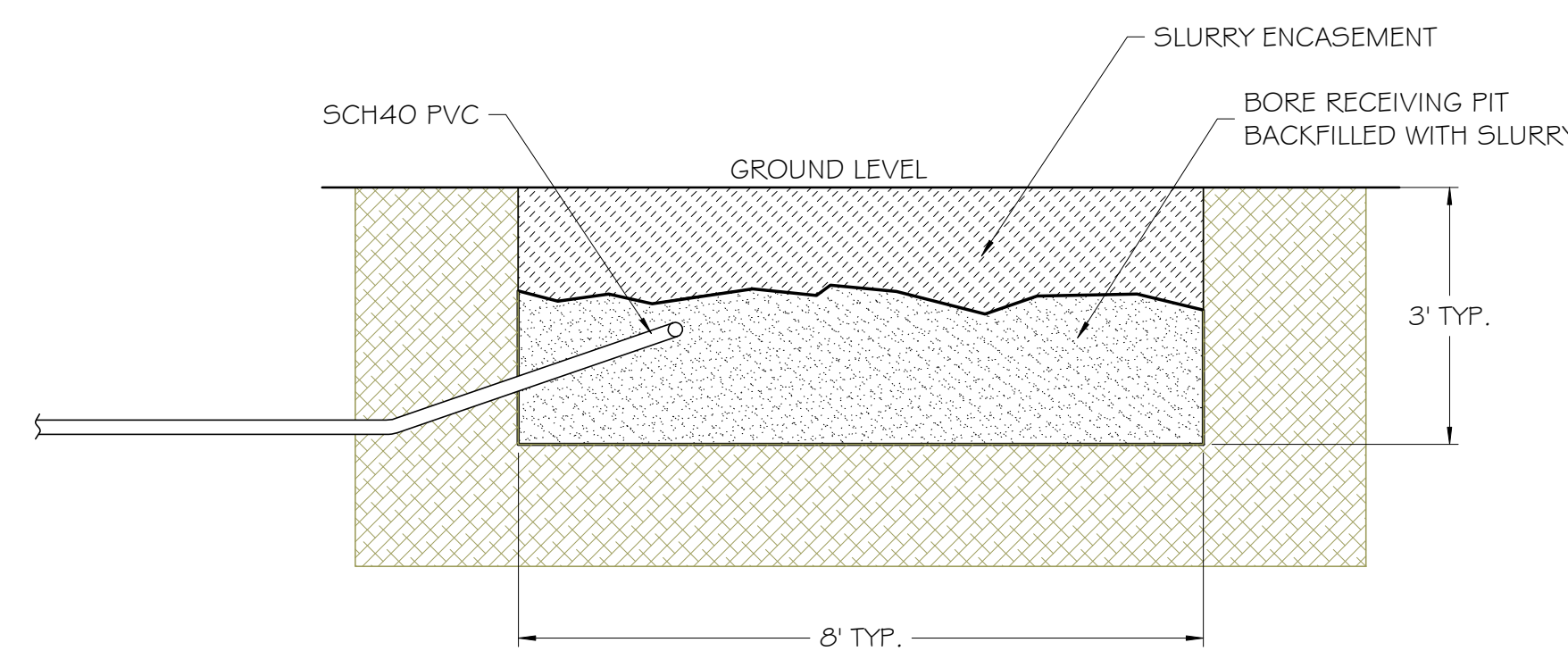


BORING CROSS SECTIONS
SCALE: 1" = 12"

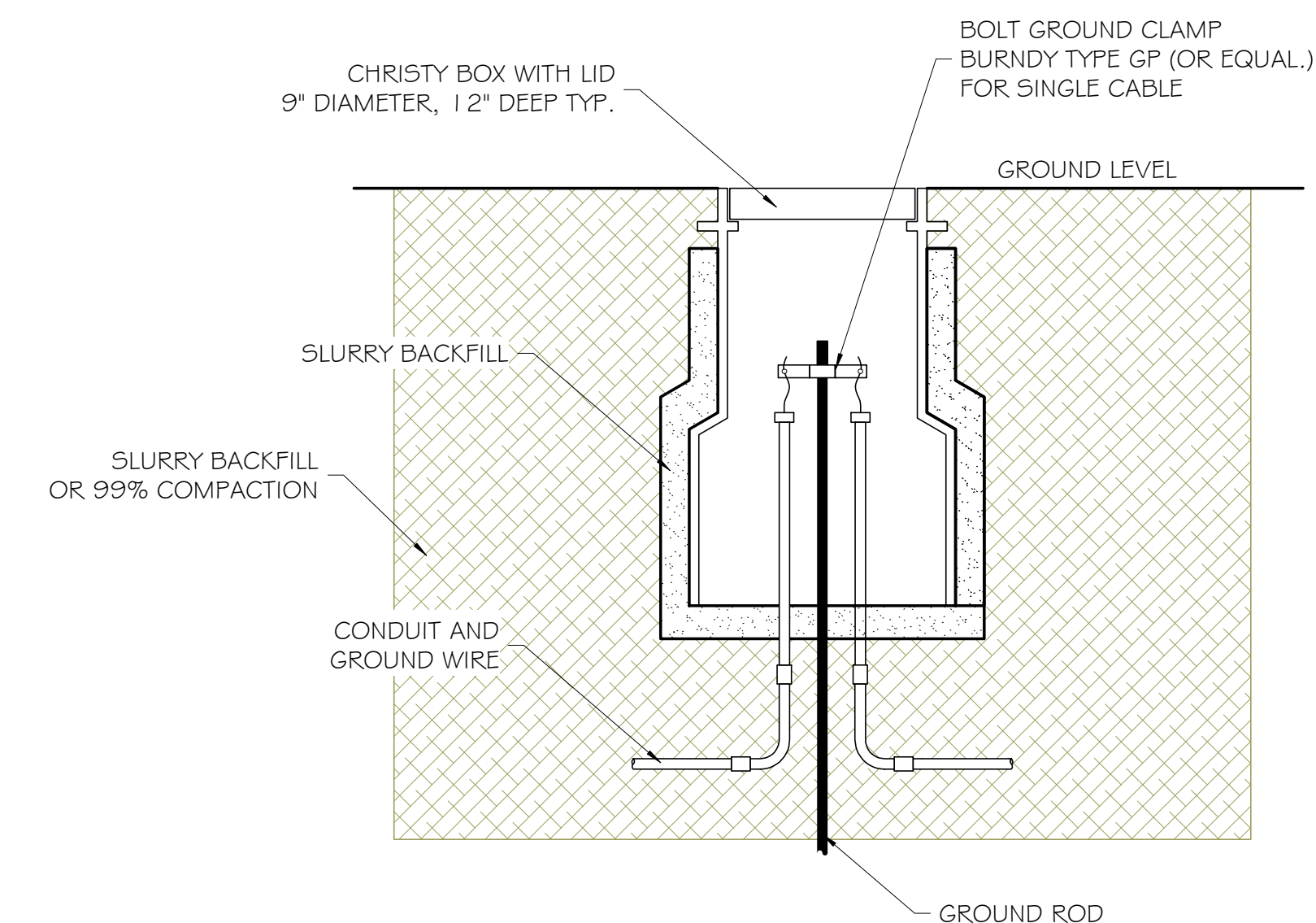


UNDERGROUND PULL BOX DETAIL
SCALE: NTS

CONDUITS WILL TRANSITION TO VERTICAL AT BORE AND RECEIVING PITS
POTHOLE AS NECESSARY FOR ELEVATION CONFIRMATION OF AN EXISTING UTILITIES CROSSING WITHIN 30° OF EXPECTED PATH OF TRAVEL
4' BORE DEPTH TO BE MAINTAINED, EXCEPT WHERE ELEVATION CHANGES ARE REQUIRED TO AVOID OBSTACLES
PITS TO BE BACKFILLED WITH SLURRY, COMPLETED, AND PATCHED AS NECESSARY AFTER CONDUIT INSTALLATION
CONDUIT ENTRY AND EXIT AT PITS WILL BE 30° BELOW GRADE; BENDS AT RISERS WILL BE SCH40 PVC
PRIOR TO BORING, SURVEY FOR EXISTING UNDERGROUND UTILITIES



BORING DETAILS
SCALE: 1" = 24"



GROUND WELL DETAIL
SCALE: NTS

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CONSTRUCTION
DETAILS 2

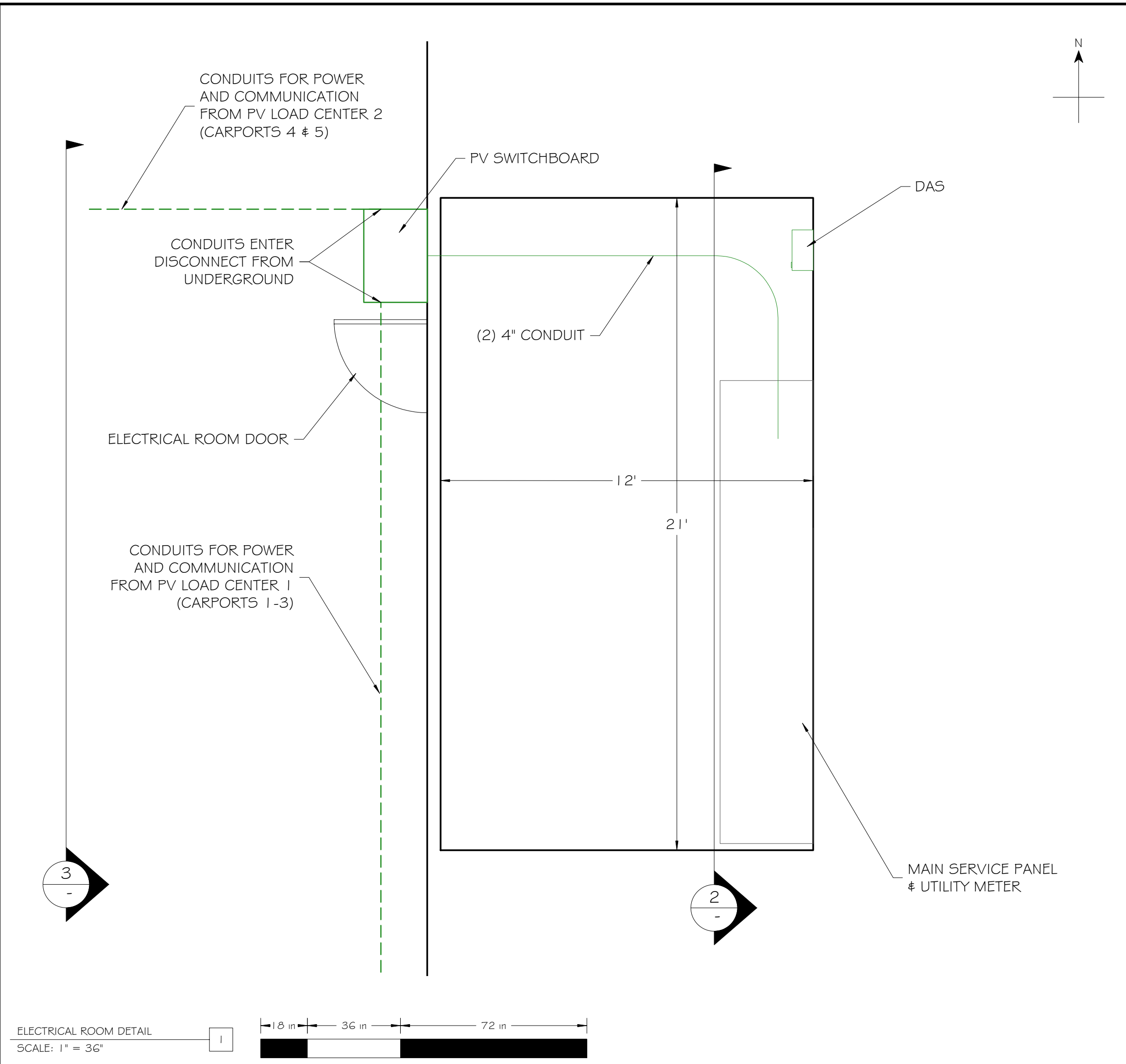
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PV-102216-011268

