Southern Oregon University
Lithia PV Solar and Hawk PV Solar + Battery Storage
RFP 2024-04
July 27, 2023

Addendum #1

This Addendum together with RFP 2024-04 (including 9 attachments) shall form the Contract Documents. The following clarifications, changes, additions and deletions hereby become part of the Contract Documents. The original solicitation documents remain in full effect unless specifically modified by this Addendum.

1. **"As-Built" Drawings and Submittals for the Existing PV System - Lithia Building**
   Drawings and product submittals for the existing 63 KW PV system installed in 2019 are attached for reference.

2. **Submittal for the Main Distribution Panel (MDP) – Lithia Building**
   The 2017 submittals for the Lithia Building MDP are attached for reference.

3. **Exterior Location for Battery Storage – Hawk Dining**
   The location shown on the attached Site Plan is approved as an alternate location for the battery storage and related equipment. The Design-Build contractor will be responsible for furnishing and installing the battery system and all related panels, equipment, conduit and wiring to complete the installation. SOU will be responsible for design and construction of the concrete slab and screen wall enclosure, and for trenching and backfill between the enclosure and the building entry as shown on the attached Site Plan.

4. **Connect the IT and Electrical Room HVAC Units to Battery Power – Hawk Dining**
   Add the mini-split cooling units in MDF 011 and Electrical 012 to the RFP Attachment D2- "Schedule of Building Loads - to be connected to the battery back-up system".

Enclosures: E2 Solar as-built drawings and product submittals - Lithia Building (18 pages)
MDP submittal – Lithia Building (9 pages)
Site Plan – Hawk Dining (1 page)

End of Addendum #1

Southern Oregon University - Lithia Motors Student Recreation Center

1465 Webster Street
Ashland, OR. 97520

SCOPE OF WORK

The scope of work includes the installation of a grid interactive photovoltaic system with an AC nameplate rating of 66kW.

The installation consists of 1 roof mounted solar arrays. 2 SolarEdge inverters, and related metering and safety equipment. All equipment installed must meet applicable codes and requirements of the local utility company and AHJ.

During daylight hours, the system will provide electricity in parallel with the utility. The system does not provide any backup functionality upon loss of utility power.

GENERAL NOTES

All electrical work shall be performed by licensed electricians or apprentices under supervision of the licensed contractor.

All electrical equipment shall be listed for it's purposed and installed in a code approved method and in a workmanship like manner. All outdoor equipment shall meet appropriate NEMA ratings.

Photovoltaic system shall not be operated until the AHJ and the local utility provider have approved the installation

All equipment shall be suitable for the environment they are located and all fasteners shall be torqued to the manufacturers specification.

Project shall meet all interconnection requirements of the City of Ashland electric.

BUILDING

SYSTEM DESCIPTION

180 each, SolarWorld 350XL solar modules

2 each, SolarEdge 33.3kW Inverters

63 kW DC Nameplate at STC

66kW AC Nameplate

Inverters rated at 480/277V 3 phase

Snap-n Rack racking system, UL 1703 & 2703 listed

ASHRAE WEATHER DATA

4% Average High Temp 40°C (1046°F)

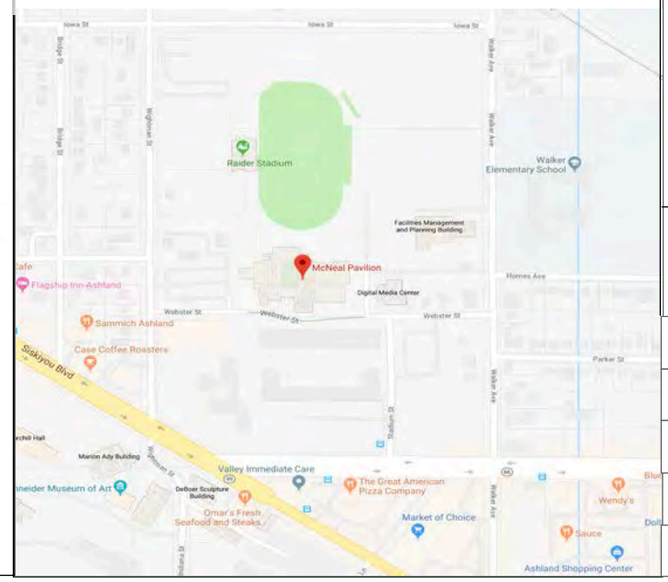
Extreme Annual Mean Minimum Dry Bulb Temp -8°C (17.62°F)

Weather Location: Rouge Valley Airport

MEDFORD ROGUE VALLEY INTL AP

Elev.	High Temp		Distance above roof			Extreme
	0.4%	2% Avg.	0.5"	3.5"	12"	Min
405 m	40 °C	36 °C	58 °C	53 °C	50 °C	-8 °C

SITE LOCATION



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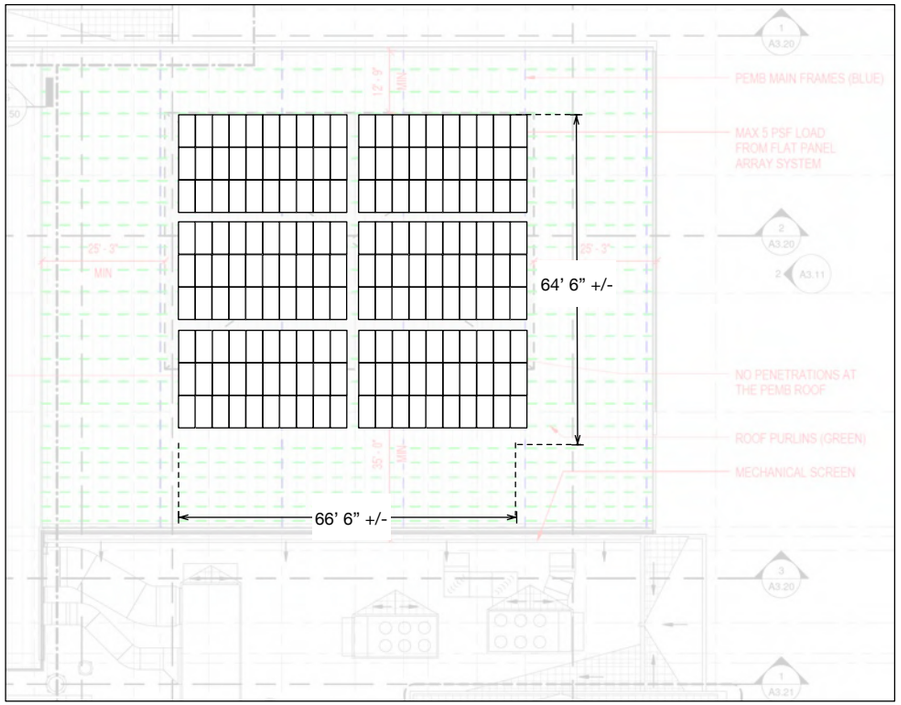
NABCEP CERTIFIED PV Installation Professional

092411-73
Mike Hewitt

FILE NAME
SOU Lithia Motors AS BUILT.graffle

SHEET TITLE
A1.1 Site Plan

DATE CREATED	DATE MODIFIED
Fri Jun 15 2012	Wed Feb 06 2019
DRAWN BY	PAGE NUMBER
Mike Hewitt	1 of 8



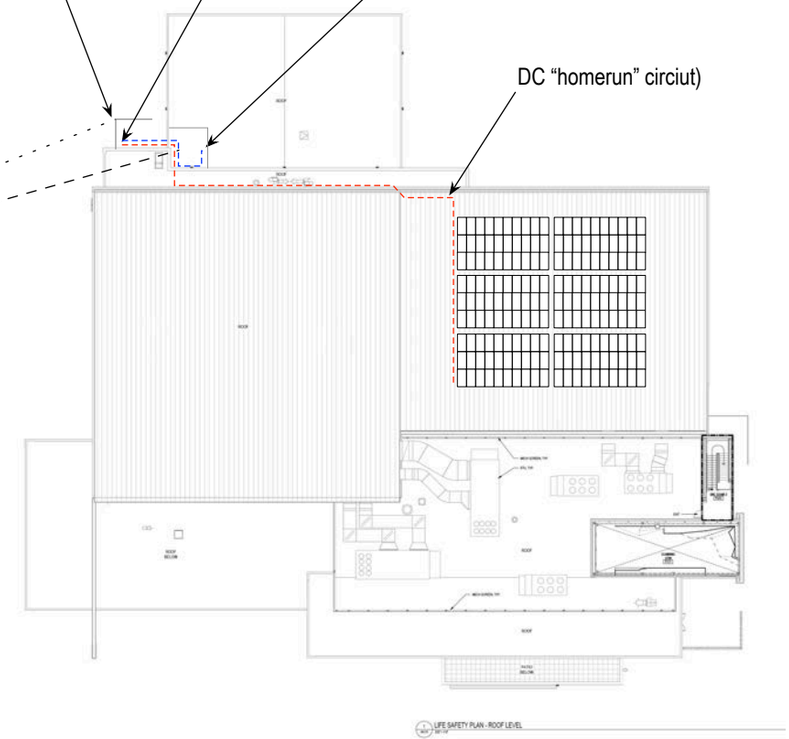
Inverter(s) AC master disconnect for utility and rapid shutdown (line of sight to transformer)

Inverters located exterior North wall next to backup genset

Main electrical room (Solar backfed breaker is located panel BS1-4)

DC "homerun" circiut)

City of Ashland Utility transformer located here (approx)



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SHEET TITLE
Z1.1 Roof Layout Plan

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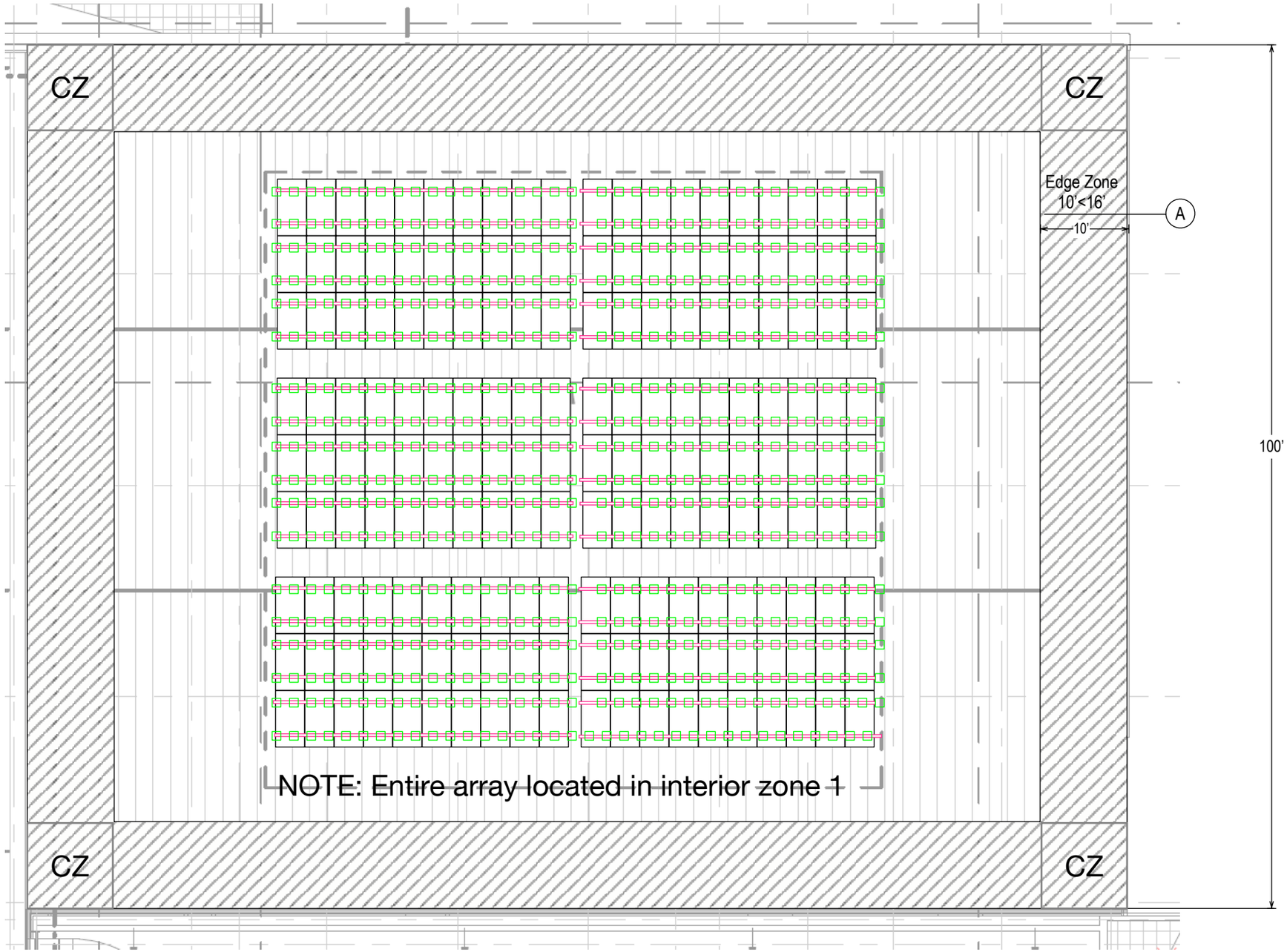
Mike Hewitt	2 of 8



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100 Modules
Solarworld 350XL mono
63.0kW DC

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FILE NAME SOU Lithia Motors AS BUILT.graffle	
SHEET TITLE S1.1 Structural Plan	
DATE CREATED Fri Jun 15 2012	DATE MODIFIED Wed Feb 06 2019
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180 Module array uplift calculation
3906 Square feet x 20 PSF wind load = 78,120 total uplift

S-5-U attachment = 921 lbs withdrawl resistance
612 attachments = 563,562 lbs withdraws resistance

563,562 > 156,2400 (48,300 x 2 safety factor)

180 Module array point load calculation
180 modules x 47.6 lbs per module = 8568 lbs

8568 lbs / 3906 s.f = 2.19 lbs per s.f.

