



BID #19-2047 Solar Modules Cleaning for Independence Elementary School

Addendum #1: Drawings and Specifications

June 23, 2020

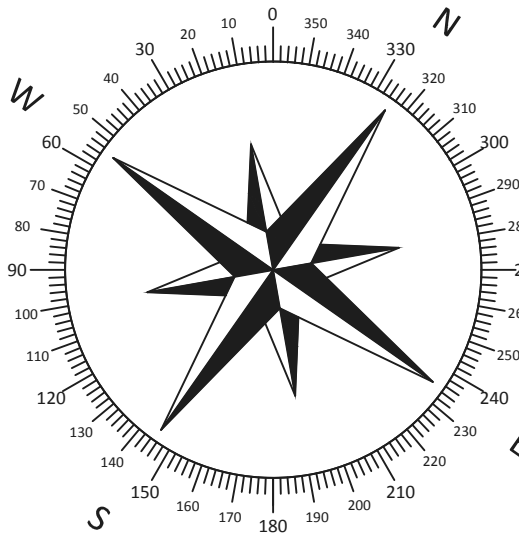
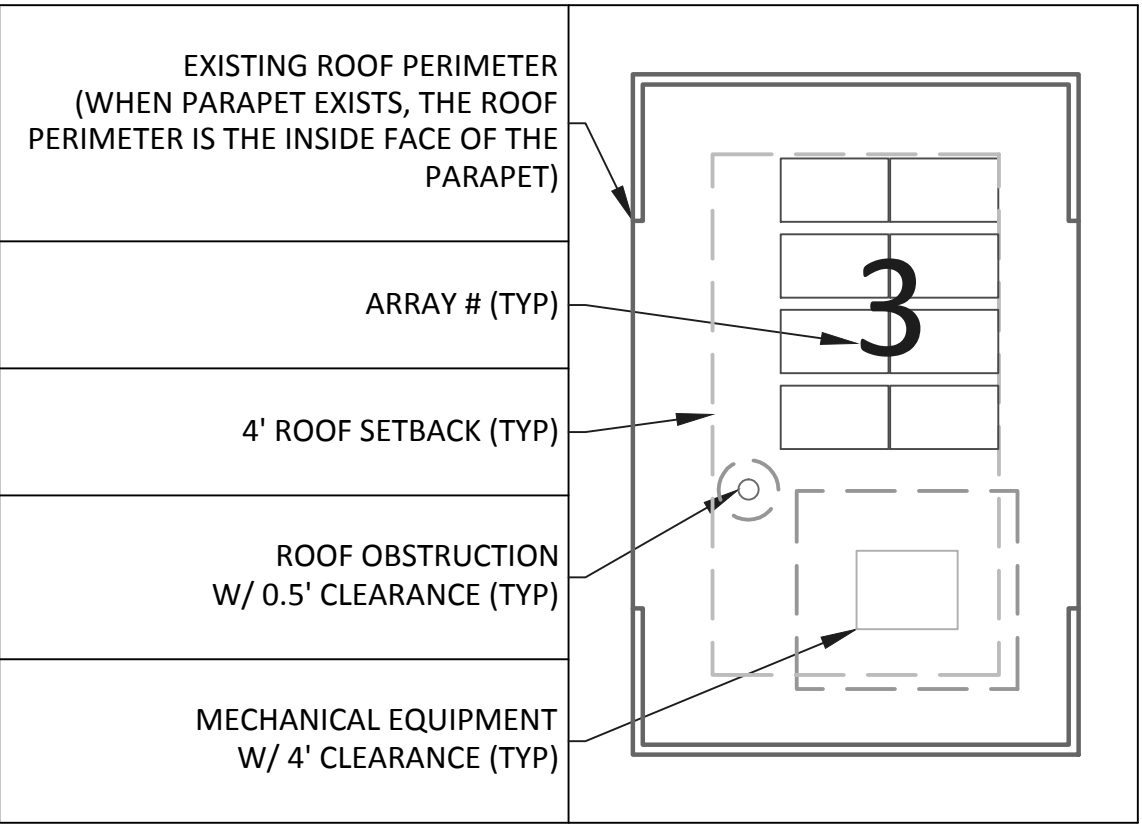
NOTE:

- **Please note the following Exhibits:**
 - **Exhibit B- Racking Construction Set**
 - **Exhibit C- Q Cells mechanical specifications**
 - **Exhibit D- Independence Roof Drawing**