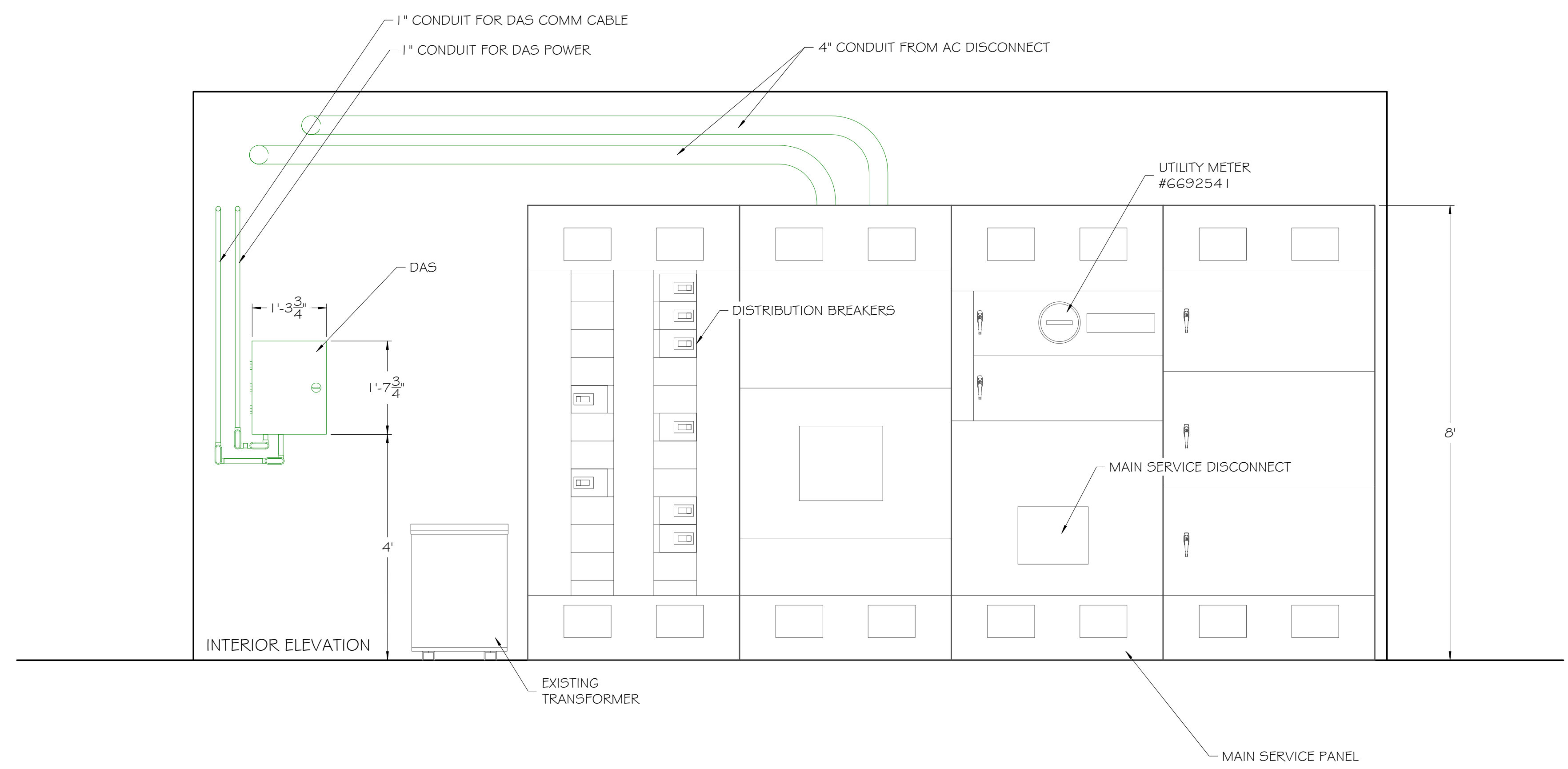


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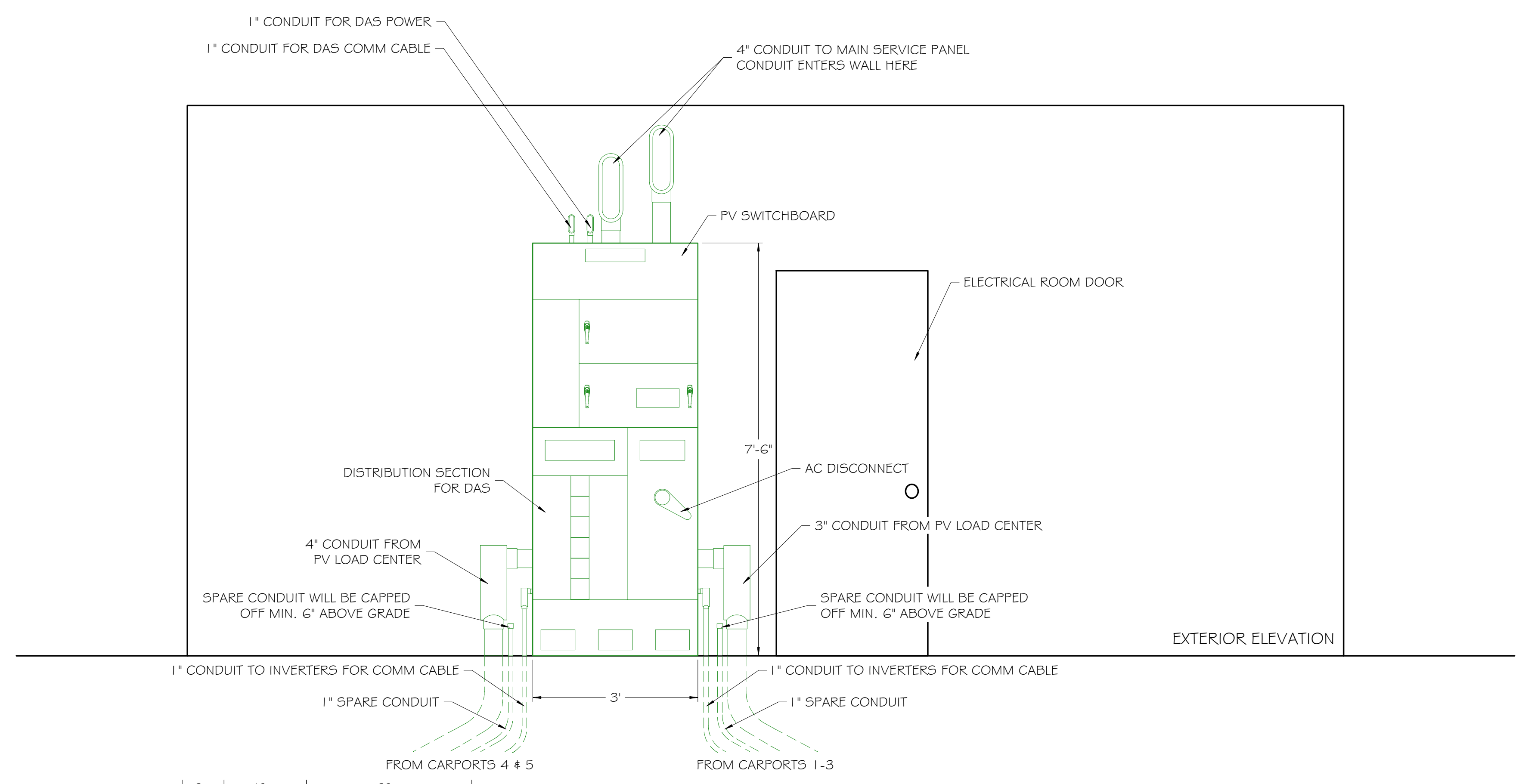
ELECTRICAL ROOM DETAIL
SCALE: 1" = 36"

NOTE: EXISTING EQUIPMENT IS COLORED GRAY, AND NEW EQUIPMENT IN GREEN



ELEC. ROOM BACK WALL ELEVATION
SCALE: 1" = 18"

NOTE: EXISTING EQUIPMENT IS COLORED GRAY, AND NEW EQUIPMENT IN GREEN



ELEC. ROOM EXTERIOR WALL ELEVATION
SCALE: 1" = 18"

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ELECTRICAL ROOM DETAILS

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A2.2

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LUMINAIRE SCHEDULE					
SYMBOL	QTY.	LABEL	DESCRIPTION	LUM. WATTS	LUM. LUMENS
	71	ILP CP-40WLED-UNIV	SURFACE-MOUNTED DOWNLIGHT	42.6	3765

COMPONENTS AND FEATURES			
SYMBOL	NAME	DESCRIPTION	REFERENCE
	CARPORT COLUMN		
	JUNCTION BOX	USED TO SPLICE INTO EXISTING LIGHTING CIRCUIT	
	LIGHT POST	INDICATES LIGHT POSTS, RED TO BE DEMOLISHED, GREEN TO REMAIN	
	LIGHT FIXTURE	NEW LIGHT FIXTURE INSTALLED UNDER CARPORT STRUCTURE	3 (A2.0)

GENERAL NOTES

- ALL EQUIPMENT SHALL BE UL LISTED. ALL PULLBOXES AND CONNECTIONS TO BE VERIFIED IN FIELD.
- LIGHTING CONTROL SCHEME TO CONTROL THE NEW UNDER CANOPY LIGHTS BY EITHER BI-LEVEL OR CONTINUOUS DIMMING THROUGH AN AUTO-ON MOTION SENSOR WITH INTEGRATED PHOTOCONTROL PER TITLE 24. VERIFY COMMISSIONING WITH ELECTRICAL CONTRACTOR.
- ALL INSTALLED OUTDOOR LIGHTING SHALL BE CIRCUITED AND INDEPENDENTLY CONTROLLED FROM OTHER ELECTRICAL LOADS BY AN AUTOMATIC SCHEDULING CONTROL.
- ALL INSTALLED LIGHTING UNDER SOLAR ARRAY STRUCTURE TO BE 3/4" CONDUIT WITH (2) AWG #12 CONDUCTORS & (1) AWG #12 GND.
- E.C. TO CONFIRM THAT EXISTING LIGHTING CIRCUITS TO BE REUSED ARE EITHER 120V OR 277V. IF THEY ARE NOT, E.C. SHALL INSTALL NEW CONDUIT AND WIRE FOR NEW LIGHTING CIRCUITS.

LIGHTING LOAD CALCS

REMOVED:

(3) EXISTING SINGLE HEAD, 250W POLE MOUNTED FIXTURES
 (19) EXISTING DUAL HEAD, 500W POLE MOUNTED FIXTURES
 TOTAL WATTAGE REMOVED: 12095 W

ADDED:

(71) NEW 40W LED FIXTURES UNDER CANOPY
 TOTAL WATTAGE ADDED: 3025 W

NET WATTAGE: 9070 W REMOVED

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Sheet Title:
LIGHTING DRAWINGS