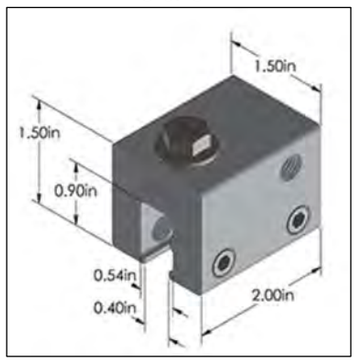
2.19 lbs per square foot is less than the engineer approved 5.0 lbs per square foot. See engineering documents attached to these plans.

Showing Test Results for S-5-U CFR Vise Lock 360 Seam by Nucor Building Systems

S-5! CLAMP	MANUFACTURER	PRODUCT	THICKNESS MATERIAL	SCREW TENSION (inch-lbs)	ULTIMATE LOAD (lbs)	FAILURE MODE	ALLOWABLE LOAD (lbs)	NOTES
S-5-U	Nucor Building Systems	CFR Vise Lock 360 Seam	24 ga steel	115	1841	B	921	

TYPICAL ATTACHMENT SYSTEM

S-5!-U



Rail Spans (Inches) -- SnapNrack 100 Series Rail

Ground Snow Load	Height Above Ground	Exposure Category	Panel Angle	110	115	120	125
15 psf	0 to 33 feet	B	0° to 7°	40 / 40 / 29	40 / 40 / 27	40 / 39 / 24	40 / 36 / 22
			7° to 27°	54 / 50 / 31	54 / 45 / 29	54 / 41 / 26	54 / 38 / 24
			27° to 45°	71 / 71 / 71	66 / 65 / 65	62 / 59 / 59	58 / 54 / 54
			45° to 90°	69 / 59 / 59	63 / 54 / 54	59 / 49 / 49	55 / 45 / 45
		C	0° to 7°	40 / 33 / 20	40 / 30 / 19	40 / 27 / 17	40 / 25 / NA
			7° to 27°	54 / 35 / 22	54 / 31 / 20	54 / 29 / 18	52 / 26 / 17
			27° to 45°	54 / 50 / 50	50 / 45 / 45	46 / 41 / 41	43 / 38 / 38
			45° to 90°	51 / 41 / 41	47 / 38 / 38	43 / 34 / 34	40 / 31 / 31
		D	0° to 7°	40 / 27 / 17	40 / 25 / NA	40 / 25 / NA	39 / 21 / NA
			7° to 27°	56 / 29 / 18	52 / 26 / 17	48 / 24 / NA	44 / 22 / NA
			27° to 45°	46 / 41 / 41	43 / 38 / 38	39 / 34 / 34	37 / 31 / 31
			45° to 90°	43 / 35 / 35	40 / 31 / 31	37 / 29 / 29	34 / 26 / 26
	30 to 60 feet	B	0° to 7°	40 / 38 / 24	40 / 35 / 22	40 / 32 / 20	40 / 29 / 18
			7° to 27°	54 / 40 / 26	54 / 37 / 23	54 / 33 / 21	54 / 31 / 19
			27° to 45°	61 / 58 / 58	56 / 53 / 53	52 / 48 / 48	49 / 44 / 44
			45° to 90°	58 / 48 / 48	53 / 44 / 44	49 / 40 / 40	46 / 37 / 37
		C	0° to 7°	40 / 28 / 17	40 / 25 / 16	40 / 23 / NA	40 / 21 / NA
			7° to 27°	54 / 29 / 19	53 / 27 / 17	48 / 24 / 16	44 / 22 / NA
			27° to 45°	47 / 42 / 42	43 / 36 / 38	40 / 35 / 35	37 / 32 / 32
			45° to 90°	44 / 35 / 35	41 / 32 / 32	37 / 29 / 29	35 / 27 / 27
		D	0° to 7°	40 / 24 / NA	40 / 22 / NA	37 / 20 / NA	34 / 18 / NA
			7° to 27°	50 / 25 / 16	46 / 23 / NA	42 / 21 / NA	38 / 19 / NA
			27° to 45°	41 / 36 / 36	38 / 33 / 33	35 / 30 / 30	33 / 28 / 28
			45° to 90°	39 / 30 / 30	36 / 28 / 28	33 / 25 / 25	30 / 23 / 23
20 psf	0 to 33 feet	B	0° to 7°	34 / 34 / 29	34 / 34 / 27	34 / 34 / 24	34 / 34 / 22
			7° to 27°	47 / 47 / 31	47 / 45 / 29	47 / 41 / 26	47 / 38 / 24
			27° to 45°	67 / 67 / 67	64 / 64 / 64	60 / 59 / 59	57 / 54 / 54
			45° to 90°	69 / 59 / 59	63 / 54 / 54	59 / 49 / 49	55 / 45 / 45
		C	0° to 7°	34 / 33 / 20	34 / 30 / 19	34 / 27 / 17	34 / 25 / NA
			7° to 27°	47 / 33 / 22	47 / 31 / 20	47 / 29 / 18	47 / 26 / 17
			27° to 45°	54 / 50 / 50	50 / 45 / 45	46 / 41 / 41	43 / 38 / 38
			45° to 90°	51 / 41 / 41	47 / 38 / 38	43 / 34 / 34	40 / 31 / 31
		D	0° to 7°	34 / 27 / 17	34 / 25 / NA	34 / 25 / NA	34 / 23 / NA
			7° to 27°	50 / 29 / 18	49 / 26 / 17	47 / 24 / NA	44 / 22 / NA
			27° to 45°	46 / 41 / 41	43 / 38 / 38	39 / 34 / 34	37 / 31 / 31
			45° to 90°	43 / 35 / 35	40 / 31 / 31	37 / 29 / 29	34 / 26 / 26
	30 to 60 feet	B	0° to 7°	34 / 34 / 24	34 / 34 / 22	34 / 32 / 20	34 / 29 / 18
			7° to 27°	47 / 40 / 26	47 / 37 / 23	47 / 33 / 21	47 / 31 / 19
			27° to 45°	60 / 58 / 58	56 / 53 / 53	52 / 48 / 48	49 / 44 / 44
			45° to 90°	58 / 48 / 48	53 / 44 / 44	49 / 40 / 40	46 / 37 / 37
		C	0° to 7°	34 / 28 / 17	34 / 25 / 16	34 / 23 / NA	34 / 21 / NA
			7° to 27°	47 / 29 / 19	47 / 27 / 17	45 / 24 / 16	44 / 22 / NA
			27° to 45°	47 / 42 / 42	45 / 38 / 38	40 / 35 / 35	37 / 32 / 32
			45° to 90°	44 / 35 / 35	41 / 32 / 32	37 / 29 / 29	35 / 27 / 27

Snap & Rack racking system allows a 34" maximum attachment spacing with 20spf snow loads, exposure category C and a roof tilt of 0-7 degrees in zone 1 of the roof array. The seam spacing on the pavilion is 24" OC, so there will be attachments located at every seam.

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Structural attachment detail

NABCEP CERTIFIED PV Installation Professional

092411-73
Mike Hewitt

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SHEET TITLE
S1.2 Structural Attachment Detail

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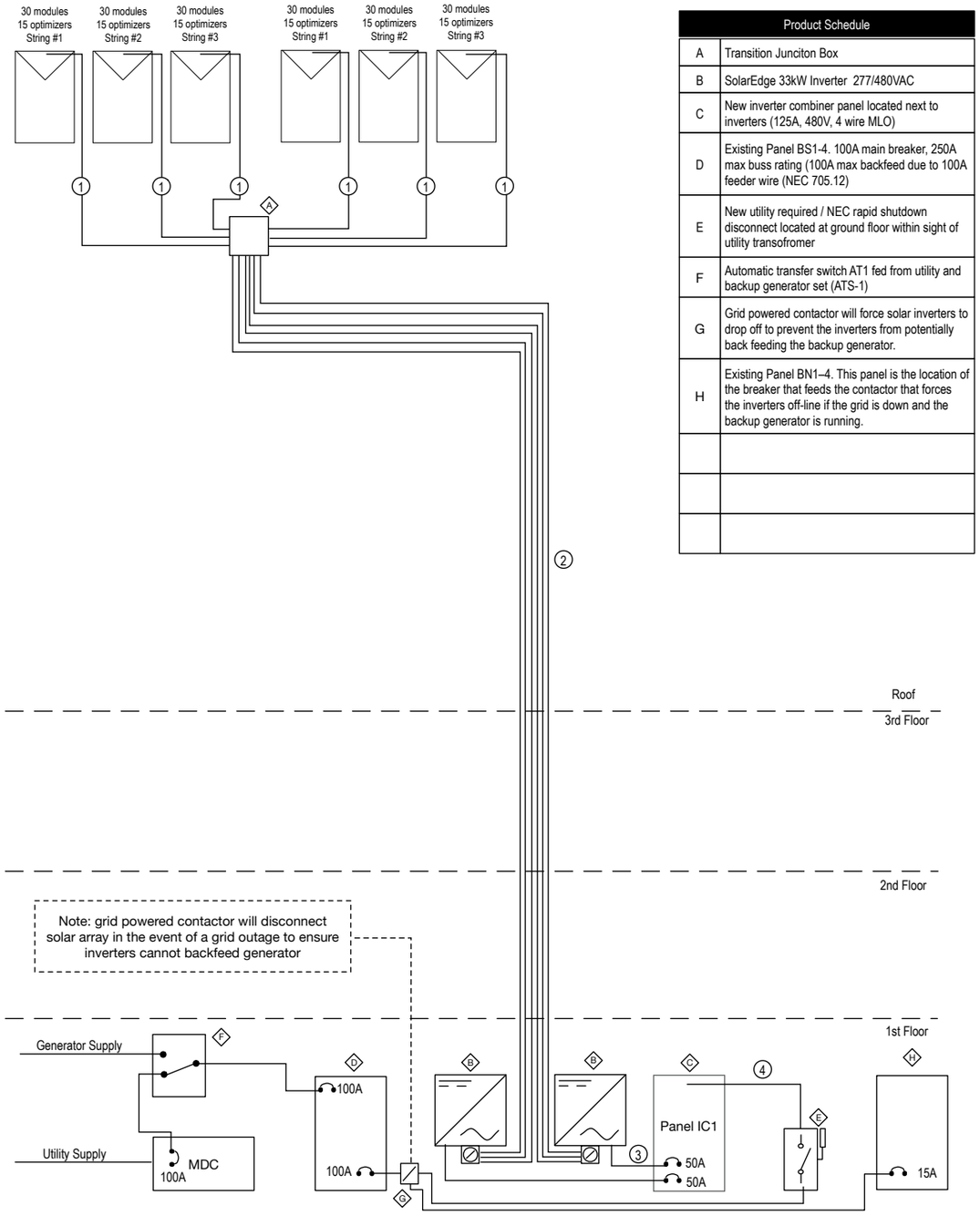

Product Schedule	
A	Transition Junciton Box
B	SolarEdge 33kW Inverter 277/480VAC
C	New inverter combiner panel located next to inverters (125A, 480V, 4 wire MLO)
D	Existing Panel BS1-4. 100A main breaker, 250A max buss rating (100A max backfeed due to 100A feeder wire (NEC 705.12)
E	New utility required / NEC rapid shutdown disconnect located at ground floor within sight of utility transofromer
F	Automatic transfer switch AT1 fed from utility and backup generator set (ATS-1)
G	Grid powered contactor will force solar inverters to drop off to prevent the inverters from potentially back feeding the backup generator.
H	Existing Panel BN1–4. This panel is the location of the breaker that feeds the contactor that forces the inverters off-line if the grid is down and the backup generator is running.