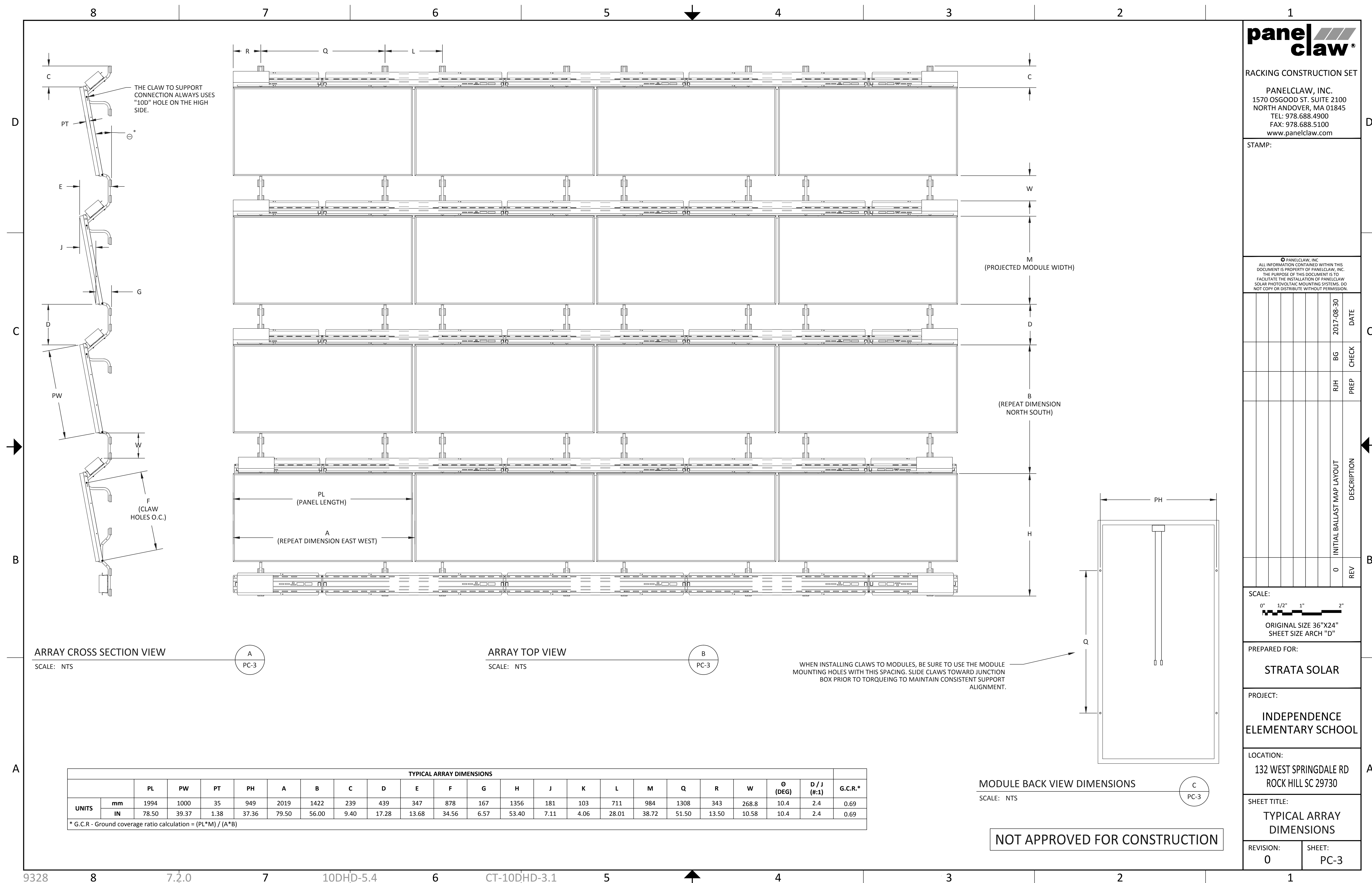
PROJECT SUMMARY	
MODULE TYPE	Hanwha Q PLUS L-G4.2 340W
MODULE DIMENSIONS (IN.)	39.37 X 78.5 X 1.38
NUMBER OF MODULES	840
MODULE WATTAGE (W STC)	340
SYSTEM SIZE (KW STC)	285.6
SYSTEM WEIGHT (LB)	94421
SYSTEM AREA (SQ FT.)	26423
NUMBER OF ARRAYS	7
ARRAY TILT (DEG)	10.4