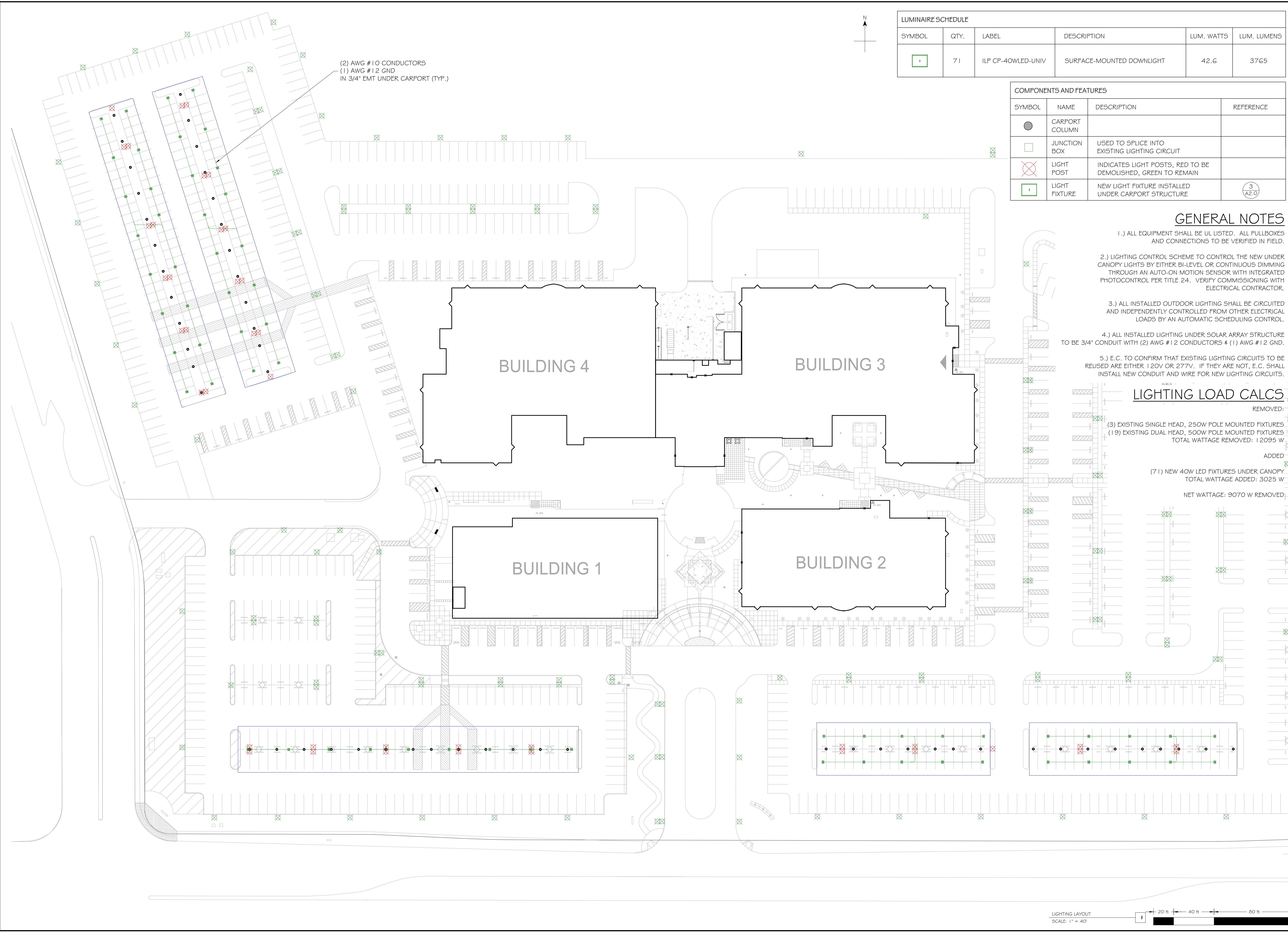
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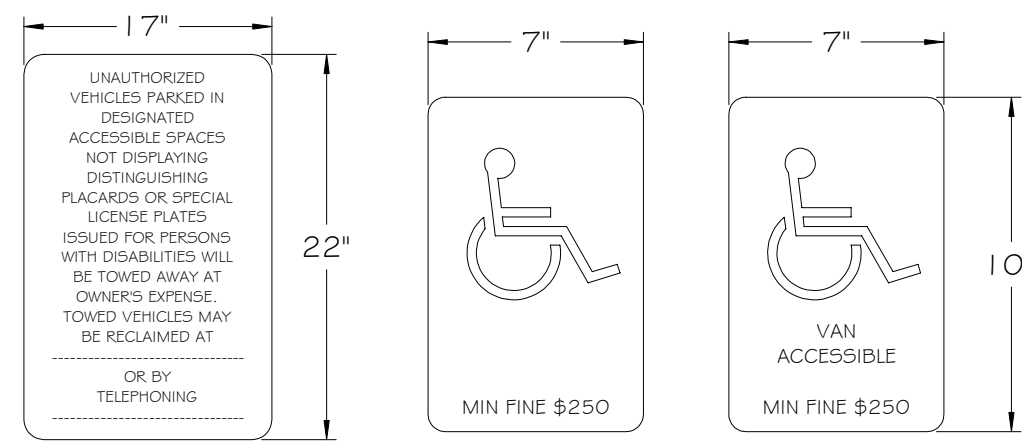
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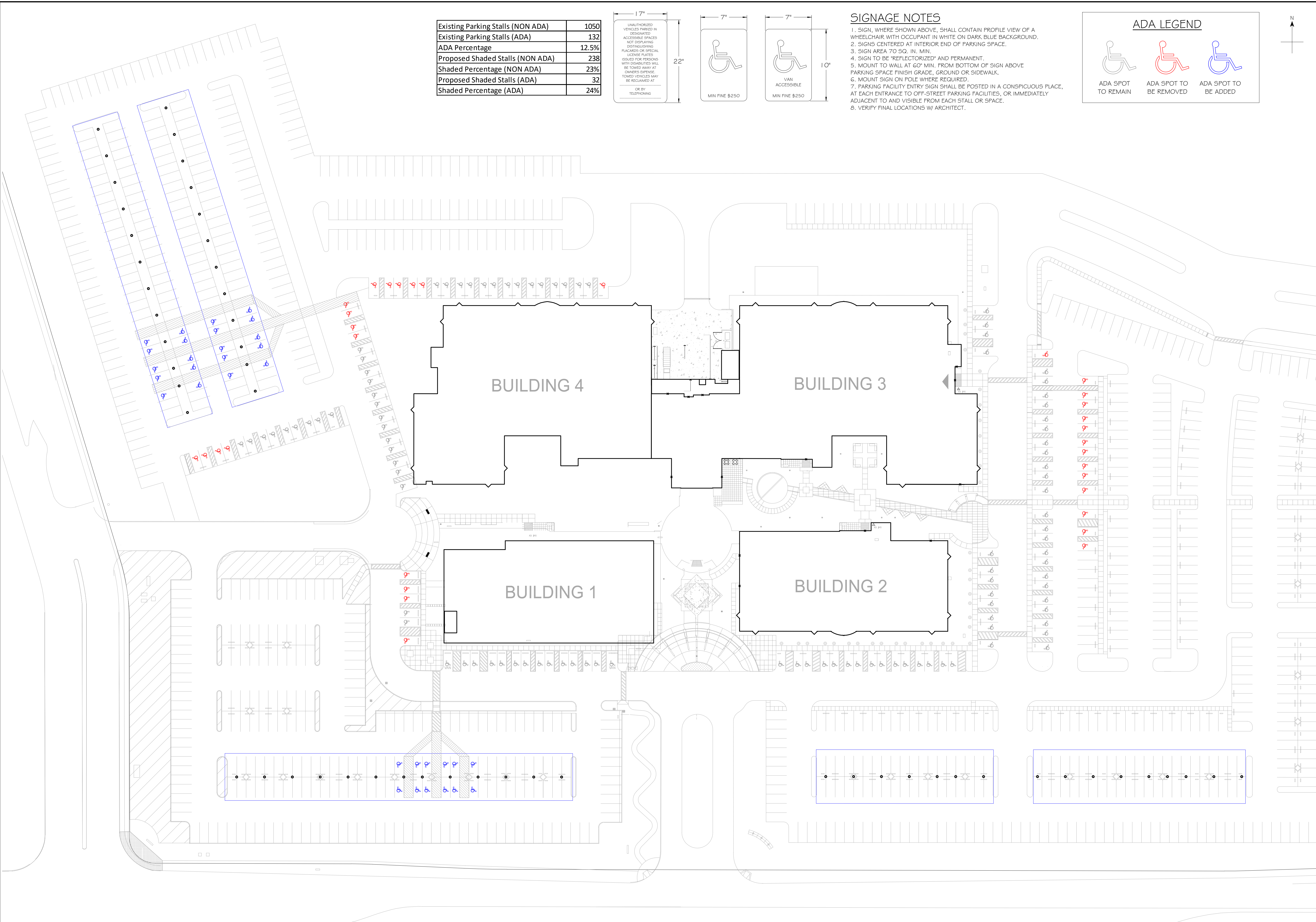
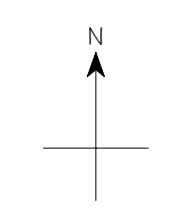
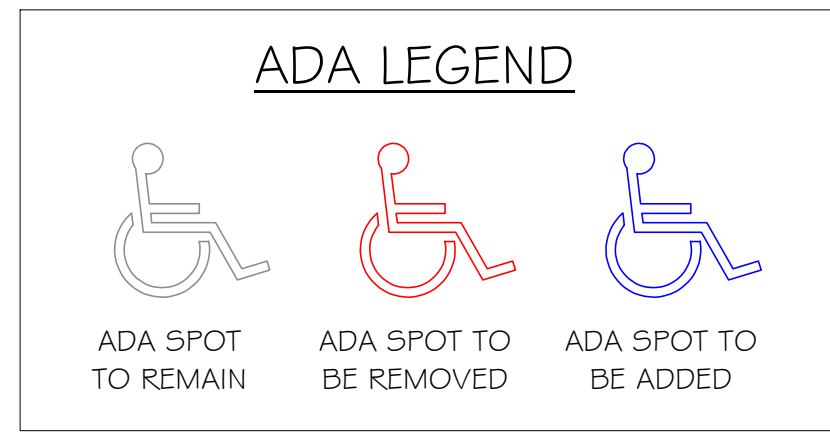


Existing Parking Stalls (NON ADA)	1050
Existing Parking Stalls (ADA)	132
ADA Percentage	12.5%
Proposed Shaded Stalls (NON ADA)	238
Shaded Percentage (NON ADA)	23%
Proposed Shaded Stalls (ADA)	32
Shaded Percentage (ADA)	24%



SIGNAGE NOTES

1. SIGN, WHERE SHOWN ABOVE, SHALL CONTAIN PROFILE VIEW OF A WHEELCHAIR WITH OCCUPANT IN WHITE ON DARK BLUE BACKGROUND.
2. SIGNS CENTERED AT INTERIOR END OF PARKING SPACE.
3. SIGN AREA 70 SQ. IN. MIN.
4. SIGN TO BE "REFLECTORIZED" AND PERMANENT.
5. MOUNT TO WALL AT 60" MIN. FROM BOTTOM OF SIGN ABOVE PARKING SPACE FINISH GRADE, GROUND OR SIDEWALK.
6. MOUNT SIGN ON POLE WHERE REQUIRED.
7. PARKING FACILITY ENTRY SIGN SHALL BE POSTED IN A CONSPICUOUS PLACE, AT EACH ENTRANCE TO OFF-STREET PARKING FACILITIES, OR IMMEDIATELY ADJACENT TO AND VISIBLE FROM EACH STALL OR SPACE.
8. VERIFY FINAL LOCATIONS W/ ARCHITECT.



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Sheet Title:
ADA PLAN

Sheet Number:
A4.0

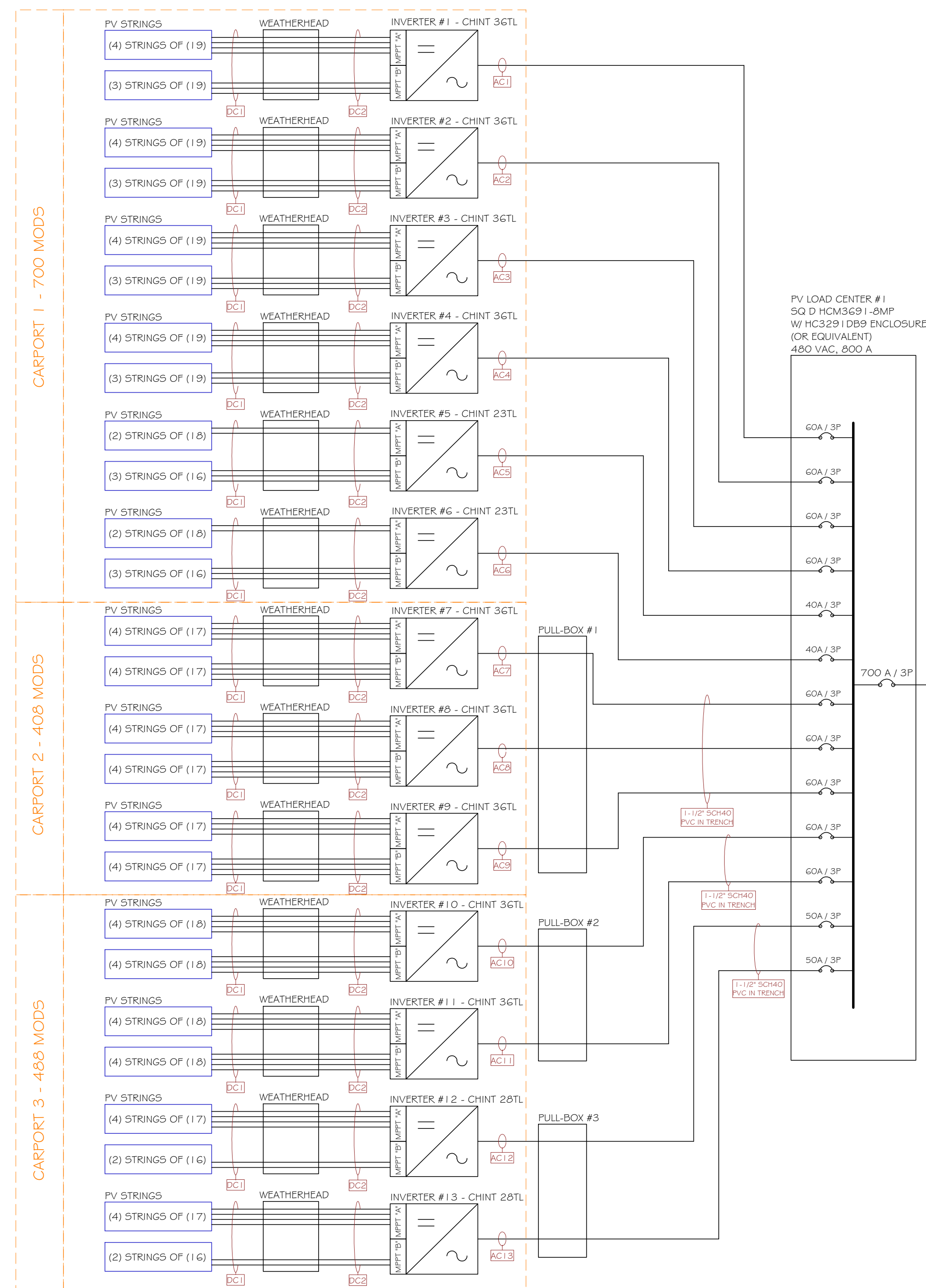
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---- = EQUIP. GROUNDING CONDUCTOR ——— = CIRCUIT CONDUCTOR —|— = FUSE —|— = CIRCUIT BREAKER (N) = NEW EQUIP. (E) = EXISTING EQUIP. L1 = LINE 1 (BROWN) L2 = LINE 2 (ORANGE) L3 = LINE 3 (YELLOW) N = NEUTRAL (WHITE) G = GROUND (GREEN) + = POSITIVE (RED) - = NEGATIVE (BLACK)



PV Module Specifications	
Model Number:	LG LG365N2W-B3
Weight:	44.8 lbs
Dimensions:	77.17 x 39.37 x 1.81 (in)
Module Power @ STC:	365 Watts
Voc (open-circuit Voltage):	48.4 Volts DC
Vmp (max-power Voltage):	38.6 Volts DC
Isc (short-circuit current):	9.89 Amps
Imp (max-power current):	9.46 Amps
Mfr Voc Temp Coefficient:	-0.28 %/°C
UL Max DC Voltage Rating:	1,000 Volts DC

INVERTER TYPE 1 SPECIFICATIONS	
Model Number:	CHINT CPS SCA36KTL-DO/US-480
Power Rating:	36.00 kW AC
Nominal Voltage:	480 Volts AC
Max Output Current:	43.5 Amps
CEC Weighted Efficiency:	98.0%
Max Current MPPT A:	35.0
Maximum DC Voltage:	1000
DC Start Voltage:	330
MPPT Quantity:	2
Inverter Quantity:	9

INVERTER TYPE 2 SPECIFICATIONS	
Model Number:	CHINT CPS SCA28KTL-DO/US-480
Power Rating:	28.00 kW AC
Nominal Voltage:	480 Volts AC
Max Output Current:	33.7 Amps
CEC Weighted Efficiency:	98.0%
Max Current MPPT A:	29.0
Maximum DC Voltage:	1000
DC Start Voltage:	330
MPPT Quantity:	2
Inverter Quantity:	2

INVERTER TYPE 3 SPECIFICATIONS	
Model Number:	CHINT CPS SCA23KTL-DO/US-480
Power Rating:	23.00 kW AC
Nominal Voltage:	480 Volts AC
Max Output Current:	27.7 Amps
CEC Weighted Efficiency:	98.0%
Max Current MPPT A:	25.0
Maximum DC Voltage:	1000
DC Start Voltage:	330
MPPT Quantity:	2
Inverter Quantity:	2

System #1 Array Configuration													
System Power: 582.54 kWstc, 426 kW AC													
Total PV Module Qty: 1596													
Carport ID #:	#1			#2			#3						
Total Module Qty:	700			408			488						
Inverter I.D. #	Inv #1	Inv #2	Inv #3	Inv #4	Inv #5	Inv #6	Inv #7	Inv #8	Inv #9	Inv #10	Inv #11	Inv #12	Inv #13
Inverter AC Power (kW):	36.00	36.00	36.00	36.00	23.00	23.00	36.00	36.00	36.00	36.00	28.00	28.00	
PV Power (kWstc):	48.55	48.55	48.55	48.55	30.66	30.66	49.64	49.64	49.64	52.56	52.56	36.50	36.50
Inverter DC:AC Ratio	1.35	1.35	1.35	1.35	1.33	1.33	1.38	1.38	1.38	1.46	1.46	1.30	1.30
Module Total Qty:	133	133	133	133	84	84	136	136	136	144	144	100	100
MPPT "A"	String Qty:	4	4	4	4	2	2	4	4	4	4	4	4
	String Length:	19	19	19	19	18	18	17	17	17	18	18	17
	Max Open Circuit Voltage	978.8	978.8	978.8	978.8	927.3	927.3	875.8	875.8	875.8	927.3	927.3	875.8
	Operating Voltage:	731.3	731.3	731.3	731.3	692.9	692.9	654.4	654.4	654.4	692.9	692.9	654.4
MPPT "B"	String Qty:	3	3	3	3	3	4	4	4	4	4	2	2
	String Length:	19	19	19	19	16	16	17	17	17	18	18	16
	Max Open Circuit Voltage	978.8	978.8	978.8	978.8	824.3	824.3	875.8	875.8	875.8	927.3	927.3	824.3
	Operating Voltage:	731.3	731.3	731.3	731.3	615.9	615.9	654.4	654.4	654.4	692.9	692.9	615.9