CONDUCTOR SCHEDULE							
	1 WAY DISTANCE	SIZE / TYPE	Ω / 1000 ft	VOLTS	AMPS	Volt Rise/Drop	%
1	72'	SE Trunk Cabling	N/A	840VDC	15	N/A	N/A
2	240' (max)	#10 XLPE PV WIRE**	1.26	840VDC	15	-8.84V	-1.17%
3	25' (max)	#6 THWN-2 (CU)	.510	480VAC	40	+1.2V	+.25%
4	110'	#2 THWN-2 (CU)	.201	480VAC	80	+9.6V	+.75%
5							
6							
7							

* NOTE: Total voltage rise/drop =10.8VAC at max capacity. 480VAC + 10.8VAC - 490.8VAC. 491VAC <= Maxximum inverter operating voltage of 529VAC (2.3%)

** PV Wire XLPE to be dual rated 1000V/2000V

INVERTER RATINGS	
Manufacturer	SolarEdge
Model	SE33.3KUS
Nominal Input DC	840VDC
Max System Voltage	980VDC
Nominal AC voltage	277/480
Max input amps (DC)	45A Isc
Max output amps (AC)	40
NEC AC Disconnect	NO
NEC DC Disconnect	YES
CEC Efficiency	98.5%
Built in GFCI/AFCI	YES

SolarEdge Power Optimizer P730

Max input Voltage: 125VDC
MPPT Range: 12.5-105VDC
Strings controlled at 840VDC by inverter
Max DC Amps in: 13.75
Isc in: 11ADC
Max amps out: 15ADC (per string)

*** PV OUTPUT CIRCUIT RATINGS MINIMUM**

15ADC x 125% = 18.8A (NEC 690.8)
Output wire is #10 THHN Cable which is good for 35A on the 75 degree table. (NEC 310.15 B16) (upsized for voltage drop considerations)

PV ARRAY INFORMATION	
Total installed DC watts	63,000
# Modules in series string	30 (15 optimizers)
# Strings in parallel	1 (3X)
ASHRAE AEMMDBT	-8°C
ASHRAE .4% HIGH TEMP	40C
Location	Roof

PV MODULE INFORMATION	
Manufacturer	SolarWorld
Model	Sunmodule 350XL Mono
Voc	48.0
Vmp	38.4
Isc	9.82
Imp	9.17
Max Power (watts)	350
Vmp temp coefficient	-.43% / °C
Voc temp coefficient	-.30% / °C
Module wire size	#12 PV Wire
Module Fuse Rating	25A
Connector Type	Anphenol UTX

VMP CORRECTED FOR HIGH TEMPS

ASHRAE 4% high is 40C so delta is 15. . 38.4Vmp x .43% x 15 delta = 2.48V loss
38.4 - 2.484 x 1 in series = 35.9 TKVMP at Hottest
35.9VDC* is greater than the power optimizer minimum input voltage of 12.5VDC

VOC CORRECTED FOR LOW TEMPS

ASHRAE EAMMDBT is -8C so delta is 33
48.0 x .30% x 33 = 4.8V gain. 48.0+ 4.8V x 1 in series = 52.8VDC TKVOC at ASHRAE AEMMDBT. (annual extreme mean minimum dry bulb temperature)
105.6VDC** is less than Max input voltage of 125VDC to the power optimizer (2 modules connected)

INVERTER IC1 PANEL RATINGS	
Brand	Cutler Hammer
Main Breaker Rating	MLO
Busbar Rating	125A
Inverter OCPD rating (AC disconnect)	50A (breaker 2X)
AIC Rating	>=14KAIC

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Signing Electrical Supervisor:
Ralph Mathis, 4074S

Oregon Elec. Lic LRT
Mike Hewitt, 057LRT

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092411-73
Mike Hewitt

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SHEET TITLE
E1.1 Electrical Plan

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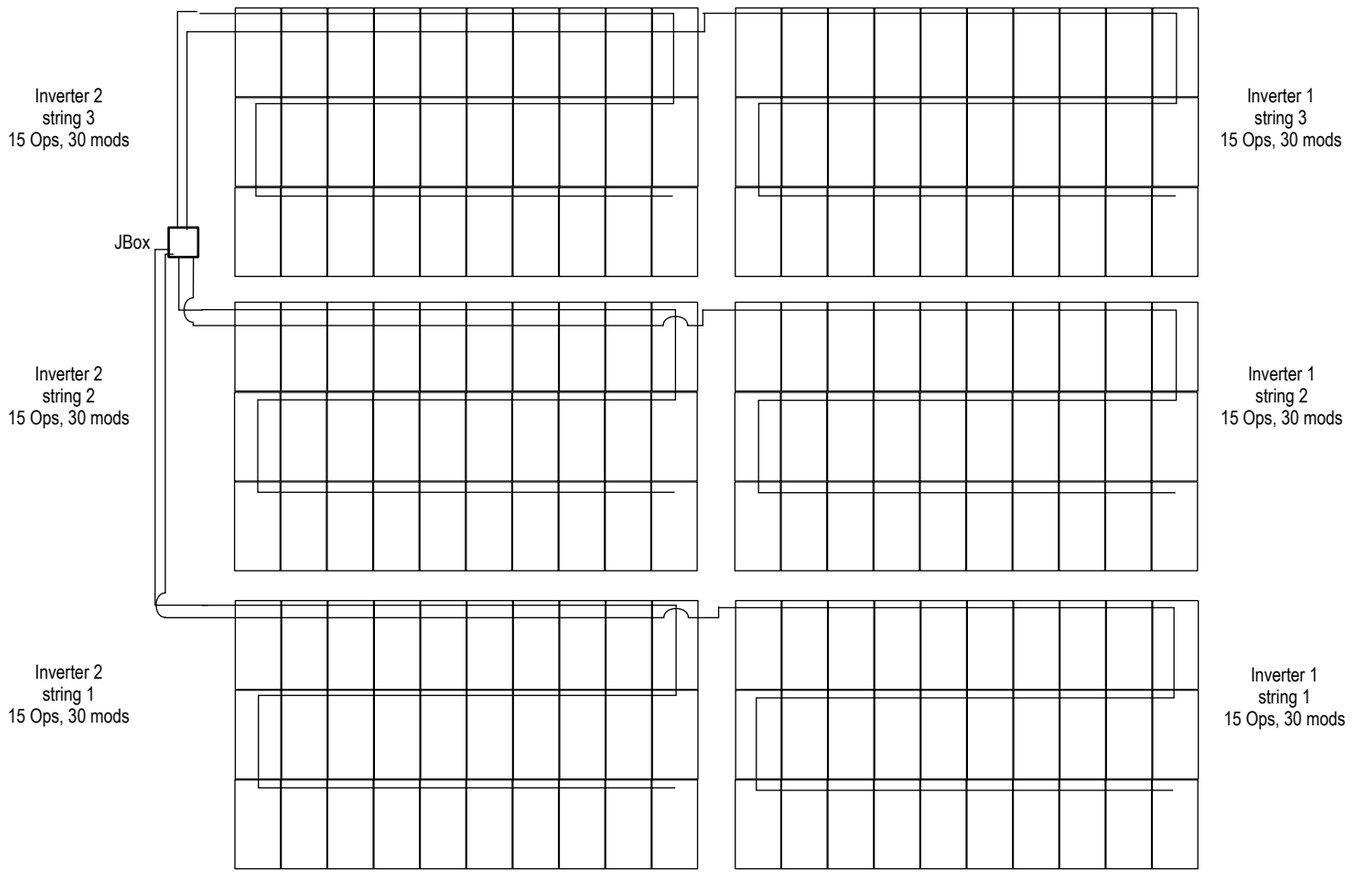

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SHEET TITLE
E1.2 String Plan

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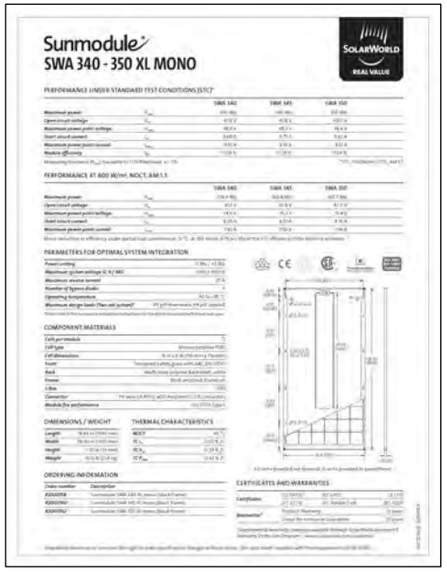

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P1.1 Products

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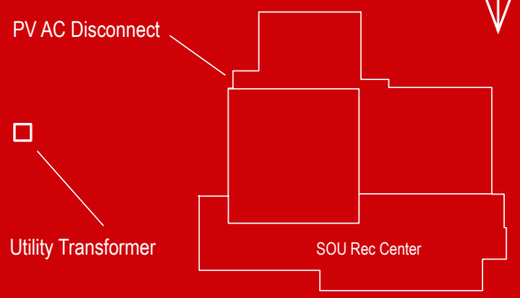
Project signage

Utility Transformer

NOTICE: Parallel generation
On-Site. photovoltaics and utility
The main photovoltaic AC disconnect
and rapid shutdown device is located
as shown below



All DC or inverter disconnecting means

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

Inverter(s) input/DC Disconnect

DIRECT CURRENT
PHOTOVOLTAIC POWER SOURCE

MAXIMUM VOLTAGE 840 VDC
MAX CIRCUIT CURRENT 45 AMPS

All inverters, disconnects or junction boxes

WARNING
ELECTRIC SHOCK HAZARD
IF GROUND FAULT IS INDICATED
ALL NORMALLY GROUNDED
CONDUCTORS MAY BE
UNGROUNDED AND ENERGIZED

ALL DC raceways and junction boxes

WARNING: PHOTOVOLTAIC
POWER SOURCE

Inverter point of connection/backfed panel

WARNING
TURN OFF PHOTOVOLTAIC
AC DISCONNECT PRIOR TO
WORKING INSIDE PANEL

All AC/DC Disconnects

WARNING
ELECTRIC SHOCK HAZARD
DO NOT TOUCH TERMINALS
TERMINALS ON BOTH THE LINE AND
LOAD SIDES MAY BE ENERGIZED
IN THE OPEN POSITION
PHOTOVOLTAIC MODULES PRODUCE DC VOLTAGE
WHENEVER THEY ARE EXPOSED TO SUNLIGHT

Utility meter/PV AC Disconnect

PHOTOVOLTAIC SYSTEM
EQUIPPED WITH
RAPID SHUTDOWN

Main AC PV Disconnect

RAPID SHUTDOWN
SWITCH FOR
SOLAR PV SYSTEM

All backfed breakers

WARNING
SOLAR ELECTRIC
CIRCUIT BREAKER
IS BACKFED

Inverter combiner panel

PHOTOVOLTAIC SYSTEM
COMBINER PANEL
DO NOT ADD LOADS

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SHEET TITLE
X1.1 Signage

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DESCRIPTION:	DRAWN BY:	SnapNrack™ Solar Mounting Solutions
SNAPNRACK, STANDARD RAIL	D. Ryan	
PART NUMBER(S):	REVISION:	
232-01067, 232-01068, 232-01069, 232-01070, 232-02112, 232-02113	A	

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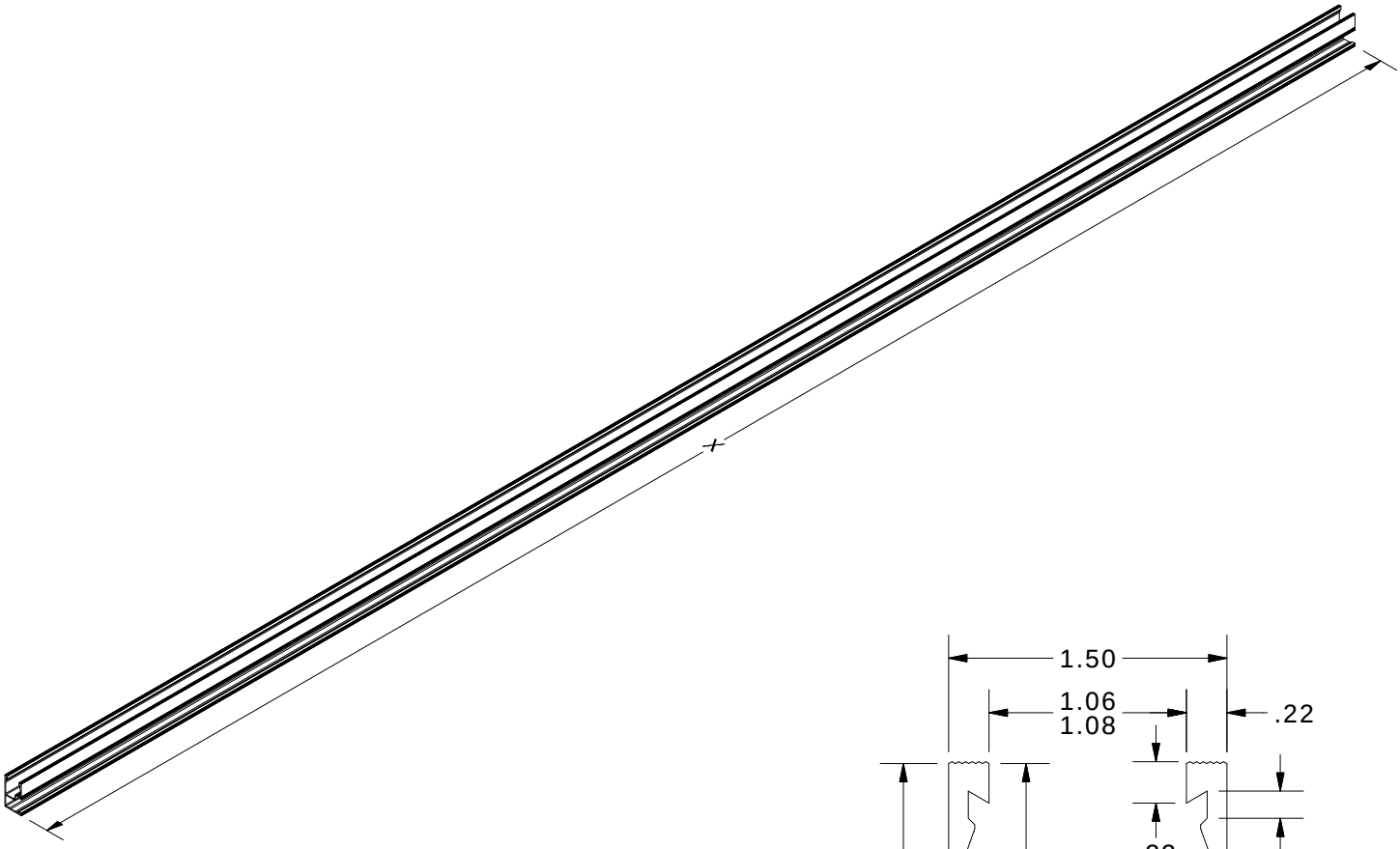
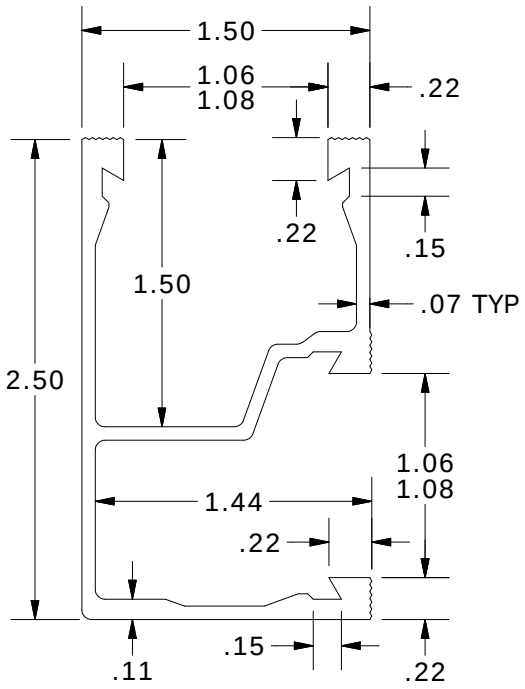




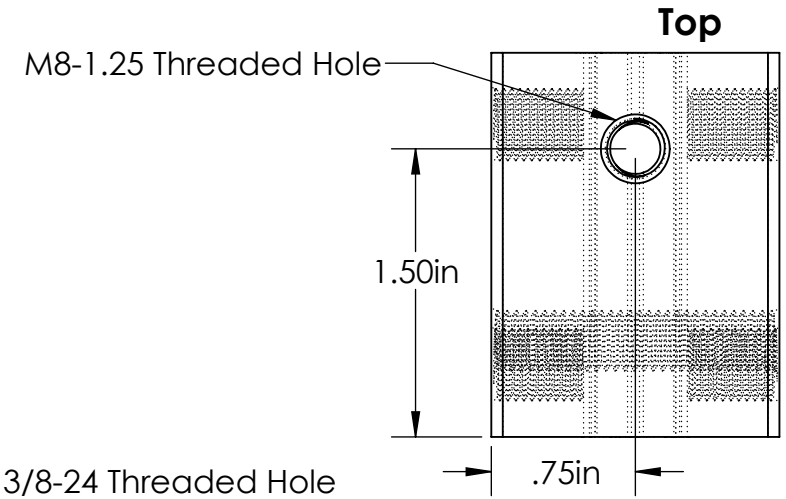
STANDARD RAIL PROPERTIES		
SKU	RAIL LENGTH (X)	FINISH
232-01067	122"	BLACK
232-01068	122"	CLEAR
232-01069	162"	BLACK
232-01070	162"	CLEAR
232-02112	122"	MILL
232-02113	162"	MILL

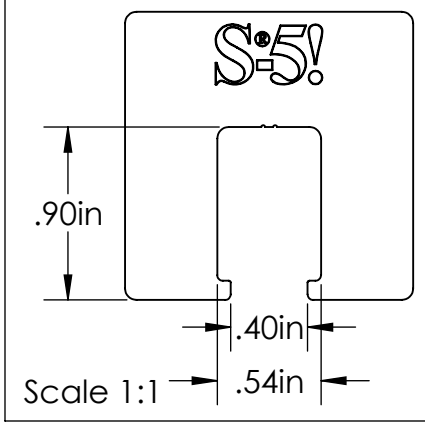
ALL DIMENSIONS IN INCHES

MATERIALS:	6000 SERIES ALUMINUM	OPTIONS:
DESIGN LOAD (LBS):	N/A	CLEAR / BLACK ANODIZED
ULTIMATE LOAD (LBS):	N/A	MILL FINISH
TORQUE SPECIFICATION:	N/A LB-FT	122" / 162" LENGTHS
CERTIFICATION:	UL 2703, FILE E359313	BOXES OF 2 / 6
WEIGHT (LBS):	7.65 - 10.16	BUNDLES OF 112

S-5-U

Top





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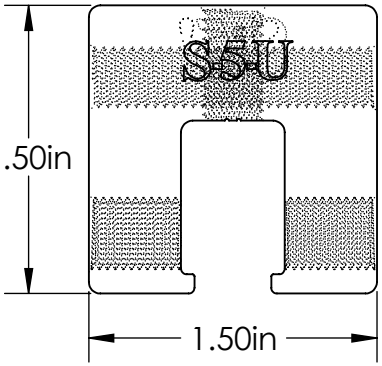

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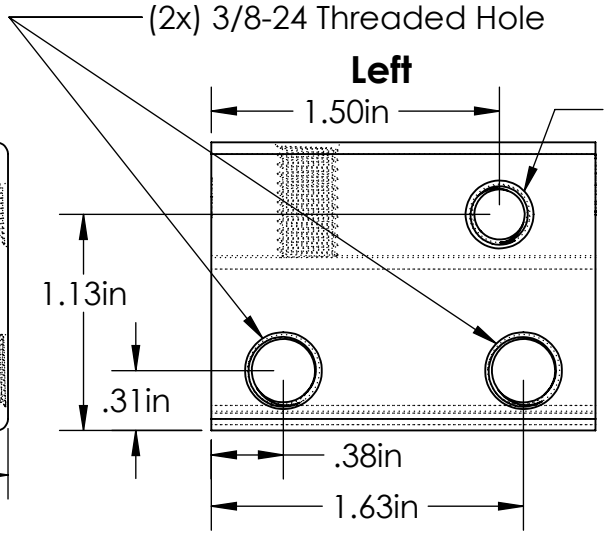

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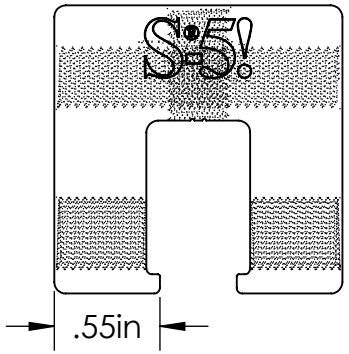

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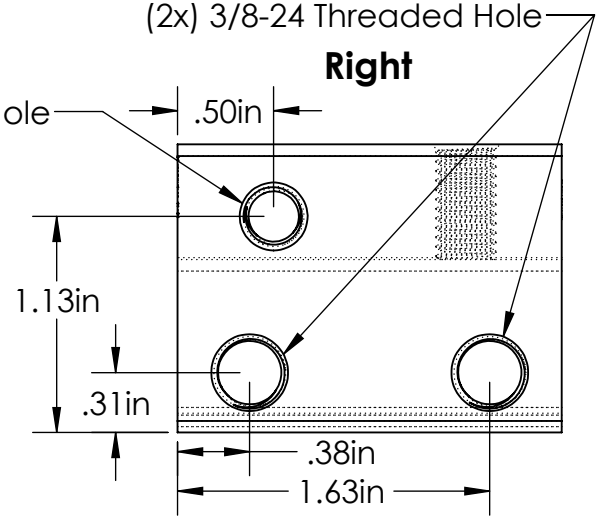

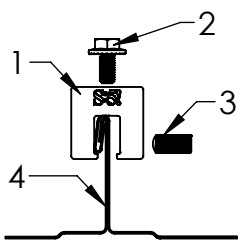

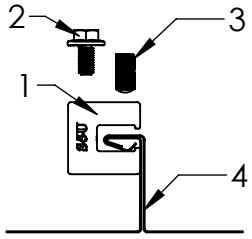

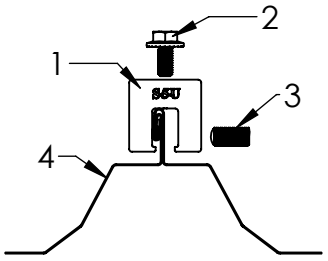

FOR STANDING SEAM SPECIFIC MECHANICAL LOAD TEST INFORMATION AND CLAMP INSTALLATION INFORMATION PLEASE VISIT: WWW.S-5.COM

General Notes:

1. S-5-U Clamp
2. M8-1.25 SS Hex Flange Bolt (13mm Socket)
3. 3/8-24 SS Round Point Setscrew (3/16 Hex Drive)
4. Example roof

MATERIAL: 6061 T6 Al	S-5! The Right Way!	METAL ROOF INNOVATIONS, LTD. 8655 TABLE BUTTE RD COLORADO SPRINGS, CO 80908 719-495-0518 719-495-0045(FAX)	
EST ASSEMBLY WEIGHT: 0.373 lbs			
SUPPLIED HARDWARE: M8-1.25 x 16 mm HEX Bolt (2x) 3/8-24 x .800" Setscrews	TITLE: S-5-U		
SCALE: 1:1	DRAWING NO.: U11-B-16-D	DRAWN BY: Kati Kadakas	DATE: 4/11/2016
EST. WEIGHT: Clamp: 0.304 lbs Setscrew: 0.0170 lbs Bolt: 0.0345 lbs			

INVERTERS

SolarEdge Three Phase Inverters for the 277/480V Grid for North America

SE10KUS / SE20KUS / SE30KUS / SE33.3KUS

The best choice for SolarEdge enabled systems

- Specifically designed to work with power optimizers
- Superior efficiency (98.5%)
- Integrated arc fault protection and rapid shutdown for NEC 2014 and 2017, per article 690.11 and 690.12
- UL1741 SA certified, for CPUC Rule 21 grid compliance
- Built-in module-level monitoring
- Internet connection through Ethernet or Wireless
- Small, lightweight, and easy to install outdoors or indoors on provided bracket
- Fixed voltage inverter for longer strings
- Integrated Safety Switch
- Supplied with RS485 Surge Protection Device, to better withstand lightning events