AC Subsystem Summary (PVL1)	
NOMINAL SYSTEM VOLTAGE:	480 Volts AC
MAX CURRENT PER 690.8(A):	505 Amps
MAX CURRENT PER 690.8(B):	631 Amps

PV System Maximum Voltage Calculation per NEC 690.7(A)			
Local Record Low Temp:	2 °C	Data Source:	SAN DIEGO/BROWN FLD
Voc Temp Coefficient	25°C - Record Low Temp.	Voc	Max # of Modules in Series
	0.28%/°C x 23°C + 1 = 1.064	1.064 x 48.4 x 19 =	978.8 Volts DC

WIRE AND CONDUIT SCHEDULE										
TAG	COND QTY	# OF PARALLEL CONDS	COND SIZE	COND TYPE	GND (+NRL) QTY	GND (+NRL) SIZE	GND (+NRL) TYPE	CONDUIT SIZE	CONDUIT TYPE	EST. DIST.
DC1	2/STRING	1	AWG #10	PV-WIRE	1(1)	AWG #10	PV-WIRE	N/A	N/A	5
DC2	16 MAX	1	AWG #10	PV-WIRE	1(1)	AWG #10	PV-WIRE	2"	EMT	50
AC1	3	1	AWG #6	THWN-2	1(1)	AWG #8	THWN-2	3/4"	EMT	50
AC2	3	1	AWG #6	THWN-2	1(1)	AWG #8	THWN-2	3/4"	EMT	30
AC3	3	1	AWG #6	THWN-2	1(1)	AWG #8	THWN-2	3/4"	EMT	30
AC4	3	1	AWG #6	THWN-2	1(1)	AWG #8	THWN-2	3/4"	EMT	10
AC5	3	1	AWG #8	THWN-2	1(1)	AWG #8	THWN-2	3/4"	EMT	30
AC6	3	1	AWG #8	THWN-2	1(1)	AWG #8	THWN-2	3/4"	EMT	30
AC7	3	1	AWG #4	THWN-2						300
AC8	3	1	AWG #4	THWN-2	1(3)	AWG #8	THWN-2	1-1/2"	SCH40 PVC	300
AC10	3	1	AWG #4	THWN-2						330
AC11	3	1	AWG #4	THWN-2	1(2)	AWG #8	THWN-2	1-1/2"	SCH40 PVC	500
AC12	3	1	AWG #4	THWN-2						530
AC13	3	1	AWG #4	THWN-2	1(2)	AWG #8	THWN-2	1-1/2"	SCH40 PVC	530

Project: SAN MARCOS, CA 92078

Project Details: 1080.40 kWstc, 783.0 kW AC

Engineering Approval:

REVISIONS		
DESCRIPTION	DATE	REV
30% COMPLETION	1/02/2015	A
100% COMPLETION	2/12/2016	B

TAG	CIRCUIT ORIGIN	CIRCUIT DESTINATION	CONDUCTOR SPECIFICATIONS			REQUIRED CONDUCTOR AMPACITY			AMPACITY CHECK #1		CONDUCTOR TEMPERATURE DERATING				CONDUIT FILL DERATING		CORRECTED AMPACITY CALCULATION			AMPACITY CHECK #2		VOLTAGE DROP						
			MATERIAL	TEMP. RATING	TRADE SIZE	AMPACITY @ 30°C PER 310.15(B)(16)	MAX CURRENT PER 690.8(A)(1)	Isc	# OF PARALLEL STRINGS	MAX CURRENT PER 690.8(A)(1)	125% PER 690.8(B)(2)(a)	MAX CURRENT PER 690.8(B)(2)(a)	CIRCUIT ENVIRONMENT	LOCAL 2% AVG. HIGH TEMP (°C)	HEIGHT ABOVE ROOF (in)	TEMP. ADDER PER 310.15(B)(3)(c)	OPERATING TEMP (°C)	AMPACITY CORRECTION PER 310.15(B)(2)(a)	# OF UNGROUNDED CONDUCTORS	AMPACITY CORRECTION PER 310.15(B)(3)(a)	CONDUCTOR AMPACITY	TEMP DERATE	CONDUIT FILL DERATE	DERATED CONDUCTOR AMPACITY	MAX CURRENT PER 690.8(A)(1)	DERATED CONDUCTOR AMPACITY	EST. ONE-WAY DISTANCE	VOLTAGE DROP
DC1	PV STRING	JUNCTION BOX	COPPER	90°C	AWG #10	40 Amps	1.25	9.89	1	12.4 Amps	1.25	15.5 Amps	15.5 Amps < 40.0 Amps	OUTDOORS, SHADED (+10°C)	26	-	N/A	41	0.87	N/A	1.00	40	0.87	1.00	34.8 Amps	12.4 Amps < 34.8 Amps	50 ft	0.02%
DC2	JUNCTION BOX	INVERTER	COPPER	75°C	AWG #10	35 Amps	1.25	9.89	1	12.4 Amps	1.25	15.5 Amps	15.5 Amps < 35.0 Amps	OUTDOORS, SHADED (+10°C)	26	-	N/A	36	0.88	16	0.50	35	0.88	0.50	15.4 Amps	12.4 Amps < 15.4 Amps	50 ft	0.20%
AC1	INVERTER #1	PV LOAD CENTER 1	COPPER	75°C	AWG #6	65 Amps	43.5	1	1	43.5 Amps	1.25	54.4 Amps	54.4 Amps < 65 Amps	OUTDOORS, SHADED (+10°C)	26	36	0.91	3	1.00	65	0.91	1.00	59.2 Amps	43.5 Amps < 59.2 Amps	50 ft	0.38%		
AC2	INVERTER #2	PV LOAD CENTER 1	COPPER	75°C	AWG #6	65 Amps	43.5	1	1	43.5 Amps	1.25	54.4 Amps	54.4 Amps < 65 Amps	OUTDOORS, SHADED (+10°C)	26	36	0.91	3	1.00	65	0.91	1.00	59.2 Amps	43.5 Amps < 59.2 Amps	30 ft	0.23%		
AC3	INVERTER #3	PV LOAD CENTER 1	COPPER	75°C	AWG #6	65 Amps	43.5	1	1	43.5 Amps	1.25	54.4 Amps	54.4 Amps < 65 Amps	OUTDOORS, SHADED (+10°C)	26	36	0.91	3	1.00	65	0.91	1.00	59.2 Amps	43.5 Amps < 59.2 Amps	30 ft	0.23%		
AC4	INVERTER #4	PV LOAD CENTER 1	COPPER	75°C	AWG #6	65 Amps	43.5	1	1	43.5 Amps	1.25	54.4 Amps	54.4 Amps < 65 Amps	OUTDOORS, SHADED (+10°C)	26	36	0.91	3	1.00	65	0.91	1.00	59.2 Amps	43.5 Amps < 59.2 Amps	10 ft	0.08%		
AC5	INVERTER #5	PV LOAD CENTER 1	COPPER	75°C	AWG #8	50 Amps	27.7	1	1	27.7 Amps	1.25	34.6 Amps	34.6 Amps < 50 Amps	OUTDOORS, SHADED (+10°C)	26	36	0.91	3	1.00	50	0.91	1.00	45.5 Amps	27.7 Amps < 45.5 Amps	30 ft	0.23%		
AC6	INVERTER #6	PV LOAD CENTER 1	COPPER	75°C	AWG #8	50 Amps	27.7	1	1	27.7 Amps	1.25	34.6 Amps	34.6 Amps < 50 Amps	OUTDOORS, SHADED (+10°C)	26	36	0.91	3	1.00	50	0.91	1.00	45.5 Amps	27.7 Amps < 45.5 Amps	30 ft	0.23%		
AC7	INVERTER #7	PV LOAD CENTER 1	COPPER	75°C	AWG #4	85 Amps	43.5	1	1	43.5 Amps	1.25	54.4 Amps	54.4 Amps < 85 Amps	UNDERGROUND (+0°C)	26	26	1	9	0.70	85	1	0.70	59.5 Amps	43.5 Amps < 59.5 Amps	300 ft	1.46%		
AC8	INVERTER #8	PV LOAD CENTER 1	COPPER	75°C	AWG #4	85 Amps	43.5	1	1	43.5 Amps	1.25	54.4 Amps	54.4 Amps < 85 Amps	UNDERGROUND (+0°C)	26	26	1	9	0.70	85	1	0.70	59.5 Amps	43.5 Amps < 59.5 Amps	300 ft	1.46%		
AC9	INVERTER #9	PV LOAD CENTER 1	COPPER	75°C	AWG #4	85 Amps	43.5	1	1	43.5 Amps	1.25	54.4 Amps	54.4 Amps < 85 Amps	UNDERGROUND (+0°C)	26	26	1	9	0.70	85	1	0.70	59.5 Amps	43.5 Amps < 59.5 Amps	300 ft	1.61%		
AC10	INVERTER #10	PV LOAD CENTER 1	COPPER	75°C	AWG #4	85 Amps	43.5	1	1	43.5 Amps	1.25	54.4 Amps	54.4 Amps < 85 Amps	UNDERGROUND (+0°C)	26	26	1	6	0.80	85	1	0.80	68 Amps	43.5 Amps < 68.0 Amps	500 ft	2.43%		
AC11	INVERTER #11	PV LOAD CENTER 1	COPPER	75°C	AWG #4	85 Amps	43.5	1	1	43.5 Amps	1.25	54.4 Amps	54.4 Amps < 85 Amps	UNDERGROUND (+0°C)	26	26	1	6	0.80	85	1	0.80	68 Amps	43.5 Amps < 68.0 Amps	500 ft	2.43%		
AC12	INVERTER #12	PV LOAD CENTER 1	COPPER	75°C	AWG #4	85 Amps	33.7	1	1	33.7 Amps	1.25	42.1 Amps	42.1 Amps < 85 Amps	UNDERGROUND (+0°C)	26	26	1	6	0.80	85	1	0.80	68 Amps	33.7 Amps < 68.0 Amps	530 ft	2.00%		
AC13	INVERTER #13	PV LOAD CENTER 1	COPPER	75°C	AWG #4	85 Amps	33.7	1	1	33.7 Amps	1.25	42.1 Amps	42.1 Amps < 85 Amps	UNDERGROUND (+0°C)	26	26	1	6	0.80	85	1	0.80	68 Amps	33.7 Amps < 68.0 Amps	530 ft	2.00%		

Sheet Title: ELECTRICAL SINGLE-LINE #1

Sheet Number: E1.0

Sheet Size: ARCH D - 36" x 24"

DESIGN & DRAFTING BY: RICHARD DOBBINS
PV-102216-01.1268

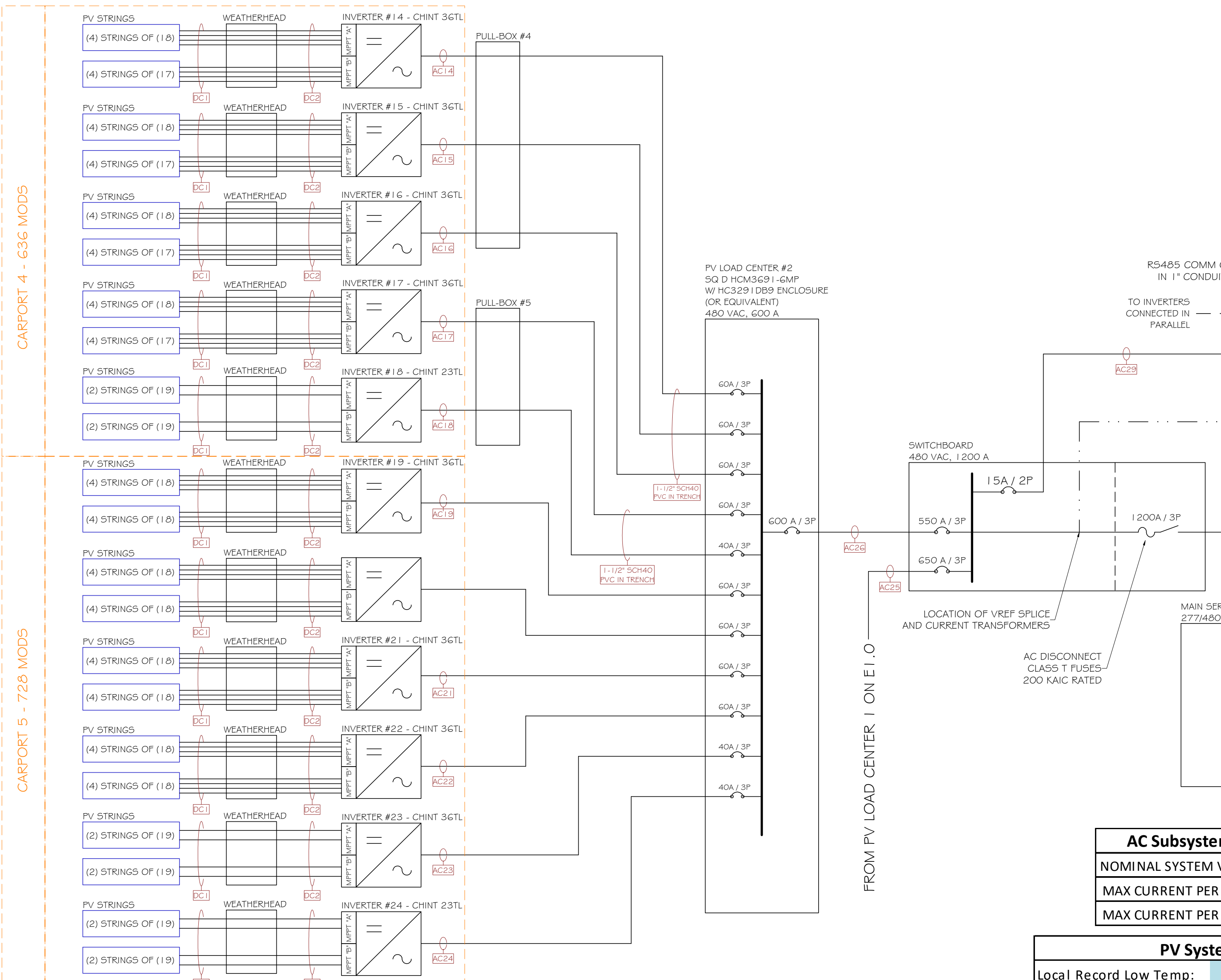
SepiSolar POWER BY DESIGN

Reviewed & Approved by: JH

---- = EQUIP. GROUNDING CONDUCTOR --- = CIRCUIT CONDUCTOR [Symbol] = FUSE [Symbol] = CIRCUIT BREAKER (N) = NEW EQUIP. (E) = EXISTING EQUIP. L1 = LINE 1 (BROWN) L2 = LINE 2 (ORANGE) L3 = LINE 3 (YELLOW) N = NEUTRAL (WHITE) G = GROUND (GREEN) + = POSITIVE (RED) - = NEGATIVE (BLACK)