Three Phase Inverters for the 277/480V Grid[1] for North America

SE10KUS / SE20KUS / SE30KUS / SE33.3KUS

	SE10KUS	SE20KUS	SE30KUS	SE33.3KUS	
OUTPUT					
Rated AC Power Output	10000	20000	30000	33300	VA
Maximum AC Power Output	10000	20000	30000	33300	VA
AC Output Line Connections	4-wire WYE (L1-L2-L3-N) plus PE				
AC Output Voltage Minimum-Nominal-Maximum[2] (L-N)	244-277-305				Vac
AC Output Voltage Minimum-Nominal-Maximum[2] (L-L)	422.5-480-529				Vac
AC Frequency Min-Nom-Max[2]	59.3 - 60 - 60.5				Hz
Max. Continuous Output Current (per Phase)	12	24	36.5	40	A
GFDI Threshold	1				A
Utility Monitoring, Islanding Protection, Country Configurable Set Points	Yes				
INPUT					
Maximum DC Power (Module STC)	13500	27000	40500	45000	W
Transformer-less, Ungrounded	Yes				
Maximum Input Voltage DC to Gnd	490				Vdc
Maximum Input Voltage DC+ to DC-	980				Vdc
Nominal Input Voltage DC to Gnd	420				Vdc
Nominal Input Voltage DC+ to DC-	840				Vdc
Maximum Input Current	13.5	26.5	39	40	Adc
Maximum Input Short Circuit Current	45				Adc
Reverse-Polarity Protection	Yes				
Ground-Fault Isolation Detection	1MΩ Sensitivity		350kΩ Sensitivity[3]		
CEC Weighted Efficiency	98		98.5		%
Night-time Power Consumption	< 3		< 4		W
ADDITIONAL FEATURES					
Supported Communication Interfaces	RS485, Ethernet, ZigBee (optional)				
Rapid Shutdown – NEC 2014 and 2017 690.12	Automatic Rapid Shutdown upon AC Grid Disconnect[4]				
RS485 Surge Protection	Supplied with the inverter				
STANDARD COMPLIANCE					
Safety	UL1741, UL1741 SA, UL1699B, CSA C22.2, Canadian AFCI according to T.I.L. M-07				
Grid Connection Standards	IEEE1547, Rule 21, Rule 14 (HI)				
Emissions	FCC part15 class B				
INSTALLATION SPECIFICATIONS					
AC output conduit size / AWG range	3/4" minimum / 12-6 AWG		3/4" minimum / 8-4 AWG		
DC input conduit size / AWG range	3/4" minimum / 12-6 AWG				
Number of DC inputs	2 pairs		3 pairs[5]		
Dimensions (H x W x D)	21 x 12.5 x 10.5 / 540 x 315 x 260				in / mm
Dimensions with Safety Switch (H x W x D)	30.5 x 12.5 x 10.5 / 775 x 315 x 260				in / mm
Weight	73.2 / 33.2		99.5 / 45		lb / kg
Weight with Safety Switch	79.7 / 36.2		106 / 48		lb / kg
Cooling	Fans (user replaceable)				
Noise	< 50		< 55		dBA
Operating Temperature Range	-40 to +140 / -40 to +60[6]				˚F / ˚C
Protection Rating	NEMA 3R				

[1] For 208V inverters refer to: http://www.solaredge.com/files/pdfs/products/inverters/se-three-phase-us-inverter-208V-datasheet.pdf
[2] For other regional settings please contact SolarEdge support
[3] Where permitted by local regulations
[4] P/Ns SE10K/SE20K-US0xxxxxx have Manual Rapid Shutdown for NEC 2014 compliance (NEC 2017 compliance with outdoor installation)
[5] Field replacement kit for 1 pair of inputs P/N: DCD-3PH-1TBK; Field replacement kit for 3 pairs of fuses and holders P/N: DCD-3PH-6FHK-S1
[6] For power de-rating information refer to: https://www.solaredge.com/sites/default/files/se-temperature-derating-note-na.pdf

RoHS

solaredge

Power Optimizer
for North America
P730 / P800p / P850

POWER OPTIMIZER

PV power optimization at the module-level
The most cost effective solution for commercial and large field installations

- Specifically designed to work with SolarEdge inverters
- Up to 25% more energy
- Superior efficiency (99.5%)
- Balance of System cost reduction; 50% less cables, fuses and combiner boxes, over 2x longer string lengths possible
- Fast installation with a single bolt
- Advanced maintenance with module-level monitoring
- Module-level shutdown for installer and firefighter safety
- Compliant with arc fault protection and rapid shutdown NEC requirements (when installed as part of the SolarEdge system)
- Use with two PV modules connected in series or in parallel

Power Optimizer for North America

P730 / P800p / P850

Optimizer model (typical module compatibility)	P730 (for 2 x high power 72-cell PV modules)	P800p (for parallel connection of 2x 96-cell 5'' PV modules)	P850* (for 2x high power or bi-facial modules)	
INPUT				
Rated Input DC Power[1]	730	800	850	W
Absolute Maximum Input Voltage (Voc at lowest temperature)	125	83	120	Vdc
MPPT Operating Range	12.5 - 105	12.5 - 83	12.5 - 105	Vdc
Maximum Short Circuit Current (Isc)	11	14	12.5	Adc
Maximum DC Input Current	13.75	17.5	15.63	Adc
Maximum Efficiency	99.5			%
Weighted Efficiency	98.6			%
Overvoltage Category	II			
OUTPUT DURING OPERATION (POWER OPTIMIZER CONNECTED TO OPERATING SOLAREDGE INVERTER)				
Maximum Output Current	15	18		Adc
Maximum Output Voltage	85			Vdc
OUTPUT DURING STANDBY (POWER OPTIMIZER DISCONNECTED FROM SOLAREDGE INVERTER OR SOLAREDGE INVERTER OFF)				
Safety Output Voltage per Power Optimizer	1 ± 0.1			Vdc
STANDARD COMPLIANCE				
EMC	FCC Part15 Class B, IEC61000-6-2, IEC61000-6-3			
Safety	IEC62109-1 (class II safety), UL1741			
Material	UL-94 (5-VA), UV Resistant			
RoHS	Yes			
INSTALLATION SPECIFICATIONS				
Compatible SolarEdge Inverters	Three phase inverters			
Maximum Allowed System Voltage	1000			Vdc
Dimensions (W x L x H)	128 x 152 x 50 / 5 x 5.97 x 1.96	128 x 158 x 59 / 5 x 6.22 x 2.32	128 x 152 x 59 / 5 x 5.97 x 2.32	mm / in
Weight (including cables)	1064 / 2.34	1090 / 2.4	1064 / 2.34	gr / lb
Input Connector	MC4 Compatible			
Output Wire Type / Connector	Double Insulated; MC4 Compatible			
Output Wire Length	2.1 / 6.9	1.8 / 5.9	2.1 / 6.9	m / ft
Operating Temperature Range[2]	-40 - +85 / -40 - +185			°C / °F
Protection Rating	IP68 / NEMA6P			
Relative Humidity	0 - 100			%

[1] Rated STC power of the module. Module of up to +5% power tolerance allowed.
[2] For ambient temperature above +70°C / +158°F power de-rating is applied. Refer to Power Optimizers Temperature De-Rating Application Note for more details.

PV SYSTEM DESIGN USING A SOLAREDGE INVERTER[3][4]		THREE PHASE 208V		THREE PHASE 480V		
Compatible Power Optimizers		P730[5]	P800p, P850[5]	P730	P800p, P850	
Minimum String Length	Power Optimizers	8		13		
	PV Modules	16		26		
Maximum String Length	Power Optimizers	30		30		
	PV Modules	60		60		
Maximum Power per String		6000[6]	7200	12750[7]	15300	W
Parallel Strings of Different Lengths or Orientations		Yes				

[3] P800p and P850 can be mixed in one string. It is not allowed to mix P730 with P800p/P850 in one string or to mix P730/P800p/P850 with P300/P320/P400/P405 in one string.
[4] In a case of odd number of PV modules in one string it is allowed to install one P730/P800p/P850 power optimizer connected to one PV module. When connecting a single module to the P800p seal the unused input connectors with the supplied pair of seals.
[5] P730/ P800p/ P850 design with three phase 208V inverters is limited. Use the SolarEdge Site Designer for verification.
[6] For SE14.4KUS/SE43.2KUS: It is allowed to install up to 6,500W per string when 3 strings are connected to the inverter (3 strings per unit for SE43.2KUS) and when the maximum power difference between the strings is up to 1,000W.
[7] For SE30KUS/SE33.3KUS/SE66.6KUS/SE100KUS: It is allowed to install up to 15,000W per string when 3 strings are connected to the inverter (3 strings per unit for SE66.6KUS/SE100KUS) and when the maximum power difference between the strings is up to 2,000W.
* P850 replaced the P800s; they can be used interchangeably and can be connected in the same string.

Sunmodule®
SWA 340 - 350 XL MONO

SOLARWORLD
REAL VALUE

Data sheet

SOLARWORLD ASSURANCE™
WARRANTY PROTECTION PROGRAM

POWERING AMERICA FOR MORE THAN 40 YEARS

For over four decades SolarWorld Americas has been creating the highest quality solar cells and panels. Driven by uncompromising standards of quality and reliability, every solar panel we produce demonstrates our commitment to American innovation, manufacturing and sustainability.

- Our **Watts+** guarantees our panels will produce at least the minimum advertised nameplate power
- **PowAR-TECH™** Glass features the industry's best anti-reflective coating, capturing more light and increasing your panels' power
- Our patented **INFINITEE™** Corners and Frame Technology are press-fit for superior strength and aesthetics and enhanced drainage
- By capturing more light, **OPTIGRID™** Cell Layout increases lifetime performance while also greatly increasing durability
- **Perma-Sil™** J-Box sealing encloses critical electrical connections, protecting them against moisture intrusion
- With **CoAST** Salt Resistance, installations on islands or near coastal areas are certified against salt corrosion

MADE IN USA
OF US & IMPORTED PARTS

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Sunmodule®
SWA 340 - 350 XL MONO

SOLARWORLD
REAL VALUE

PERFORMANCE UNDER STANDARD TEST CONDITIONS (STC)*

		SWA 340	SWA 345	SWA 350
Maximum power	P_{max}	340 Wp	345 Wp	350 Wp
Open circuit voltage	V_{oc}	47.6 V	47.8 V	48.0 V
Maximum power point voltage	V_{mpp}	38.0 V	38.2 V	38.4 V
Short circuit current	I_{sc}	9.69 A	9.75 A	9.82 A
Maximum power point current	I_{mpp}	9.01 A	9.10 A	9.17 A
Module efficiency	η_m	17.04 %	17.29 %	17.54 %

Measuring tolerance (P_{max}) traceable to TUV Rheinland: +/- 2%

*STC: 1000W/m², 25°C, AM 1.5

PERFORMANCE AT 800 W/m², NOCT, AM 1.5

		SWA 340	SWA 345	SWA 350
Maximum power	P_{max}	259.3 Wp	263.8 Wp	267.2 Wp
Open circuit voltage	V_{oc}	41.5 V	41.8 V	42.0 V
Maximum power point voltage	V_{mpp}	34.9 V	35.2 V	35.4 V
Short circuit current	I_{sc}	8.05 A	8.10 A	8.16 A
Maximum power point current	I_{mpp}	7.42 A	7.50 A	7.56 A

Minor reduction in efficiency under partial load conditions at 25 °C: at 200 W/m², 97% (+/-3%) of the STC efficiency (1000 W/m²) is achieved.

PARAMETERS FOR OPTIMAL SYSTEM INTEGRATION

Power sorting	-0 Wp / +5 Wp
Maximum system voltage SC II / NEC	1000 / 1500 V
Maximum reverse current	25 A
Number of bypass diodes	3
Operating temperature	-40 to +85 °C
*Maximum design loads (Two rail system)**	113 psf downward, 64 psf upward

*Please refer to the Sunmodule installation instructions for the details associated with these load cases.

COMPONENT MATERIALS

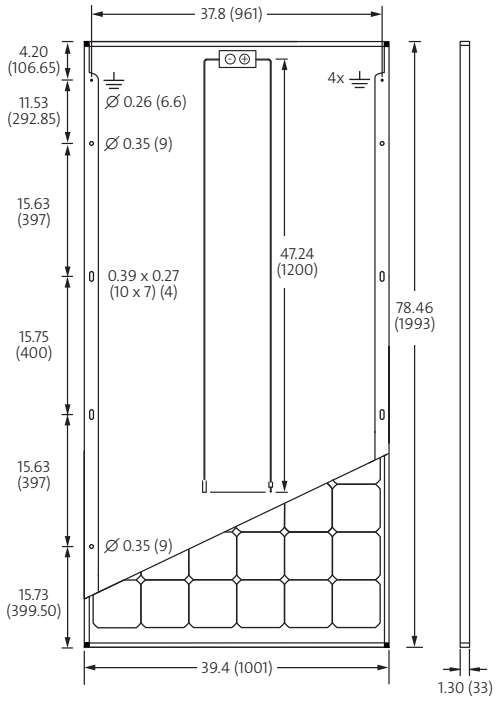
Cells per module	72
Cell type	Monocrystalline PERC
Cell dimensions	6 in x 6 in (156 mm x 156 mm)
Front	Tempered safety glass with ARC (EN 12150)
Back	Multi-layer polymer backsheet, white
Frame	Black anodized aluminum
J-Box	IP65
Connector	PV wire (UL4703) with Amphenol UTX connectors
Module fire performance	(UL 1703) Type 1

DIMENSIONS / WEIGHT

Length	78.46 in (1993 mm)
Width	39.40 in (1001 mm)
Height	1.30 in (33 mm)
Weight	47.6 lb (21.6 kg)

THERMAL CHARACTERISTICS

NOCT	46 °C
TC I_{sc}	0.03 % /C
TC V_{oc}	-0.29 % /C
TC P_{mpp}	-0.42 % /C



All units provided are imperial. SI units provided in parentheses.

ORDERING INFORMATION

Order number	*Description*
82000758	Sunmodule SWA 340 XL mono (black frame)
82000760	Sunmodule SWA 345 XL mono (black frame)
82000762	Sunmodule SWA 350 XL mono (black frame)

CERTIFICATES AND WARRANTIES

Certificates	IEC 61730	IEC 61215	UL 1703
	IEC 62716	IEC 60068-2-68	IEC 61701
*Warranties**	Product Warranty		20 years
	Linear Performance Guarantee		25 years

**Supplemental warranty coverage available through SolarWorld Assurance™ Warranty Protection Program – www.solarworld.com/assurance*

SolarWorld Americas Inc. reserves the right to make specification changes without notice. This data sheet complies with the requirements of EN 50380.

SW7224US 20180129

Series 100

The Installers Choice for Residential Solar Mounting

- Entire Mounting System from Single Manufacturer under 1 Warranty
- Snap-in features make the install process intuitive and fast
- Industry Leading Technical Support Services for Every Customer
- The Most Comprehensive UL 2703 Listing in the Industry

Start Mounting Solar on Your Roof Today

RESOURCES	snapnrack.com/resources
DESIGN	snapnrack.com/configurator
WHERE TO BUY	snapnrack.com/where-to-buy

The SnapNrack Series 100 Roof Mount System

is designed to provide the lowest total install cost of any residential mounting system.

The top-of-the-line features of the SnapNrack mounting system reduce install times and labor cost while eliminating the need for service calls creating the lowest install lifecycle cost of any mounting system.

Wire Management

- Products such as the standard rail channel keep wires neatly organized providing a clean finished look to every install
- Industry's largest offering of wire management accessories include snap in junction box, 4-wire and trunk cable clamps, as well as conduit clamps for both composition shingle and tile roofs.

Undeniable Aesthetics

- Render the mounting system invisible by using Universal End Clamps that fasten modules while remaining hidden underneath the array
- Array skirt provides a sleek look and attractive design to the front of the array
- Rail-based system provides rigid structure tucked away underneath array with no unsightly mounts at the top or bottom

Quality. Performance. Innovation.

SnapNrack solutions are focused on simplifying the installation experience through intuitive products and the best wire management in the industry.

SnapNrack™
Solar Mounting Solutions

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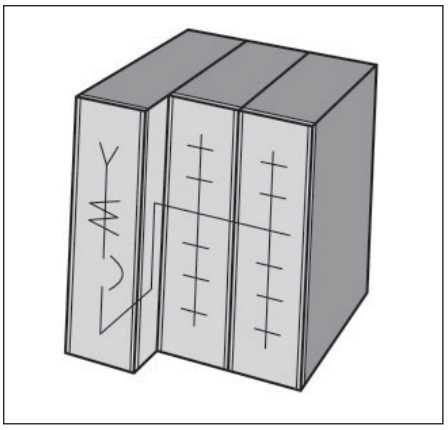
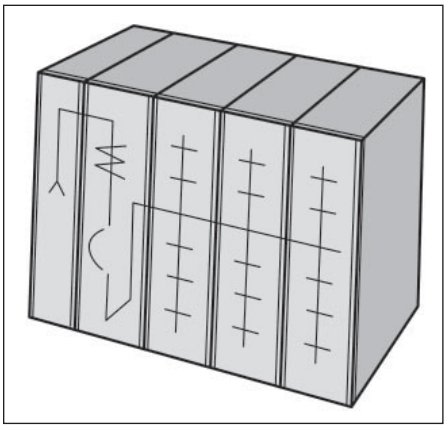
Low-Voltage Switchgear



Type SB1 Switchboard Pictorial



Type SB2 Switchboard Pictorial

Whether the design is for a 240V AC, 400 ampere system; a 600V AC, 4000 ampere system; or something in between, Siemens Switchboards should be considered. Every aspect of design has been aimed at improving layout convenience, reducing installation costs, and minimizing the impact and cost of system changes. These switchboards provide the rugged construction and service flexibility necessary in systems for industrial plants, hi-rise complexes, hospitals, and commercial buildings, and are built to UL-891 and NEMA PB-2 standards.

Type SB1 for Limited Space Applications

The SB1 switchboard has been specifically designed for those applications where floor space is at a premium. The rear of all sections align so the switchboard can be installed against a wall. The SB1 contains front-connected main protective devices and through-bus ratings up to 2000 amperes at 600V AC.

Type SB2 for Increased Service and More Load Cable Room

Siemens SB2 switchboard can have extra depth behind the vertical bus in each distribution section, and contains main protective devices and through-bus rated up to 4000 amperes at 600V AC. The rear of all sections align as a standard. Front and rear alignment is available as an option.

Type SB3 For Custom Options

The SB3 switchboard is available with main bus up to 6000 amperes. All sections are front and rear aligned. Options include, but are not limited to, incoming and outgoing busway, Siemens ACCESS™ System communications,[1] and cold sequence utility C.T. Compartments.

Type RCIII Rear Connected Switchboards

The RCIII switchboard differs from the SB3 switchboard primarily in the mounting of the devices in the distribution section. The branch and feeder devices are individually mounted. Because of this method of mounting, access to outgoing cable terminations must be from the rear of the switchboard. Bus bar extensions from the feeder devices are run back to the rear of the unit for easy access.

The front and rear of all sections align, designed for mounting away from the wall. RCIII switchboards will accommodate systems up to 6000 amperes, 600 volts maximum in any three-phase three-wire or three-phase four-wire configuration. The main bus can be specified for 600 to 6000 ampere rating. Main devices and bus ties are available up to 5000 amperes, branch devices up to 2000 amperes. As with Type SB3, the RCIII switchboard can be of indoor or outdoor NEMA 3R construction.

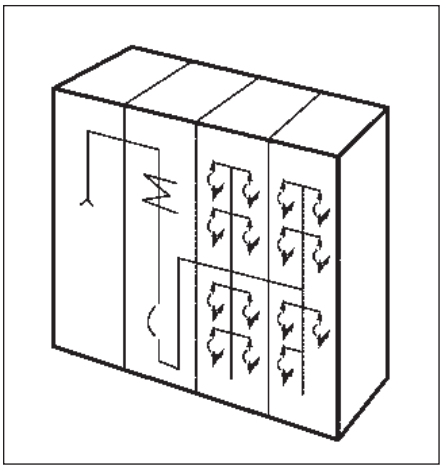
Switchboard Distribution Sections

All standard distribution sections are 90 in. (2286) mm) high and 38 in. (965 mm) wide. Optional height of 70 in. (1778 mm) and optional width of 32 in. (813 mm) and 46 in. (1168 mm) are also available.

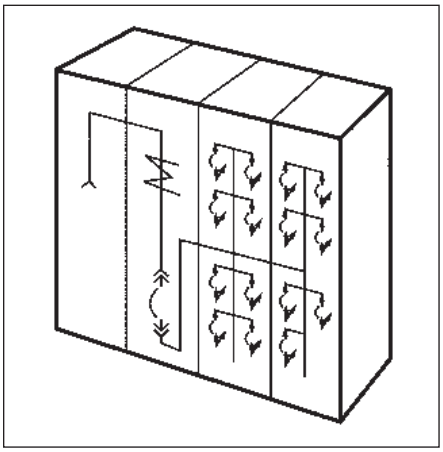
SB1 distribution sections are 20 in. (508 mm) deep. For deeper sections, SB2 and SB3 switchboards must be chosen.

SB2 distribution sections have a standard depth of 20 in. (508 mm) but can also be specified in depth of 28 in. (711 mm) and 38 in. (965 mm) when additional space is required. Rear access is required to make use of the additional depth of the SB2 and SB3 switchboards, and to provide access to bus connections, where required. SB2 may be installed against a wall.

[1] See Section 1 of this Guide for a complete discussion of Siemens ACCESS™ system.



RCIII Switchboard — Fixed Mounted Devices



RCIII Switchboard — Drawout Mounted Devices

Table 7.1 General

Switch-board Type	Main Bus Ampere Rating	Connected	Access	Install Against Wall?
SB1	to 2000	Front	Front	Yes
SB2	to 4000	Front	Front	Yes
SB3	to 6000	Front	Rear	No
RCIII	to 6000	Rear	Rear	No

① Distribution section with two high 800 or 1200A Vacu- Break is 28 in. (711 mm) deep.
② Distribution section with two high bolted pressure switch is 38 in. (965 mm) deep minimum.
③ Width depends on branch device. See page 128.
④ Fixed mounted only.
⑤ Drawout or fixed mounted.

Table 7.2 Main Devices

Switch-board Type	Mounting		Molded Case Circuit Breaker Fixed	Vacu-Break Fusible Switch Fixed	HCP Fusible Switch	Bolted Pressure Fusible Switch Fixed	Insulated Case Breaker	LV Power Circuit Breaker
	Individual	Panel						
SB1	Yes		400-2000A	800-1200A	400-1200A	800-2000A	—	—
		Yes	400-1200A	400-600A	400-1200A	—		
SB2	Yes		400-3200A	400-1200A	400-1200A	800-4000A	800-4000A ④	—
		Yes	400-1200A	400-600A	400-1200A	—	—	
SB3	Yes		400-3200A	400-1200A	400-1200A	800-4000A	800-5000A ⑤	—
		Yes	400-1200A	400-600A	400-1200A	—	—	
RCIII	Yes	No	400-3200A	400-1200A	400-1200A	800-4000A	800-5000A Fixed / Drawout	800-4000A Drawout

Table 7.3 Branch Devices

Switch-board Type	Mounting		Molded Case Circuit Breaker Fixed	Vacu-Break Fusible Switch Fixed	HCP Fusible Switch	Bolted Pressure Fusible Switch Fixed	Insulated Case Breaker	LV Power Circuit Breaker
	Individual	Panel						
SB1	No	Yes	15-1200A	30-600A	400-1200A	—	—	—
SB2	Yes		—	800-1200A	400-1200A	—	—	—
		Yes	15-1200A	30-600A	400-1200A	—	—	—
SB3	Yes		400-3000A	800-1200A	400-1200A	800-4000A	800-2000A ⑤ —	—
		Yes	15-1200A	30-600A	400-1200A	—	—	—
RCIII	Yes-Rear	No	100-2000A	100-1200A	400-1200A	800-4000A	800-4000A Fixed / Drawout	800-1600A Drawout

Table 7.4 Distribution Sections

Switch-board Type	Access	Dimensions in inches (mm)					
		Height		Width		Depth	
		Std.	Opt.	Std.	Opt.	Std.	Opt.
SB1	Front	90 (2286)	—	38 (965)	32 or 46 (813 or 1168)	20 (508)	—
SB2	Front	90 (2286)	—	38 (965)	32 or 46 (813 or 1168)	20 (508) ①	28 or 38 (711 or 965) ①
SB3	Front & Rear	90 (2286)	70 (1778)	38 (965)	32 or 46 (813 or 1168)	20 (508) ① ②	28, 38, 48, or 58 (711, 965, 1219 or 1473) ① ②
RCIII	Rear	90 (2286)	70 (1778)	25, 32, 38, (635, 813, or 965) ③	32 or 46 (813 or 1168)	48 or 58 (1219 or 1473)	—

Service Sections

Bussed or Non-Bussed Pull Sections

With Siemens switchboards, a non-bussed pull section, or a cross-bussed pull section for underground feed can be selected. The unique cross-bussed section permits cable to be run straight from underground to the bus bars at the top of the section. Non-bussed pull sections have openings for carrying the underground feed cables to the service section bus.

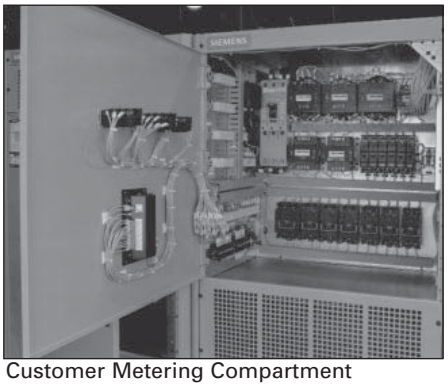
Typical switchboards consist of a service section, and one or more distribution sections. Service sections can be fed directly from overhead by cable or busway. When fed from underground, a separate pull section is usually added. The service section is then fed from the adjacent underground pull section.

Bolted Pressure Switches, Vacu-Break® and HCP Switches equipped for bottom feed will accept cable directly from underground into the service section.

Service Section Options Utility Metering

In addition to the main disconnect, the service section usually contains utility metering provisions. "Hot" metering (CT's on the line side of the main disconnect) is normal, but "cold" metering provisions (CT's on the load side of the main disconnect) can also be furnished.