CARPOT 4 - 636 MODS

CARPOT 5 - 728 MODS



PV Module Specifications	
Model Number:	LG LG365N2W-B3
Weight:	44.8 lbs
Dimensions:	77.17 x 39.37 x 1.81 (in)
Module Power @ STC:	365 Watts
Voc (open-circuit Voltage):	48.4 Volts DC
Vmp (max-power Voltage):	38.6 Volts DC
Isc (short-circuit current):	9.89 Amps
Imp (max-power current):	9.46 Amps
Mfr Voc Temp Coefficient:	-0.28 %/°C
UL Max DC Voltage Rating:	1,000 Volts DC

INVERTER TYPE 1 SPECIFICATIONS	
Model Number:	CHINT CPS SCA36KTL-DO/US-480
Power Rating:	36.00 kW AC
Nominal Voltage:	480 Volts AC
Max Output Current:	43.5 Amps
CEC Weighted Efficiency:	98.0%
Max Current MPPT A:	35.0
Max Current MPPT B:	35.0
Maximum DC Voltage:	1000
DC Start Voltage:	330
MPPT Quantity:	2
Inverter Quantity:	8

INVERTER TYPE 3 SPECIFICATIONS	
Model Number:	CHINT CPS SCA23KTL-DO/US-480
Power Rating:	23.00 kW AC
Nominal Voltage:	480 Volts AC
Max Output Current:	27.7 Amps
CEC Weighted Efficiency:	98.0%
Max Current MPPT A:	25.0
Max Current MPPT B:	25.0
Maximum DC Voltage:	1000
DC Start Voltage:	330
MPPT Quantity:	2
Inverter Quantity:	3

System #2 Array Configuration											
System Power: 497.86 kWstc, 357 kW AC											
Total PV Module Qty: 1364											
Carport ID #:	#4						#5				
Total Module Qty:	636						728				
Inverter I.D. #:	inv #14	inv #15	inv #16	inv #17	inv #18	inv #19	inv #20	inv #21	inv #22	inv #23	inv #24
Inverter AC Power (kW):	36.00	36.00	36.00	36.00	23.00	36.00	36.00	36.00	36.00	23.00	23.00
PV Power (kWstc):	51.10	51.10	51.10	51.10	27.74	52.56	52.56	52.56	52.56	27.74	27.74
Inverter DC:AC Ratio	1.42	1.42	1.42	1.42	1.21	1.46	1.46	1.46	1.46	1.21	1.21
Module Total Qty:	140	140	140	140	76	144	144	144	76	76	
String Qty:	4	4	4	4	2	4	4	4	4	2	2
String Length:	18	18	18	18	19	18	18	18	18	19	19
Max Open Circuit Voltage	927.3	927.3	927.3	927.3	978.8	927.3	927.3	927.3	927.3	978.8	978.8
Operating Voltage	692.9	692.9	692.9	692.9	731.3	692.9	692.9	692.9	692.9	731.3	731.3
Max Short Circuit Current	49.5	49.5	49.5	49.5	24.7	49.5	49.5	49.5	49.5	24.7	24.7
Operating Current	37.8	37.8	37.8	37.8	18.9	37.8	37.8	37.8	37.8	18.9	18.9
String Qty:	4	4	4	4	2	4	4	4	4	2	2
String Length:	17	17	17	17	19	18	18	18	18	19	19
Max Open Circuit Voltage	875.8	875.8	875.8	875.8	978.8	927.3	927.3	927.3	927.3	978.8	978.8
Operating Voltage	654.4	654.4	654.4	654.4	731.3	692.9	692.9	692.9	692.9	731.3	731.3
Max Short Circuit Current	49.5	49.5	49.5	49.5	24.7	49.5	49.5	49.5	49.5	24.7	24.7
Operating Current	37.8	37.8	37.8	37.8	18.9	37.8	37.8	37.8	37.8	18.9	18.9

AC Subsystem Summary (PVLC 2)		AC Total System Summary	
NOMINAL SYSTEM VOLTAGE:	480 Volts AC	NOMINAL SYSTEM VOLTAGE:	480 Volts AC
MAX CURRENT PER 690.8(A):	431 Amps	MAX CURRENT PER 690.8(A):	936 Amps
MAX CURRENT PER 690.8(B):	539 Amps	MAX CURRENT PER 690.8(B):	1170 Amps

PV System Maximum Voltage Calculation per NEC 690.7(A)			
Local Record Low Temp:	2 °C	Data Source: SAN DIEGO/BROWN FLD	
Voc Temp Coefficient	25°C - Record Low Temp.	Voc Correction Factor	Max # of Modules in Series
x	+1	x	
	=		
1.028%/°C	x 23°C	+1	= 1.064
		1.064	x 48.4 x 19 = 978.8 Volts DC

* AC27 IS A PAIR OF 4" CONDUITS EACH CARRYING HALF OF THE TOTAL NUMBER OF CONDUCTORS, WITH A TOTAL OF 14 CONDUCTORS (4 SETS OF 3 CURRENT CARRYING CONDUCTORS, PLUS 1 NEUTRAL AND 1 GROUND) IN AC28, EACH 4" CONDUIT CONTAINS 7 CONDUCTORS. SEE DETAILS 2 # 3 ON PAGE A2.2 FOR ELECTRICAL ROOM CONDUIT ROUTING DETAIL.

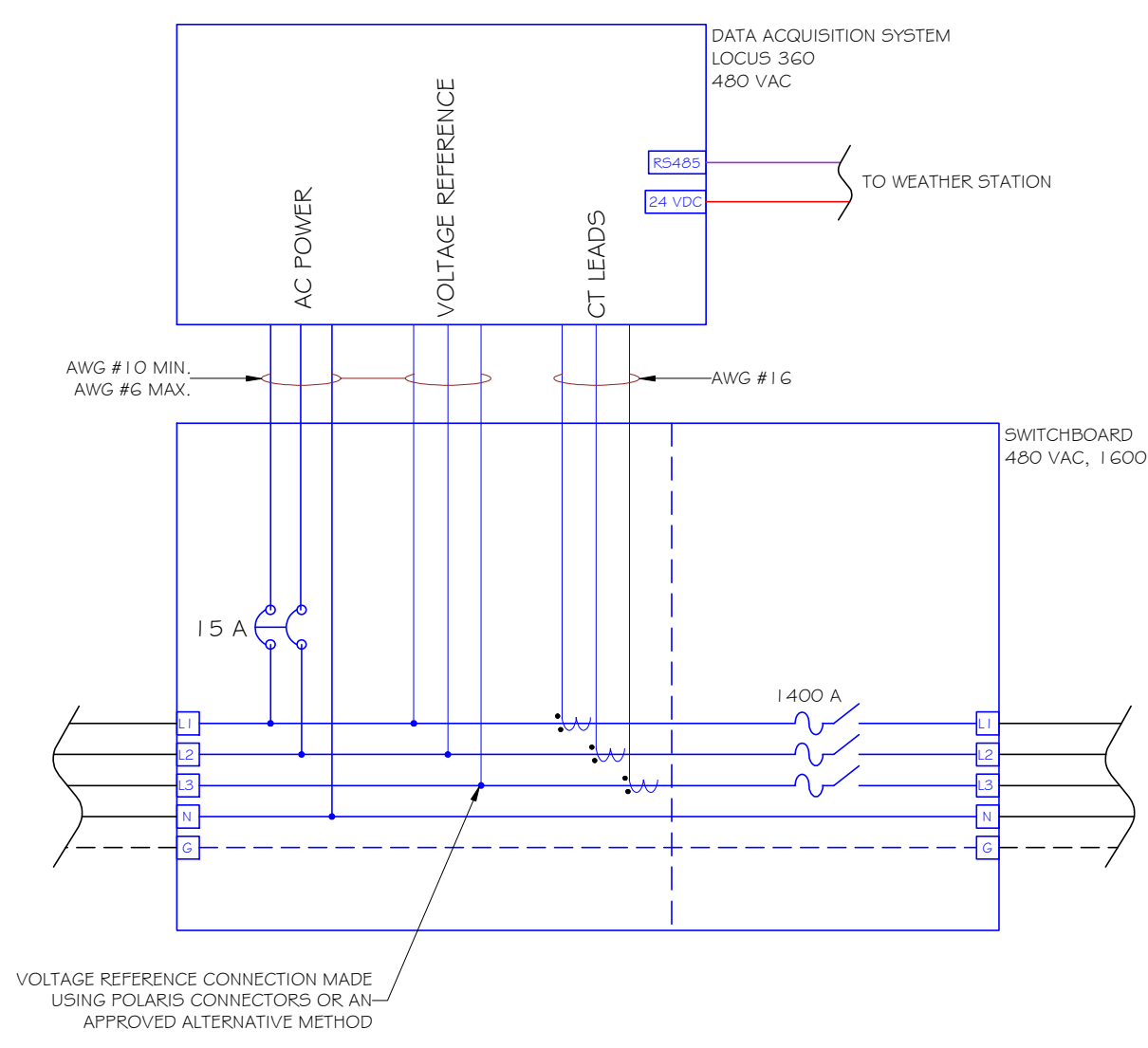
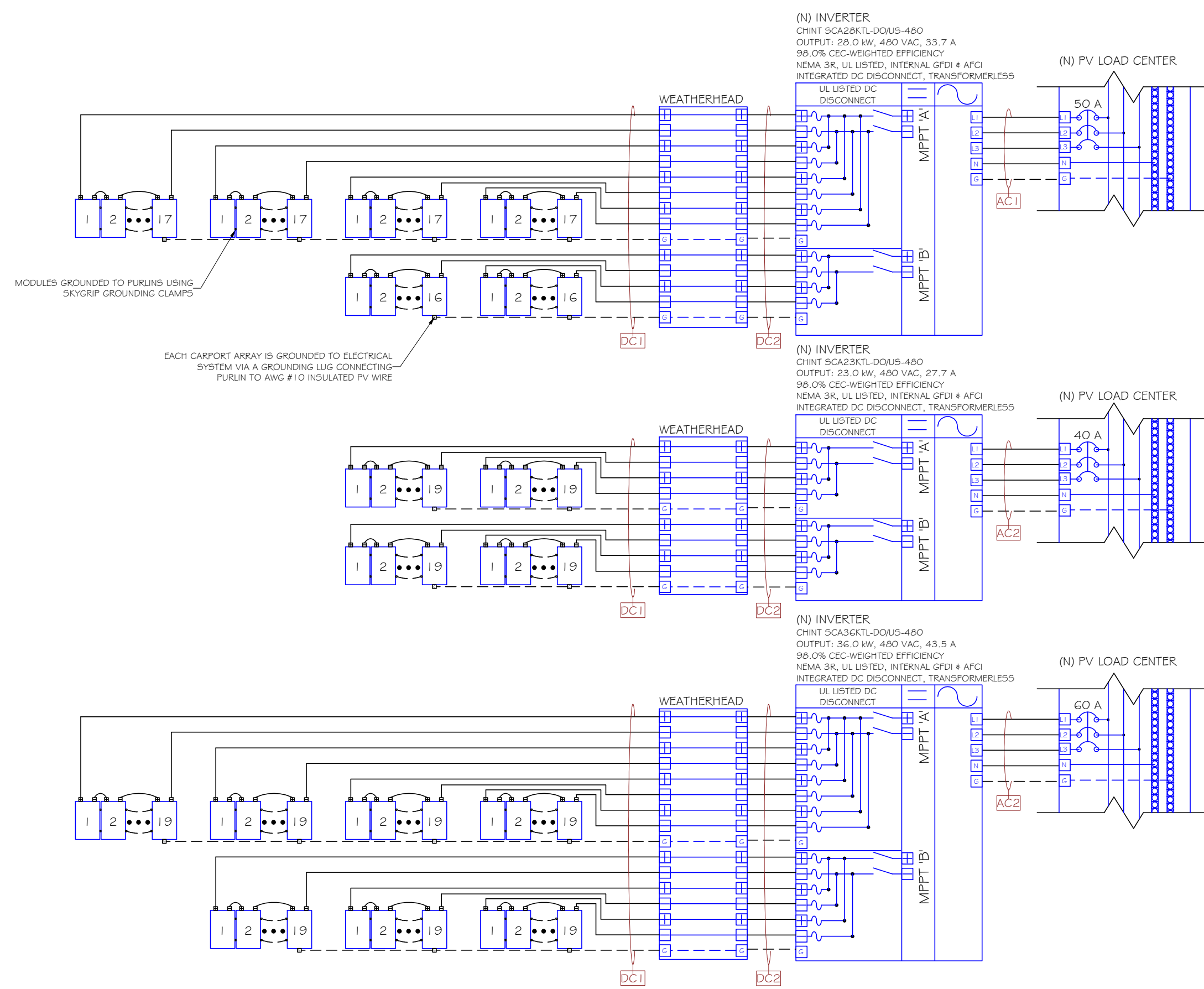
WIRE AND CONDUIT SCHEDULE										
TAG	COND QTY	# OF PARALLEL SETS	COND SIZE	COND TYPE	GND (+NRL) QTY	GND (+NRL) SIZE	GND (+NRL) TYPE	CONDUIT SIZE	CONDUIT TYPE	EST. DIST.
DC1	2/STRING	1	AWG #10	PV-WIRE	1	AWG #10	PV-WIRE	N/A	N/A	5
DC2	16 MAX	1	AWG #10	PV-WIRE	1	AWG #10	PV-WIRE	1-1/4"	EMT	50
AC14	3	1	AWG #6	THWN-2						70
AC15	3	1	AWG #6	THWN-2	1(3)	AWG #8	THWN-2	1-1/2"	SCH40 PVC	70
AC16	3	1	AWG #6	THWN-2						100
AC17	3	1	AWG #6	THWN-2						100
AC18	3	1	AWG #8	THWN-2	1(3)	AWG #8	THWN-2	1-1/2"	SCH40 PVC	120
AC19	3	1	AWG #6	THWN-2						70
AC20	3	1	AWG #6	THWN-2	1(1)	AWG #8	THWN-2	3/4"	EMT	50
AC21	3	1	AWG #6	THWN-2	1(1)	AWG #8	THWN-2	3/4"	EMT	50
AC22	3	1	AWG #6	THWN-2	1(1)	AWG #8	THWN-2	3/4"	EMT	30
AC23	3	1	AWG #8	THWN-2	1(1)	AWG #8	THWN-2	3/4"	EMT	30
AC24	3	1	AWG #8	THWN-2	1(1)	AWG #8	THWN-2	3/4"	EMT	30
AC25	9	3	250 kcmil	THWN-2	1(1)	AWG #10	THWN-2	4"	SCH40 PVC	200
AC26	6	2	350 kcmil	THWN-2	1(1)	AWG #10	THWN-2	3"	SCH40 PVC	300
AC27*	12	4	350 kcmil	THWN-2	1(1)	AWG #10	THWN-2	4"	SCH40 PVC	10
AC28	2	1	AWG #10	THWN-2	1(1)	AWG #8	THWN-2	1"		25