Whether hot or cold metering is required, the CT's provided by the utility company will be mounted in a completely separate compartment. The compartment will be built to utility company standards, with hinged doors and provisions for metering equipment provided by the utility.



Customer Metering Compartment

Customer Metering

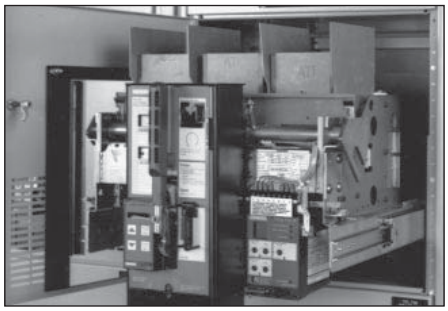
The service section often provides space for many user instrument requirements. Ammeters, voltmeters, and their associated selector switches can be mounted in the service section along with the main disconnect. A separate section would be needed only if a large instrument or an unusual number of instruments were required.

Main Disconnect Options

Main protective devices can be mounted individually for quick access in an emergency. Switchboards will accommodate a variety of main protective devices. Selection depends on the characteristics of each electrical system.

Type RL Power Circuit Breakers

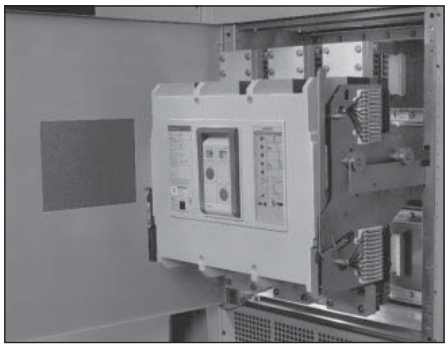
Power circuit breakers, 800 – 5000 amperes, 600 volts AC, with solid-state overcurrent trip devices offer stored-energy tripping plus optional ground fault protection, selective tripping, and a broad range of accessories.



Type RL, LV Power Circuit Breaker

Type SB Encased Systems Breakers

Insulated case circuit breakers, 800 – 5000 amperes, 600 volts AC, with solid-state trip devices, offer stored energy tripping plus optional ground fault protection, selective tripping, and a broad range of accessories.



Type SB Encased Systems Breaker

Molded Case Circuit Breakers Heavy Duty

Standard interrupting capacity, thermal-magnetic breakers, 400 – 2000 amperes, 600 volts AC, provide protection that allows "immediate restoration of power" for normal system requirements. A wide range of accessory options is available, including shunt trip, motor operator, auxiliary switches, alarm switches, and others.

Extra Heavy Duty Breakers

High-interrupting-capacity thermal-magnetic breakers, 400 – 2000 amperes, 600 volts AC, provide increased protections where high available fault currents exist, with the same convenience and accessory feature offered in standard interrupting capacity breakers.

Solid-State Sensitrip®

Full function breakers 400 – 3200 amperes, 600 volts AC, have solid-state circuitry which assures minimal damage through the quick interruption control of fault currents, and includes short-time delay and ground fault trip for branch device coordination.

Fuseless Current Limiting

Molded case breakers, 400 – 1600 amperes, 600 volts AC, with thermal-magnetic protection provide coordinated protection for branch devices and circuits where extremely high fault currents are available. Solid state current limiting molded case breakers also available in ratings of 400 – 1600A.

Fusible Switches

Vacu-Break® Fusible Switches, 400 – 1200 amperes, 600 volts AC, provide protection, coordination with branch protective fusible switches, and application flexibility in systems where high available fault currents are encountered.

HCP Fusible Switch

HCP switches, 400 – 1200 amperes, 600 volts AC, combine economy with extremely high interrupting capacity in conjunction with Class J and Class L fuses. Has visible contacts and optional auxiliary contacts, shunt trip and ground fault relaying.

Bolted Pressure Switches

Bolted pressure switches, 800 – 4000 amperes, 480 volts AC, combine economy with extremely high interrupting capacity in conjunction with Class L fuses. Options include short trip, ground fault relaying, and a wide range of other accessories.

Ground Fault Relays

All main protective devices, except Vacu-Break fusible switches, can be equipped with ground fault relays to comply with the National Electrical Code (Section 230-95) ground fault protection requirements.

Bus Bars Design
Siemens switchboard bus bars are available in standard tin-finished aluminum or optional silver-finished copper. Standard bus is sized to limit heat rise to 65°C above an ambient temperature of 40°C maximum in accordance with UL 891.

As an option, conductor material can be sized according to density limits, based on bus material. The applicable limits are:

Aluminum — 750 amperes / sq. in.

Copper — 1000 amperes / sq. in.

In accordance with NEMA and UL 891 standards, at each distribution section, the through-bus capacity is reduced as load is taken off. The through-bus is tapered to a minimum of one-third the ampacity of the incoming service mains.

If required by special system characteristics, switchboards can be supplied with optional full-capacity bus; i.e., the ampacity of the through-bus remains at the full ampacity of the main throughout the switchboard.

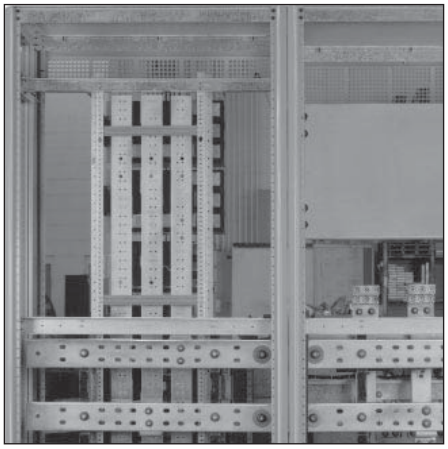
Splice Plates
All splice plates can be accessed, bolted, and unbolted from the front of the switchboard to make connection of adjacent sections easy. Each splice plate is attached with one 1/2-inch grade 2 bolt, and a 2-inch or 3-inch Belville washer on each end. This reduces installation time while increasing contact pressure at the joint.

To make installation and servicing of the splice plates easier, all phase and neutral through-busses are stacked one above the other, eliminating the need to stuff bolts in between bus bars that are stacked one behind the other in the same horizontal plane.

Disconnect Links in Service Entrance Equipment
In switchboard service sections to be used as service entrance equipment on 1Ø3W and 3Ø4W systems, provisions must be included to isolate the neutral bus from the grounded service neutral. This removable link gives you the ability to check branch neutral continuity on the load side of the main disconnect.

To maintain a service ground to the switchboard frame while the neutral link is removed, a bonding strap is connected from the switchboard frame to the neutral bus on the line side of the removable link.

UL and "SUSE" (suitable for use as service entrance) labels will be furnished on service sections specified for service entrance.


Bus Bars and Lug Construction


Splice Plates

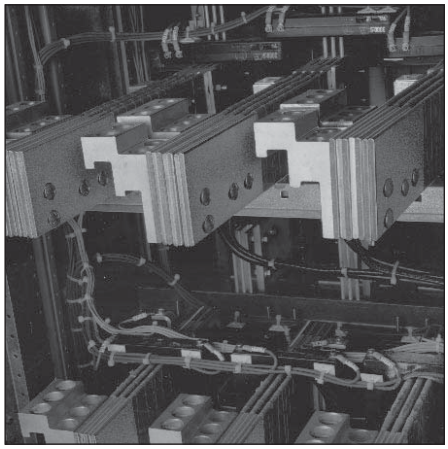
Cable Terminals
Screw mechanical connectors (lugs) are provided as standard equipment on all devices. However, compression connectors are available as an option on all main lugs, main bolted pressure switches, main power circuit breakers, main molded case, main fusible devices, and main insulated case circuit breakers.

Distribution Sections
Siemens switchboard distribution sections are engineered for accessibility and expanded use. For expanded wiring room and exceptional accessibility, generous top and bottom gutters have been created by locating through-bus in the rear center of the distribution section. In cable entrance sections, no obstructions are less than 8 in. (203 mm) above the floor, and no live bus bars are located less than 10 in. (254 mm) off the floor. So there is plenty of room to run cables into the distribution section for connections.

Standard bolted gutter covers give complete access to load conductors. Optional hinged gutter covers can be furnished where quick access to load connectors is desired.

Heavy channels form a rigid ring at the base and top of each section, and heavy gauge structural members are used for the vertical corner posts eliminating encroachment of additional bracing into the top and bottom gutter areas.

To provide additional room for top load cable routing where needed, pull box extensions are available in heights of 10,15, 20, 25, and 30 in. (254, 381, 508, and 762 mm) to mount on any standard distribution section. Top plates on all sections are easily removed in the field for drilling, punching, and cutting conduit entry holes.


Screw Mechanical Connectors

Because all distribution sections can accommodate any combination of panel-mounted branch devices, including molded case circuit breakers, Vacu-Break fusible switches, and motor starters, future system modifications are easier to handle without adding switchboard sections.

To make additional distribution sections easier to install when they are necessary, the through-bus in each distribution section is extended, and the end is predrilled to accept splice plate bolts. To add a section to an existing switchboard, set the new section flush against the side of the existing distribution section, and bolt together the bus bar splice plates.

Distribution Sections (cont'd)
Distribution sections of SB1, SB2, and SB3 switchboards can accept any combination of molded case circuit breakers and fusible switches. If the system calls for a mixture of these devices, there is the option of grouping the devices in logical patterns within a single section. A separate section is not needed for each type of device. And because all types of devices can be put in a single section, the total number of sections required in the system can be reduced.

For future modifications, devices can be added or replaced as the system grows and changes. If a motor starter has to be added after the installation, an entire switchboard section need not be provided to house it. It can be installed in any distribution section with available unit space.

Operating Temperatures
All distribution sections contain louvers both at the top and bottom to assure cool operation in accordance with UL Standard 891.

Bus Location
All through-bus to adjoining sections is located in the rear center of the distribution section. This design provides large, unobstructed wiring gutters at the top and bottom of each section. Wiring takes less time and costs less to install.

Motor Starter Switchboards
Type SB3 switchboards offer a complete line of group-mounted starters that provide a compact and convenient method of combining power distribution and control circuits in one location.

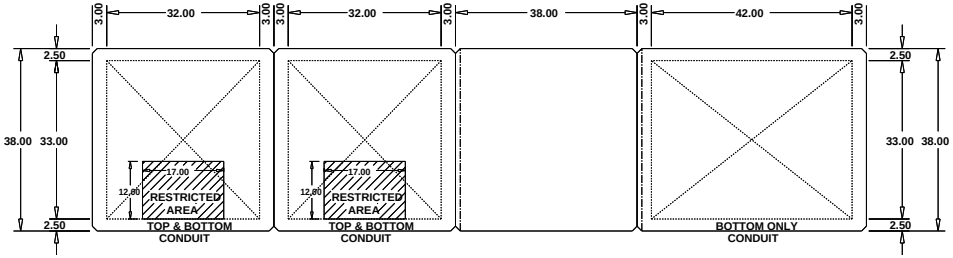
Motor starter units are available with fully bussed circuit breaker or fusible Vacu-Break units, factory-wired on the load side to full voltage, non-reversing starters to reduce installation time.

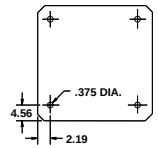
Type A wiring is standard without terminal blocks. The fusible switch, circuit breaker, or starter unit is factory wired; however, control and load cabling is connected by the installer directly onto the starter.

Type B wiring is available as an option. Control wiring is brought out to terminal blocks and identified. Starter load terminals are conveniently located near the vertical wiring gutters and adjacent to control terminal blocks. No wiring external to the unit is furnished.

Type C wiring is not available in motor starter switchboards.

Front Connected Switchboards, Type SB1





TYPICAL BOLTDOWN HOLE PROVISION FOR CUBICLE BOTTOM EACH SECTION

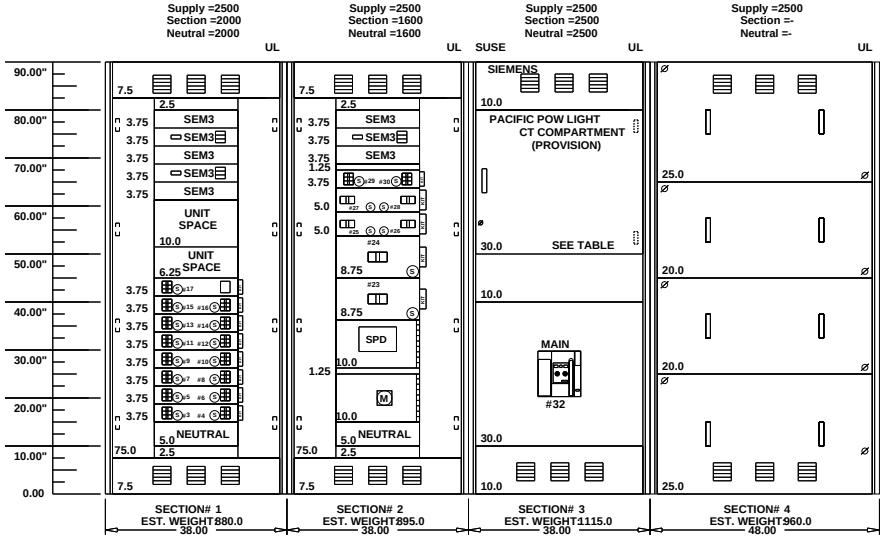
- INCOMING LUGS
- LOAD LUGS
- BARRIER
- NEUTRAL DISCONNECT LINK
- BONDING STRAP
- CONCEALED HINGES
- BARREL LOCK PROVISION
- SEALING DEVICE
- STANDARD ACCURACY SEM3 METER
- HIGH ACCURACY SEM3 METER
- PROVISION DEVICE

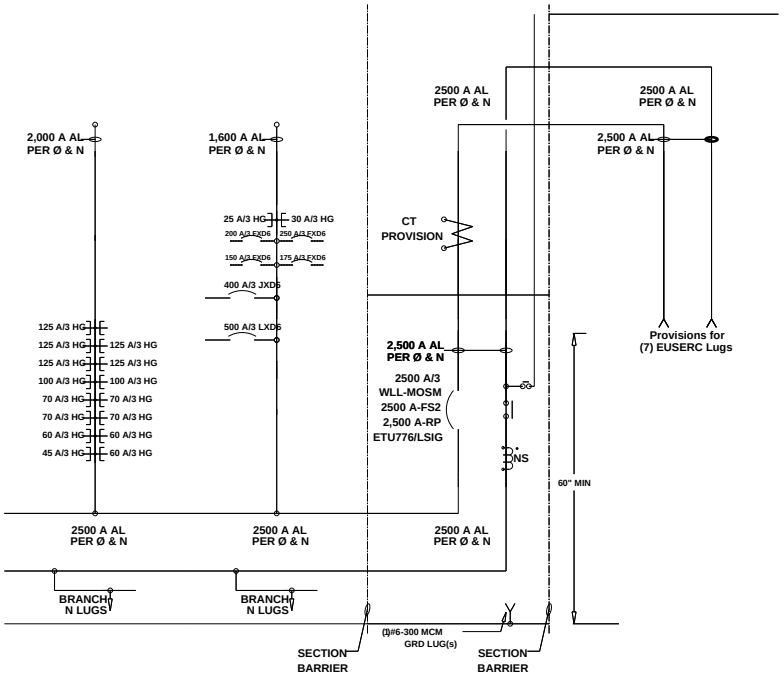
NOTES

CONSTRUCTION	:SWITCHBOARD IS BUILT AND LABELED PER UL 891 IN EFFECT.
INCOMING	:AMPERES: 2,500
SERVICE	:SYSTEM VOLTAGE: 480Y/277 3Ø4W Wye AC
INTERRUPTING RATING	:THE SHORT CIRCUIT INTERRUPTING CAPABILITY IS 35,000 :RMS SYMMETRICAL AMPERES AT 480 VOLTS BASED ON THE LOWEST SHORT CIRCUIT CURRENT RATING OF THE INDIVIDUAL OR SERIES RATED COMBINATION DEVICES INSTALLED AT TIME OF MANUFACTURE OF BUSSING STRUCTURE. THE BUSSING STRUCTURE IS CONSTRUCTED TO WITHSTAND FAULTS OF 65,000 RMS SYMMETRICAL AMPERES.
ENCLOSURE	:ENCLOSURE IS TYPE NEMA 1 FOR INDOOR APPLICATION. SEISMICENCLOSURE SHALL BE CONSTRUCTED TO MEET SEISMIC REQUIREMENTS
EXTERIOR	:ANSI 61 LIGHT GREY PAINT.
TERMINATIONS	:TERMINATIONS ARE ACCESSIBLE FROM THE FRONT.
BUS BARS	:TIN PLATED ALUMINUM BUS BARS SIZED ON BASIS OF 65°C MAXIMUM TEMPERATURE RISE.
BUS BARS	:THE SWITCHBOARD THROUGH BUS SHALL BE EXTENDED ON THE LAST LOAD SIDE SECTION TO ALLOW FUTURE SECTION ADDITIONS.
BUS BARS	:THE GROUND BUS IN THIS SWITCHBOARD IS Aluminum SIZED PER UL 891 OR GREATER.
UTILITY	:PACIFIC POW LIGHT

HINGED GUTTER COVERS ARE PROVIDED ON EACH SWITCHBOARD SECTION CONTAINING PANEL-MOUNTED DEVICES FOR EASY ACCESS TO LOAD CONNECTIONS.

NAMEPLATE :NAMEPLATES ATTACHED WITH ADHESIVE.





ABBREVIATIONS

'UL' INDICATES THAT THE MARKED SWITCHBOARD SECTION COMPLIES WITH ALL APPLICABLE UNDERWRITERS LABORATORIES STANDARDS AND IS IDENTIFIED WITH A UL LABEL.

'SUSE' INDICATES THAT THE MARKED SWITCHBOARD SECTION IS SUITABLE ONLY FOR USE AS SERVICE ENTRANCE EQUIPMENT.

'UNIT SPACE' INDICATES UNOCCUPIED AREA INTENDED FOR FUTURE USE.

'MOSM' INDICATES A MANUALLY OPERATED STATIONARY MOUNTED BREAKER.

'GFT' INDICATES GROUND FAULT TRIP.

'SPD' INDICATES SURGE PROTECTIVE DEVICE

UTILITY CO. :
PACIFIC POW LIGHT

INSTALLATION NOTE

Caution: If switchboard is installed on a housekeeping slab greater than 2-1/2" the meter may be over the 6'3" maximum allowable meter height. Consult utility if you need more information.

NO.	REVISIONS	DRAWN BY:	DATE
1	0	turnpx00c	8-11-2016

JOB: **SOU McNeal Pavilion**

P.O. -
CONTR -
TIE -
S.O. -
CUST. NORTH COAST ELECTRIC COMPANY
CONSLT -
BY turnpx00c
DATE 8-11-2016
ENG. LOC. -
APP.
MFG. LOC. -
APP.
DWG. FILE
DESIGNATION MDC
DWG. NO. turnpx00c_05031600_01_00_O00-20000-1
SHEET 1 OF 3
REV. 1

Siemens Industry, Inc.
Norcross, Georgia

CIRCUIT SCHEDULE

NUMBER	DEVICE DESCRIPTION	TRIP AMPERAGE (A)	INTERRUPT RATING (AIC)	POLES	METER ACC	CT RATING	LOAD LUG SIZE PER PHASE
1	_	_	_	_	_	_	_
2	_	_	_	_	_	_	_
3	HG	45	35000	3	S	50	(1)#6-#1/0CU/(1)#4-#2/0AL MECH
4	HG	60	35000	3	S	125	(1)#6-#1/0CU/(1)#4-#2/0AL MECH
5	HG	60	35000	3	S	125	(1)#6-#1/0CU/(1)#4-#2/0AL MECH
6	HG	60	35000	3	S	125	(1)#6-#1/0CU/(1)#4-#2/0AL MECH
7	HG	70	35000	3	S	125	(1)#6-#1/0CU/(1)#4-#2/0AL MECH
8	HG	70	35000	3	S	125	(1)#6-#1/0CU/(1)#4-#2/0AL MECH
9	HG	70	35000	3	S	125	(1)#6-#1/0CU/(1)#4-#2/0AL MECH
10	HG	70	35000	3	S	125	(1)#6-#1/0CU/(1)#4-#2/0AL MECH
11	HG	100	35000	3	S	125	(1)#6-#1/0CU/(1)#4-#2/0AL MECH
12	HG	100	35000	3	S	125	(1)#6-#1/0CU/(1)#4-#2/0AL MECH
13	HG	125	35000	3	S	125	(1)#6-#1/0CU/(1)#4-#2/0AL MECH
14	HG	125	35000	3	S	125	(1)#6-#1/0CU/(1)#4-#2/0AL MECH
15	HG	125	35000	3	S	125	(1)#6-#1/0CU/(1)#4-#2/0AL MECH
16	HG	125	35000	3	S	125	(1)#6-#1/0CU/(1)#4-#2/0AL MECH
17	HG	125	35000	3	S	125	(1)#6-#1/0CU/(1)#4-#2/0AL MECH
18	_	_	_	_	_	_	_
19	_	_	_	_	_	_	_
20	WL	_	_	_	_	_	_
21	_	_	_	_	_	_	_
22	WL	_	_	_	_	_	_
23	LXD6	500	35000	3	S	600	(2)4/0-500 KCMIL AL MECH
24	JXD6	400	35000	3	S	400	(2)4/0-500 KCMIL AL MECH

JOB: SOU McNeal Pavilion

P.O.: -
CUST.: NORTH COAST ELECTRIC COMPANY
CONTR: -
CONSLT: -
TIE: -
BY: turnpx00c
ENG. LOC.: -
DESIGNATION: MDC
S.O.: -
DATE: 8-11-2016
APP.:
MFG. LOC.: -
DWG. NO.: turnpx00c_05031600_01_00_O00-20000-2

Siemens Industry, Inc.
Norcross, Georgia

APP.:
DWG. FILE:
SHEET 2 OF 3
REV.: 1

CIRCUIT SCHEDULE

NUMBER	DEVICE DESCRIPTION	TRIP AMPERAGE (A)	INTERRUPT RATING (AIC)	POLES	METER ACC	CT RATING	LOAD LUG SIZE PER PHASE
25	FXD6	150	35000	3	S	250	(1)#4-350 KCMIL AL MECH
26	FXD6	175	35000	3	S	250	(1)#4-350 KCMIL AL MECH
27	FXD6	200	35000	3	S	250	(1)#4-350 KCMIL AL MECH
28	FXD6	250	35000	3	S	250	(1)#4-350 KCMIL AL MECH
29	HG	25	35000	3	S	50	(1)#14-#6CU/ (1)#12-#6AL MECH
30	HG	30	35000	3	S	50	(1)#14-#6CU/ (1)#12-#6AL MECH
31	_	_	_	_	_	_	_
32	WL	2,500	100000	_	_	_	N/A

JOB: SOU McNeal Pavilion

P.O.: -
CUST.: NORTH COAST ELECTRIC COMPANY
CONTR: -
CONSLT: -
TIE: -
BY: turnpx00c
ENG. LOC.: -
DESIGNATION: MDC
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MFG. LOC.: -
DWG. NO.: turnpx00c_05031600_01_00_O00-20000-3

Siemens Industry, Inc.
Norcross, Georgia

APP.:
DWG. FILE:
SHEET 3 OF 3
REV.: 1

SOU HAWK DINING FACILITY

Location of
MDF Room 013

OUTDOOR
DINING

New Concrete Slab and CMU Screen Wall for Batteries & Equipment. Enclosure Design & Construction by SOU

Route for connection to Dining Electrical Service. Excavation and Backfill by SOU. All Conduit and Wiring by Contractor

±280' ~ 4"Ø 'PERFORATED FOUNDATION DRAIN'
EXTERIOR FOUNDATION BOTTOM MAY VARY
IE = ±980.33

±195' ~ 6"Ø 'HDPE'
STORM @ 0.5%

±85' ~ 8"Ø 'HDPE'
STORM @ 0.5%

±58' ~ 6"Ø 'HDPE'
STORM @ 2.4%

ie ±980.67
ff 984.00
grd 983.50
ie ±980.00
ie 979.60
ie ±982.00
grd 983.33
tow 979.50
grd 981.50
conc 983.70
ie 980.00
sw 983.80
grd 983.50
3.7%
4.9%
sw 983.27
grd 982.65
grd 983.20
sw 983.28
sw 983.24
sw 983.12
sw 982.96
sw 982.81
2.0%
sw 982.47
sw 982.72
sw 983.00
ie ±978.6
sw 982.16
sw 982.00
grd 981.20
sw 981.27
sw 981.30
sw 981.30
sw 981.27
sw 981.20
grd 981.00
sw 981.05
grd 981.20
2.0%
FG = 980.11
EG = 979.38
Δ = ±8-3/4"
FG = 979.82
EG = 979.24
Δ = ±7"
sw 980.63
FG = 980.19
EG = 979.42
Δ = ±9-1/4"
FG = 979.90
EG = 979.30
Δ = ±7-1/4"
sw 980.90
sw 979.59
sw 979.46
sw 979.34
sw 979.50
sw 979.38
2.0%
2.0%
sw 979.85
conc 980.19
UP 3 STE
@ 6.0" =

HAWK DINING - PV SOLAR AND BATTERY STORAGE
EXTERIOR ENCLOSURE FOR BATTERIES & EQUIPMENT
ITB 2024-04 - ADDENDUM #1
Scale: 1 inch = 10 feet (11 x 17)