TAG	CIRCUIT ORIGIN	CIRCUIT DESTINATION	CONDUCTOR SPECIFICATIONS				REQUIRED CONDUCTOR AMPACITY				AMPACITY CHECK #1		CONDUCTOR TEMPERATURE DERATING				CONDUIT FILL DERATING		CORRECTED AMPACITY CALCULATION			AMPACITY CHECK #2		VOLTAGE DROP		
			MATERIAL	TEMP. RATING	TRADE SIZE	AMPACITY @ 30°C PER 310.15(B)(16)	MAX CURRENT PER 690.8(A)(1)	Isc (Amps)	# OF STRINGS	MAX CURRENT PER 690.8(B)(2)(a)	125% PER 690.8(B)(2)(a)	MAX CURRENT PER 690.8(B)(2)(a)	MAX CURRENT PER 690.8(B)(2)(a)	CIRCUIT ENVIRONMENT	LOCAL 2% AVG. HIGH TEMP (°C)	HEIGHT ABOVE ROOF (in)	TEMP. ADDE PER 310.15(B)(3)(c)	OPERATING TEMP (°C)	AMPACITY CORRECTION 310.15(B)(2)(a)	# OF UNGROUNDED CONDUCTORS	AMPACITY CORRECTION 310.15(B)(3)(a)	AMPACITY x	TEMP DERATE	CONDUIT FILL DERATE	DERATED CONDUCTOR AMPACITY	MAX CURRENT PER 690.8(A)(1)
DC1	PV STRING	JUNCTION BOX	COPPER	90°C	AWG #10	40 Amps	1.25	x 9.89	x 1 = 12.4 Amps	x 1.25 = 15.5 Amps	15.5 Amps < 40.0 Amps	FREE AIR (+15°C)	26	-	N/A	41	0.87	N/A	1.00	40	x 0.87	x 1.00 = 34.8 Amps	12.4 Amps < 34.8 Amps	5 ft	0.02%	
DC2	JUNCTION BOX	INVERTER	COPPER	75°C	AWG #10	35 Amps	1.25	x 9.89	x 1 = 12.4 Amps	x 1.25 = 15.5 Amps	15.5 Amps < 35.0 Amps	OUTDOORS, SHADED (+10°C)	26	-	N/A	36	0.88	16	0.50	35	x 0.88	x 0.50 = 15.4 Amps	12.4 Amps < 15.4 Amps	50 ft	0.17%	

TAG	CIRCUIT ORIGIN	CIRCUIT DESTINATION	CONDUCTOR SPECIFICATIONS				REQUIRED CONDUCTOR AMPACITY				AMPACITY CHECK #1		CONDUCTOR TEMPERATURE DERATING				CONDUIT FILL DERATING		CORRECTED AMPACITY CALCULATION			AMPACITY CHECK #2		VOLTAGE DROP	
			MATERIAL	TEMP. RATING	# OF PARALLEL CONDS	TRADE SIZE	AMPACITY @ 30°C PER 310.15(B)(16)	INVERTER OUTPUT CURRENT	# OF INVERTERS	MAX CURRENT PER 690.8(A)(3)	125% PER 690.8(B)(2)(a)	MAX CURRENT PER 690.8(B)(2)(a)	MAX CURRENT PER 690.8(B)(2)(a)	CIRCUIT ENVIRONMENT	LOCAL 2% AVG. HIGH TEMP (°C)	EXPECTED OPERATING TEMP (°C)	AMPACITY CORRECTION 310.15(B)(2)(a)	# OF UNGROUNDED CONDUCTORS	AMPACITY CORRECTION 310.15(B)(3)(a)	CONDUCTOR AMPACITY x	TEMP DERATE	CONDUIT FILL DERATE	DERATED CORRECTED AMPACITY	MAX CURRENT PER 690.8(A)(3)	DERATED CONDUCTOR AMPACITY
AC14	INVERTER #14	PV LOAD CENTER 2	COPPER	75°C	1	AWG #6	65 Amps	43.5	x 1 = 43.5 Amps	x 1.25 = 54.4 Amps	54.4 Amps < 65 Amps	UNDERGROUND (+0°C)	26	26	1	9	0.70	65	x 1	x 0.70 = 45.5 Amps	43.5 Amps < 45.5 Amps	70 ft	0.54%		
AC15	INVERTER #15	PV LOAD CENTER 2	COPPER	75°C	1	AWG #6	65 Amps	43.5	x 1 = 43.5 Amps	x 1.25 = 54.4 Amps	54.4 Amps < 65 Amps	UNDERGROUND (+0°C)	26	26	1	9	0.70	65	x 1	x 0.70 = 45.5 Amps	43.5 Amps < 45.5 Amps	70 ft	0.54%		
AC16	INVERTER #16	PV LOAD CENTER 2	COPPER	75°C	1	AWG #6	65 Amps	43.5	x 1 = 43.5 Amps	x 1.25 = 54.4 Amps	54.4 Amps < 65 Amps	UNDERGROUND (+0°C)	26	26	1	9	0.70	65	x 1	x 0.70 = 45.5 Amps	43.5 Amps < 45.5 Amps	100 ft	0.77%		
AC17	INVERTER #17	PV LOAD CENTER 2	COPPER	75°C	1	AWG #6	65 Amps	43.5	x 1 = 43.5 Amps	x 1.25 = 54.4 Amps	54.4 Amps < 65 Amps	UNDERGROUND (+0°C)	26	26	1	6	0.80	65	x 1	x 0.80 = 52 Amps	43.5 Amps < 52 Amps	100 ft	0.77%		
AC18	INVERTER #18	PV LOAD CENTER 2	COPPER	75°C	1	AWG #8	50 Amps	27.7	x 1 = 27.7 Amps	x 1.25 = 34.6 Amps	34.6 Amps < 50 Amps	UNDERGROUND (+0°C)	26	26	1	6	0.80	50	x 1	x 0.80 = 40 Amps	27.7 Amps < 40 Amps	120 ft	0.94%		
AC19	INVERTER #19	PV LOAD CENTER 2	COPPER	75°C	1	AWG #6	65 Amps	43.5	x 1 = 43.5 Amps	x 1.25 = 54.4 Amps	54.4 Amps < 65 Amps	OUTDOORS, SHADED (+10°C)	26	36	0.91	3	1.00	65	x 0.91	x 1.00 = 59.2 Amps	43.5 Amps < 59.2 Amps	70 ft	0.54%		
AC20	INVERTER #20	PV LOAD CENTER 2	COPPER	75°C	1	AWG #6	65 Amps	43.5	x 1 = 43.5 Amps	x 1.25 = 54.4 Amps	54.4 Amps < 65 Amps	OUTDOORS, SHADED (+10°C)	26	36	0.91	3	1.00	65	x 0.91	x 1.00 = 59.2 Amps	43.5 Amps < 59.2 Amps	50 ft	0.38%		
AC21	INVERTER #21	PV LOAD CENTER 2	COPPER	75°C	1	AWG #6	65 Amps	43.5	x 1 = 43.5 Amps	x 1.25 = 54.4 Amps	54.4 Amps < 65 Amps	OUTDOORS, SHADED (+10°C)	26	36	0.91	3	1.00	65	x 0.91	x 1.00 = 59.2 Amps	43.5 Amps < 59.2 Amps	50 ft	0.38%		
AC22	INVERTER #22	PV LOAD CENTER 2	COPPER	75°C	1	AWG #6	65 Amps	43.5	x 1 = 43.5 Amps	x 1.25 = 54.4 Amps	54.4 Amps < 65 Amps	OUTDOORS, SHADED (+10°C)	26	36	0.91	3	1.00	65	x 0.91	x 1.00 = 59.2 Amps	43.5 Amps < 59.2 Amps	30 ft	0.23%		
AC23	INVERTER #23	PV LOAD CENTER 2	COPPER	75°C	1	AWG #8	50 Amps	27.7	x 1 = 27.7 Amps	x 1.25 = 34.6 Amps	34.6 Amps < 50 Amps	OUTDOORS, SHADED (+10°C)	26	36	0.91	3	1.00	50	x 0.91	x 1.00 = 45.5 Amps	27.7 Amps < 45.5 Amps	30 ft	0.23%		
AC24	INVERTER #24	PV LOAD CENTER 2	COPPER	75°C	1	AWG #8	50 Amps	27.7	x 1 = 27.7 Amps	x 1.25 = 34.6 Amps	34.6 Amps < 50 Amps	OUTDOORS, SHADED (+10°C)	26	36	0.91	3	1.00	50	x 0.91	x 1.00 = 45.5 Amps	27.7 Amps < 45.5 Amps	30 ft	0.23%		
AC25	PV LOAD CENTER 1	AC DISCONNECT	COPPER	75°C	3	250 kcmil	765 Amps	505.0	= 505.0 Amps	x 1.25 = 631.3 Amps	631.3 Amps < 765 Amps	UNDERGROUND (+0°C)	26	26	1	9	0.70	765	x 1	x 0.70 = 535.5 Amps	505.0 Amps < 535.5 Amps	200 ft	0.69%		
AC26	PV LOAD CENTER 2	AC DISCONNECT	COPPER	75°C	2	350 kcmil	620 Amps	431.0	= 431.0 Amps	x 1.25 = 538.8 Amps	538.8 Amps < 620 Amps	UNDERGROUND (+0°C)	26	26	1	6	0.80	620	x 1	x 0.80 = 496 Amps	431.0 Amps < 496.0 Amps	300 ft	1.00%		
AC27	AC DISCONNECT	TAP ON BUS BARS	COPPER	75°C	4	350 kcmil	1240 Amps	936.0	= 936.0 Amps	x 1.25 = 1170.0 Amps	1170.0 Amps < 1240 Amps	INDOORS (+0°C)	26	26	1	6	0.80	1240	x 1	x 0.80 = 992 Amps	936.0 Amps < 992.0 Amps	10 ft	0.04%		
AC28	AC DISCONNECT	DAS	COPPER	75°C	1	AWG #10	35 Amps	10.0	x 1 = 10.0 Amps	x 1.25 = 12.5 Amps	12.5 Amps < 35 Amps	UNDERGROUND (+0°C)	26	26	1	3	1.00	35	x 1	x 1.00 = 35 Amps	10.0 Amps < 35.0 Amps	25 ft	0.11%		

Project: SAN MARCOS, CA 92078

---- = EQUIP. GROUNDING CONDUCTOR ——— = CIRCUIT CONDUCTOR —|— = FUSE —|— = CIRCUIT BREAKER (N) = NEW EQUIP. (E) = EXISTING EQUIP. L1 = LINE 1 (BROWN) L2 = LINE 2 (ORANGE) L3 = LINE 3 (YELLOW) N = NEUTRAL (WHITE) G = GROUND (GREEN) + = POSITIVE (RED) - = NEGATIVE (BLACK)



* STRING LENGTHS VARY, SEE E.I.0 & E.I.1 FOR DETAILS

SAMPLE 3-LINE SECTIONS 1 DAS DIAGRAM 2

WARNING
ELECTRIC SHOCK HAZARD.
DO NOT TOUCH
TERMINALS. TERMINALS ON
BOTH THE LINE AND LOAD
SIDES MAY BE ENERGIZED
IN THE OPEN POSITION.

PHOTOVOLTAIC POWER SOURCE

**THIS ELECTRIC SERVICE IS
ALSO SERVED BY A
PHOTOVOLTAIC SYSTEM**

WARNING
INVERTER OUTPUT
CONNECTION. DO NOT
RELOCATE THIS
OVERCURRENT DEVICE

SOLAR AC DISCONNECT

SOLAR DC DISCONNECT

WARNING
IF A GROUND FAULT IS
INDICATED, THE NORMALLY
GROUNDED CONDUCTORS
MAY BE ENERGIZED AND
UNGROUNDED.

**WARNING: PHOTOVOLTAIC
POWER SOURCE**

SIGNAGE REQUIREMENTS
1.) RED BACKGROUND
2.) WHITE LETTERING
3.) MIN. 3/16" LETTER HEIGHT
4.) ALL CAPITAL LETTERS
5.) ARIAL OR SIMILAR FONT
6.) WEATHER RESISTANT
MATERIAL, PER UL 969

REQD BY: NEC 690.17 1 APPLY TO: DISCONNECTS, PV LOAD CENTERS, COMBINER BOXES

REQD BY: NEC 690.31(E)(3) 2 APPLY TO: EXPOSED RACEWAYS, CABLE TRAYS, COVERS OR ENCLOSURES OF JUNCTION BOXES, CONDUIT BODY W/ AVAILABLE CONDUIT OPENING

REQD BY: NEC 705.12(D)(4) 3 APPLY TO: MAIN SERVICE PANEL

REQD BY: NEC 705.12(D)(7) 4 APPLY TO: PV SYSTEM BREAKER

REQD BY: NEC 690.14(C)(2) 5 APPLY TO: PV SYSTEM AC DISCONNECTS

REQD BY: NEC 690.13(B) 6 APPLY TO: PV SYSTEM DC DISCONNECTS

REQD BY: NEC 690.5(C) 7 APPLY TO: INVERTER

REQD BY: CRC R33.1.7 8 APPLY TO: MAIN SERVICE DISCONNECT

PHOTOVOLTAIC SYSTEM DISCONNECT
AC CURRENT: 643 A
VOLTAGE: 480 VAC

PHOTOVOLTAIC SYSTEM DISCONNECT
AC CURRENT: 574 A
VOLTAGE: 480 VAC

PHOTOVOLTAIC SYSTEM DISCONNECT
AC CURRENT: 1216 A
VOLTAGE: 480 VAC

WARNING
ELECTRIC SHOCK HAZARD.
THE DC CONDUCTORS OF
THE PV SYSTEM ARE
UNGROUNDED AND MAY BE
ENERGIZED.

GRID TIED PHOTOVOLTAIC POWER SOURCE
MPPT 'A' SPECIFICATIONS:
OPERATING CURRENT: 37.8 A
OPERATING VOLTAGE: 731 V
MAX SYSTEM VOLTAGE: 979 V
MAX SYSTEM CURRENT: 49.5 A

MPPT 'B' SPECIFICATIONS:
OPERATING CURRENT: 28.4 A
OPERATING VOLTAGE: 731 V
MAX SYSTEM VOLTAGE: 979 V
MAX SYSTEM CURRENT: 37.1 A

MAX INVERTER OUTPUT:
36 kW, 43.5 A, 480 VAC

GRID TIED PHOTOVOLTAIC POWER SOURCE
MPPT 'A' SPECIFICATIONS:
OPERATING CURRENT: 18.9 A
OPERATING VOLTAGE: 693 V
MAX SYSTEM VOLTAGE: 927 V
MAX SYSTEM CURRENT: 24.7 A

MPPT 'B' SPECIFICATIONS:
OPERATING CURRENT: 28.4 A
OPERATING VOLTAGE: 616 V
MAX SYSTEM VOLTAGE: 824 V
MAX SYSTEM CURRENT: 37.1 A

MAX INVERTER OUTPUT:
23 kW, 27.7 A, 480 VAC

PHOTOVOLTAIC SYSTEM DISCONNECT
AC CURRENT: 643 A
VOLTAGE: 480 VAC

PHOTOVOLTAIC SYSTEM DISCONNECT
AC CURRENT: 574 A
VOLTAGE: 480 VAC

PHOTOVOLTAIC SYSTEM DISCONNECT
AC CURRENT: 1216 A
VOLTAGE: 480 VAC

REQD BY: NEC 690.54 9 APPLY TO: PV LOAD CENTER #1 DISCONNECT

REQD BY: NEC 690.54 10 APPLY TO: PV LOAD CENTER #2 DISCONNECT

REQD BY: NEC 690.54 11 APPLY TO: PV SYSTEM MAIN DISCONNECT

REQD BY: NEC 690.35(F) 12 APPLY TO: JUNCTION BOXES, COMBINER BOXES, DC DISCONNECTS, INVERTERS

REQD BY: NEC 690.53 13 APPLY TO: INVERTERS 1-4

REQD BY: NEC 690.53 14 APPLY TO: INVERTERS 5 & 6

GRID TIED PHOTOVOLTAIC POWER SOURCE
MPPT 'A' SPECIFICATIONS:
OPERATING CURRENT: 37.8 A
OPERATING VOLTAGE: 654 V
MAX SYSTEM VOLTAGE: 876 V
MAX SYSTEM CURRENT: 49.5 A

MPPT 'B' SPECIFICATIONS:
OPERATING CURRENT: 37.8 A
OPERATING VOLTAGE: 654 V
MAX SYSTEM VOLTAGE: 876 V
MAX SYSTEM CURRENT: 49.5 A

MAX INVERTER OUTPUT:
36 kW, 43.5 A, 480 VAC

GRID TIED PHOTOVOLTAIC POWER SOURCE
MPPT 'A' SPECIFICATIONS:
OPERATING CURRENT: 37.8 A
OPERATING VOLTAGE: 654 V
MAX SYSTEM VOLTAGE: 876 V
MAX SYSTEM CURRENT: 49.5 A

MPPT 'B' SPECIFICATIONS:
OPERATING CURRENT: 37.8 A
OPERATING VOLTAGE: 654 V
MAX SYSTEM VOLTAGE: 876 V
MAX SYSTEM CURRENT: 49.5 A

MAX INVERTER OUTPUT:
36 kW, 43.5 A, 480 VAC

GRID TIED PHOTOVOLTAIC POWER SOURCE
MPPT 'A' SPECIFICATIONS:
OPERATING CURRENT: 37.8 A
OPERATING VOLTAGE: 654 V
MAX SYSTEM VOLTAGE: 876 V
MAX SYSTEM CURRENT: 49.5 A

MPPT 'B' SPECIFICATIONS:
OPERATING CURRENT: 37.8 A
OPERATING VOLTAGE: 654 V
MAX SYSTEM VOLTAGE: 876 V
MAX SYSTEM CURRENT: 49.5 A

MAX INVERTER OUTPUT:
28 kW, 33.7 A, 480 VAC

GRID TIED PHOTOVOLTAIC POWER SOURCE
MPPT 'A' SPECIFICATIONS:
OPERATING CURRENT: 37.8 A
OPERATING VOLTAGE: 654 V
MAX SYSTEM VOLTAGE: 876 V
MAX SYSTEM CURRENT: 49.5 A

MPPT 'B' SPECIFICATIONS:
OPERATING CURRENT: 37.8 A
OPERATING VOLTAGE: 654 V
MAX SYSTEM VOLTAGE: 876 V
MAX SYSTEM CURRENT: 49.5 A

MAX INVERTER OUTPUT:
36 kW, 43.5 A, 480 VAC

GRID TIED PHOTOVOLTAIC POWER SOURCE
MPPT 'A' SPECIFICATIONS:
OPERATING CURRENT: 18.9 A
OPERATING VOLTAGE: 693 V
MAX SYSTEM VOLTAGE: 927 V
MAX SYSTEM CURRENT: 24.7 A

MPPT 'B' SPECIFICATIONS:
OPERATING CURRENT: 28.4 A
OPERATING VOLTAGE: 616 V
MAX SYSTEM VOLTAGE: 824 V
MAX SYSTEM CURRENT: 37.1 A

MAX INVERTER OUTPUT:
23 kW, 27.7 A, 480 VAC

REQD BY: NEC 690.53 15 APPLY TO: INVERTERS 7-9

REQD BY: NEC 690.53 16 APPLY TO: INVERTERS 10 & 11

REQD BY: NEC 690.53 17 APPLY TO: INVERTER 12 & 13

REQD BY: NEC 690.53 18 APPLY TO: INVERTERS 14-17, 19-22

REQD BY: NEC 690.53 19 APPLY TO: INVERTERS 18, 23, & 24

REQD BY: NFPA 70 E 20 APPLY TO: MAIN SWITCHGEAR

REQD BY: NEC 690.56 21 APPLY TO: UTILITY METER #6692541

WARNING
ARC FLASH HAZARD
APPROPRIATE PPE AND TOOLS
REQUIRED WHEN WORKING ON
THIS EQUIPMENT.
REFER TO NFPA 70 E

CAUTION
POWER FROM THIS BUILDING IS ALSO SUPPLIED
FROM THE FOLLOWING POWER SOURCES WITH
DISCONNECTS LOCATED AS SHOWN

YOU ARE HERE

UTILITY METER AND MAIN SERVICE PANEL

CARPORT PV ARRAY

CARPORT PV ARRAY

SERVICE BY QUALIFIED PERSONNEL ONLY

Project:
SAN MARCOS, CA 92078

Project Details:
1080.40 kWstc, 783.0 kW AC

Engineering Approval:

REVISIONS		
DESCRIPTION	DATE	REV
30% COMPLETION	10/22/2015	A
100% COMPLETION	2/12/2016	B

Sheet Title:
**ELECTRICAL
THREE-LINE**

Sheet Number:
E1.2

Sheet Size:
ARCH D - 36" x 24"

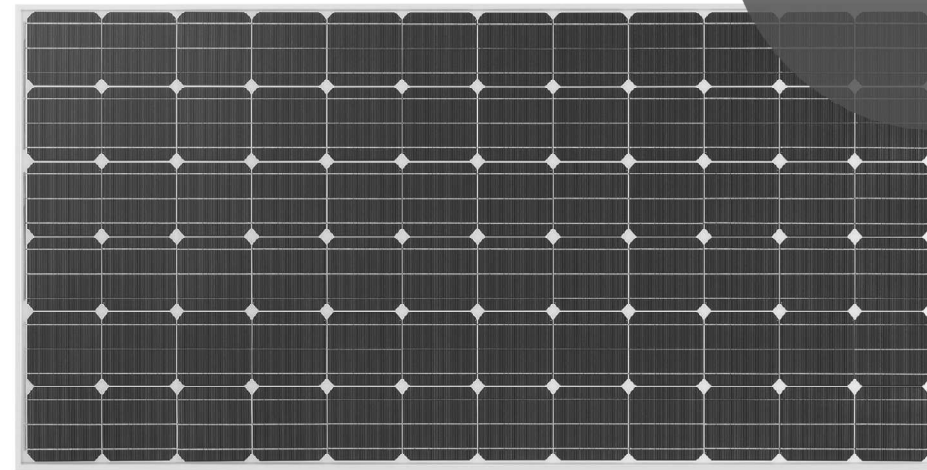
DESIGN & DRAFTING BY:
RICHARD DOBBINS
PV-102216-01 1266



Reviewed & Approved by:
JH



Innovation for a Better Life



LG NeON™ 72cell LG365N2W-B3

72 cell

Introducing LG NeON™ 72 cell module series, which uses highly efficient n-type materials, an elaborate process control adopting a semiconductor processing solution and a double-sided structure. Our R&D concentrates on developing a product that is not only efficient, but strives to increase practical value for customers.



Enhanced Performance Warranty

LG NeON™ 72 cell has an enhanced performance warranty. The annual degradation has fallen from -0.75%/yr to -0.65%/yr. Even after 25 years, the cell guarantees 2.45% more output than the previous LG NeON™ modules.



N-Type Material

LG NeON™ 72 cell uses n-type cells, boasting higher mobility of electric charge, resulting in higher generation efficiency.



Better Performance on a Sunny Day

LG NeON™ 72 cell now performs better on a sunny day thanks to its improved temperature coefficient.



High Power Output

Compared with previous models, the LG NeON™ 72 cell has been designed to significantly enhance its output efficiency making it efficient even in limited space.



Double-Sided Cell Structure

The rear of the cell used in LG NeON™ 72 cell is designed to contribute to generation; the light beam reflected from the rear of the module is reabsorbed to generate a great amount of additional power.



Near Zero LID (Light Induced Degradation)

The n-type cells used in LG NeON™ 72 cell have almost no boron, which may cause the initial efficiency to drop, leading to less LID.

About LG Electronics

LG Electronics is a global player who has been committed to expanding its operations with the solar market. The company first embarked on a solar energy source research program in 1985, supported by LG Group's vast experience in the semi-conductor, LCD, chemistry and materials industries. In 2010, LG Solar successfully released its First Mono M² series to the market, which is now available in 33 countries. The LG NeON™ (previous Mono M² NeoV) and the LG NeON™ 2 won the "Innovator Award" in 2013 and 2015, which demonstrates LG Solar's lead, innovation and commitment to the industry.

LG NeON™ 72cell LG365N2W-B3

Mechanical Properties

Cells	6 x 12
Cell Vendor	LG
Cell Type	Monocrystalline / N-type
Cell Dimensions	156.75 x 156.75 mm / 6 inches
# of Busbar	3
Dimensions (L x W x H)	1950 x 1000 x 46 mm
	77.17 x 39.37 x 1.81 inch
Front Load	60 psf
Rear Load	60 psf
Weight	20.3 ± 0.5 kg / 44.75 ± 1.1 lbs
Connector Type	MC4, IP67
Junction Box	IP67 with 3 bypass diodes
Cable	PV wire 12 AWG (4.0mm ²) conductor
Length of Cables	2 x 1200 mm / 2 x 47.24 inch
Glass	High Transmission Tempered Glass
Frame	Anodized Aluminum

Certifications and Warranty

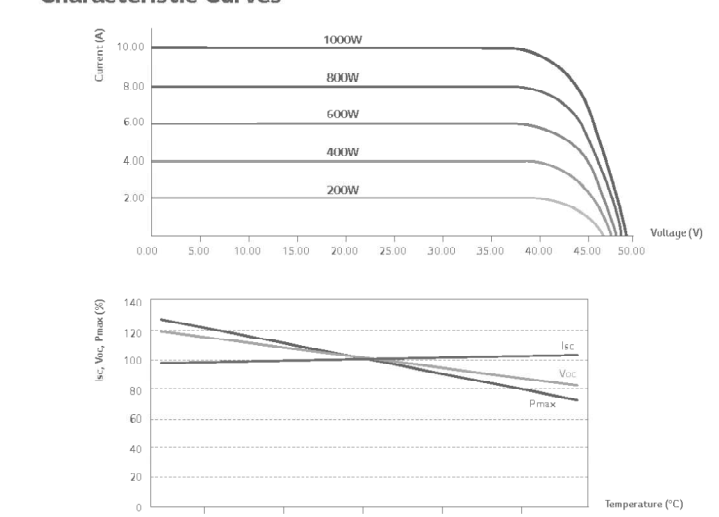
Certifications	IEC 62716 (Ammonia Test) IEC 61701 (Salt Mist Corrosion Test) ISO 9001 UL 1703
Module Fire Performance (USA)	Type 2 (UL 1703)
Fire Rating (for CANADA)	Class C (ULC/ORD C1703)
Product Warranty	12 years
Output Warranty of Pmax	Linear warranty*

* (1) 1st year 98%, 21st year 84% annual degradation, 31.83% for 25 years

Temperature Characteristics

NOCT	45 ± 2 °C
Pmax	-0.41 %/°C
Voc	-0.30 %/°C
Isc	0.08 %/°C

Characteristic Curves



Electrical Properties (STC *)

Module Type	365 W
MPP Voltage (Vmp)	38.6
MPP Current (Imp)	9.46
Open Circuit Voltage (Voc)	48.4
Short Circuit Current (Isc)	9.89
Module Efficiency (%)	18.6
Operating Temperature (°C)	-40 ~ +50
Maximum System Voltage (V)	1000
Maximum Series Fuse Rating (A)	20
Power Tolerance (%)	0 ~ +3

* STC Standard Test Condition: Irradiance 1000 W/m², Module Temperature 25 °C, AM1.5

* The temperature power output is measured and determined by LG Electronics at its site and absolute discretion.

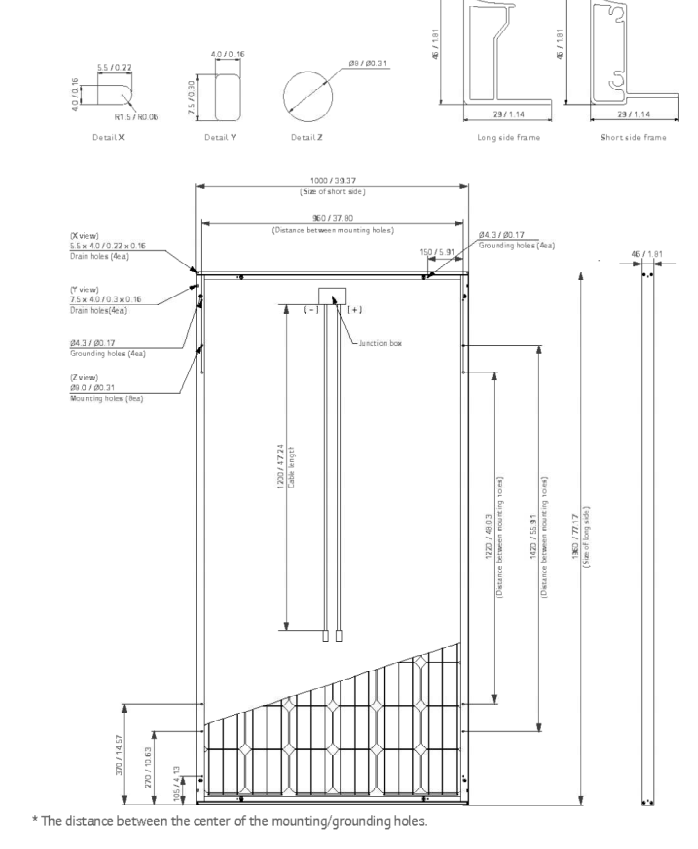
* The typical energy to module efficiency at 300 W/m² irradiance is 1000 Wh/m² x 0.06.

Electrical Properties (NOCT*)

Module Type	365 W
Maximum Power (Pmax)	26.7
MPP Voltage (Vmp)	25.3
MPP Current (Imp)	7.55
Open Circuit Voltage (Voc)	44.9
Short Circuit Current (Isc)	7.98

* NOCT (Nominal Operating Cell Temperature): Irradiance 800 W/m², ambient temperature 20 °C, wind speed 1 m/s

Dimensions (mm/in)



North America Solar Business Team
LG Electronics U.S.A. Inc.
1000 Sylvan Ave, Englewood Cliffs, NJ 07632
Contact: lg.solar@lge.com
www.lgusa.com

Product specifications are subject to change without notice.
05-01-22-C-G-P-EN-50724
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01/02/2015

Innovation for a Better Life



Datasheet

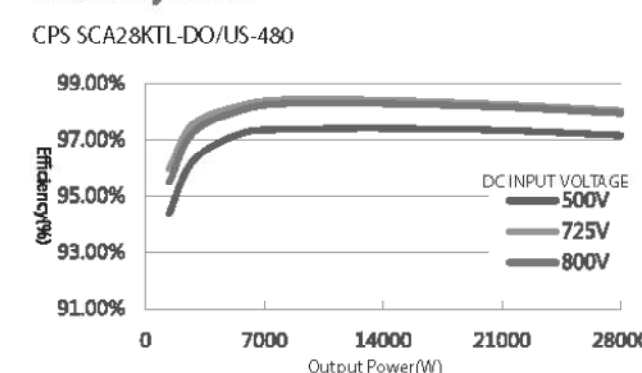
23/28kW, 1000Vdc String Inverters for North America

The medium power series of grid-tied, transformerless inverters help to accelerate the use of 1000Vdc and three phase string architecture for commercial and small ground mount utility applications. A NREL approved, cost effective alternative to central inverters enabling B0S cost savings, high harvest performance and modular design building blocks. These models provide up to 98.6% conversion efficiency and wide operating window of 300-900Vdc and dual MPPT's for maximum cash-flow generation.

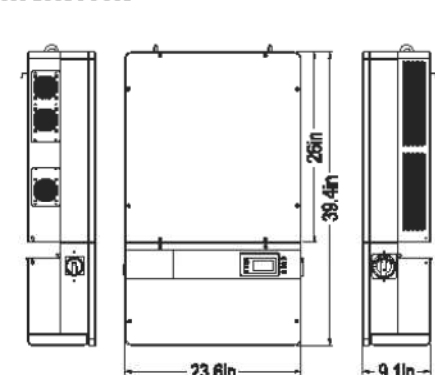


CPS SCA23KTL-DO/US-480

Efficiency Curve



Dimensions



High Efficiency

- Maximum efficiency of 98.6%, CEC efficiency of 98%
- 3-level technology and enhanced control mechanism to achieve high efficiency over wide load range
- 2 MPPTs to achieve higher system efficiency
- Transformerless design

High Reliability

- Electrolyte-free design* for improved long-term reliability
- Standard warranty: 5 years, extension up to 20 years
- Advanced thermal design, with variable speed fans
- Ground-fault detection and interruption circuit
- AFCI Integrated per UL1699B*
- * Contact CPS to enable

Broad Adaptability

- NEMA 4 (IP65), outdoor application
- Utility interactive controls : Active power derating, reactive power control
- Separate wiring box design
- Integrated DC, AC disconnects
- Wide MPPT range for flexible string sizing
- 1000V Max. DC input voltage for flexible configuration
- 15 - 90 degree installation angle



©CHINT POWER2015/02-WKT

Chart Power Systems America
7090 Koll Center Parkway, Suite 118, Pleasanton, CA 94566
Tel: 855-584-7168 Mail: AmericasSales@chintpower.com Web: www.chintpower.com/na



Technical Data

Model Name	CPS SCA23KTL-DO/US-480	CPS SCA28KTL-DO/US-480
DC Input		
Max. PV Power	31kW (15.5kW/MPPT)	38kW (19kW/MPPT)
Nominal DC Input Power	24kW	29kW
Max. DC Input Voltage	1000Vdc	1000Vdc
Operating DC Input Voltage Range	300-900Vdc	300-900Vdc
Start up DC Input Voltage / Power	330V/300W	330V/300W
Number of MPP Trackers	2	2
MPPT Voltage Range	480-800Vdc	500-800Vdc
Max. Input Current (Imp)	50A (25A per MPPT)	58A (29A per MPPT)
Max. Short Circuit Current (Isc)	82A (41A per MPPT)	96A (48A per MPPT)
Number of DC Inputs	8 inputs, 4 per MPPT	8 inputs, 4 per MPPT
DC Disconnection Type	Load rated DC switch	Load rated DC switch
AC Output		
Rated AC Output Power	23kW	28kW
Max. AC Output Power	23kW	28kW
Rated Output Voltage	480Vac	480Vac
Output Voltage Range*	422-528Vac	422-528Vac
Grid Connection Type	3Ø/N/PE	3Ø/N/PE (Neutral Optional)
Max. AC Output Current	27.7A	33.7A
Rated Output Frequency	60Hz	60Hz
Output Frequency Range*	59.3-60.5Hz	57-63Hz
Power Factor	>0.99 (±0.8 adjustable)	>0.99 (±0.8 adjustable)
Current THD	<3%	<3%
AC Disconnection Type	Load rated AC switch	Load rated AC switch
System		
Topology	Transformerless	Transformerless
Max. Efficiency	98.6%	98.4%
CEC Efficiency	98.0%	98.0%
Stand-by / Night Consumption	<20W<2W	<20W<2W
Environment		
Protection Degree	NEMA 4	NEMA 4
Cooling	Variable speed cooling fans	Variable speed cooling fans
Operating Temperature Range	-13°F to +140°F/- 25°C to +60°C (derating from +113°F/+45°C)	-13°F to +140°F/- 25°C to +60°C (derating from +113°F/+45°C)
Storage Temperature Range	-22°F to +158°F/- 30°C to +70°C	-22°F to +158°F/- 30°C to +70°C
Operating Altitude	13123.4ft/4000m (derating from 6561.7ft/2000m)	13123.4ft/4000m (derating from 6561.7ft/2000m)
Operating Humidity	0-95% non-condensing	0-95% non-condensing
Display and Communication		
Display	LCD+LED	LCD+LED
Communication	Standard: RS485 (Modbus)	Standard: RS485 (Modbus) Optional: TCP/IP Card
Mechanical		
Dimensions (WxHxD)	23.6x39.4x9.1in/600x1000x230mm	600x1000x230mm
Weight	122lbs/55kg	122lbs/55kg
Installation Angle	15 - 90 degrees from horizontal	15 - 90 degrees from horizontal
Safety		
Safety and EMC Standard	UL1741:2010, CSA-C22.2 NO.107.1-01, IEC61547: FCC PART15	UL1741:2010, UL1699B, CSA-C22.2 NO.107.1-01, IEC61547: FCC PART16
Grid Standard	IEEE1547: 2003, IEEE1547.1: 2005	IEEE1547: 2003, IEEE1547.1: 2006

*The "Output Voltage Range" and "Output Frequency Range" may differ according to specific grid standard.



Technical Data

Model Name	CPS SCA36KTL-DO/US-480
DC Input	
Max. PV Power	54kW (27kW/MPPT)
Nominal DC Input Power	37kW
Max. DC Input Voltage	1000Vdc
Operating DC Input Voltage Range	240-950Vdc
Start up DC Input Voltage / Power	330V/300W
Number of MPP Trackers	2
MPPT Voltage Range	540-800Vdc
Max. Input Current (Imp)	70A (35A per MPPT)
Max Short Circuit Current (Isc)	107A
Number of DC Inputs	8 inputs, 4 per MPPT
DC Disconnection Type	Load rated DC switch
AC Output	
Rated AC Output Power	36kW
Max. AC Output Power	36kW
Rated Output Voltage	480Vac
Output Voltage Range*	422-528Vac
Grid Connection Type	3Ø/PE/N (Neutral Optional)
Maximum AC Output Current @480Vac	43.5A
Rated Output Frequency	60Hz
Output Frequency Range*	57-63Hz
Power Factor	>0.99 (±0.8 adjustable)
Current THD	<3%
AC Disconnection Type	Load rated AC switch
System	
Topology	Transformerless
Max. Efficiency	98.4%
CEC Efficiency	98.0%
Stand-by / Night Consumption	<20W<2W
Environment	
Protection Degree	NEMA 4
Cooling	Variable speed cooling fans
Operating Temperature Range	-13°F to +140°F/- 25°C to +60°C (derating from +113°F/+45°C)
Storage Temperature Range	-49°F to +158°F/- 45°C to +70°C
Operating Humidity	0-95% non-condensing
Operating Altitude	13123.4ft/4000m (derating from 6561.7ft/2000m)
Display and Communication	
Display	LCD+LED
Communication	Standard: RS485 (Modbus) Optional: TCP/IP Card
Mechanical	
Dimensions (WxHxD)	600x1000x230mm
Weight	Inverter: 121lbs/55kg ; Wirebox: 24lbs/11kg
Installation Angle	15 - 90 degrees from horizontal
Safety	
Safety and EMC Standard	UL1741:2010, UL1699B, CSA-C22.2 NO.107.1-01, IEC61547: FCC PART16
Grid Standard	IEEE1547: 2003, IEEE1547.1: 2006

*The "Output Voltage Range" and "Output Frequency Range" may differ according to specific grid standard.

Project:

SAN MARCOS, CA 92078

Project Details:

1080.40 kWstc, 783.0 kW AC

Engineering Approval:

REVISIONS

DESCRIPTION	DATE	REV
30% COMPLETION	10/22/2015	A
100% COMPLETION	2/12/2016	B

Sheet Title:

EQUIPMENT DATA SHEETS I

Sheet Number:

D1.0

Sheet Size:

ARCH D - 36" x 24"

DESIGN & DRAFTING BY:
RICHARD DOBBINS
PV-102216-01 1/26/16



Reviewed & Approved by:

JH