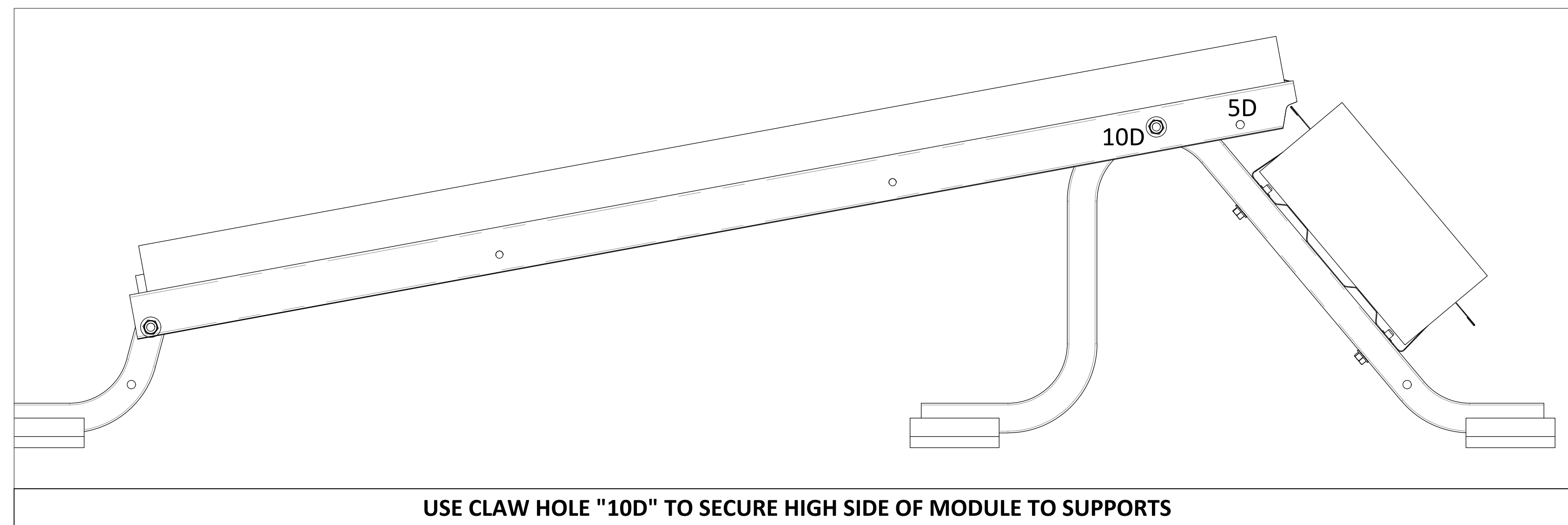
POLAR BEAR® III HD 10" - 56in			
PROJECT PART QUANTITY			
ITEM	PART NUMBER	QTY	
NORTH SUPPORT			
ASSY, SUPPORT, NORTH DBL, G90, POLAR BEAR III HD 10D	500041102	248	
SOUTH SUPPORT			
ASSY, SUPPORT, SOUTH, G90, POLAR BEAR III HD	5000412	248	
STANDARD SUPPORT			
ASSY, SUPPORT, LONG, G90, POLAR BEAR III HD 10D	500041001	1432	
LONG BALLAST TRAY			
BALLAST TRAY, G90, POLAR BEAR III HD, 10 DEG, 80" L1	200062205	858	
SHORT BALLAST TRAY			
BALLAST TRAY END, G90, POLAR BEAR III HD, 10 DEG, 39" L1	200062503	212	
CLAW			
CLAW, 1002, G90, POLAR BEAR III HD	200049301	1680	
HARDWARE - CLAW			
HEX, FIG, SERR, 1/4-20 X 1.75L & 5/16-18 X 0.5L, 304SS (100 / EACH BOLT & NUT TYPE)	500015802	36	
BOLT KIT - BALLAST TRAY			
HEX, FIG, SERR, 1/4-20 X 0.5L, 304SS (100 BOLTS)	5000159	13	
NUT KIT - BALLAST TRAY			
HEX, FIG, SERR, 1/4-20, 304SS (100 NUTS)	5000189	36	
CONCRETE MASONRY UNIT	N/A	1047	
BLOCK, CONCRETE, 32.6 LBS - 8in X 8in X 16in NOMINAL, PARTNER SUPPLIED			
*LONG BALLAST TRAY PART #200059903 MAY BE USED IN PLACE OF ALL LONG BALLAST TRAYS ABOVE. SHORT BALLAST TRAY PART #200060002 MAY BE USED IN PLACE OF ALL SHORT BALLAST TRAYS ABOVE.			



NOT APPROVED FOR CONSTRUCTION

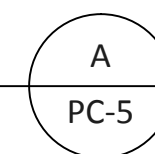
panel claw[®] RACKING CONSTRUCTION SET									
PANELCLAW, INC. 1570 OSGOOD ST. SUITE 2100 NORTH ANDOVER, MA 01845 TEL: 978.688.4900 FAX: 978.688.5100 www.panelclaw.com									
STAMP:									
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							2017-08-30	DATE	
							BG	CHECK	
							RJH	PREP	
							INITIAL BALLAST MAP LAYOUT	DESCRIPTION	
							0	REV	
SCALE: 0" 1/2" 1" 2" ORIGINAL SIZE 36"x24" SHEET SIZE ARCH "D"									
PREPARED FOR: STRATA SOLAR									
PROJECT: INDEPENDENCE ELEMENTARY SCHOOL									
LOCATION: 132 WEST SPRINGDALE RD ROCK HILL SC 29730									
SHEET TITLE: ARRAY SITE MAP									
REVISION: 0					SHEET: PC-2				





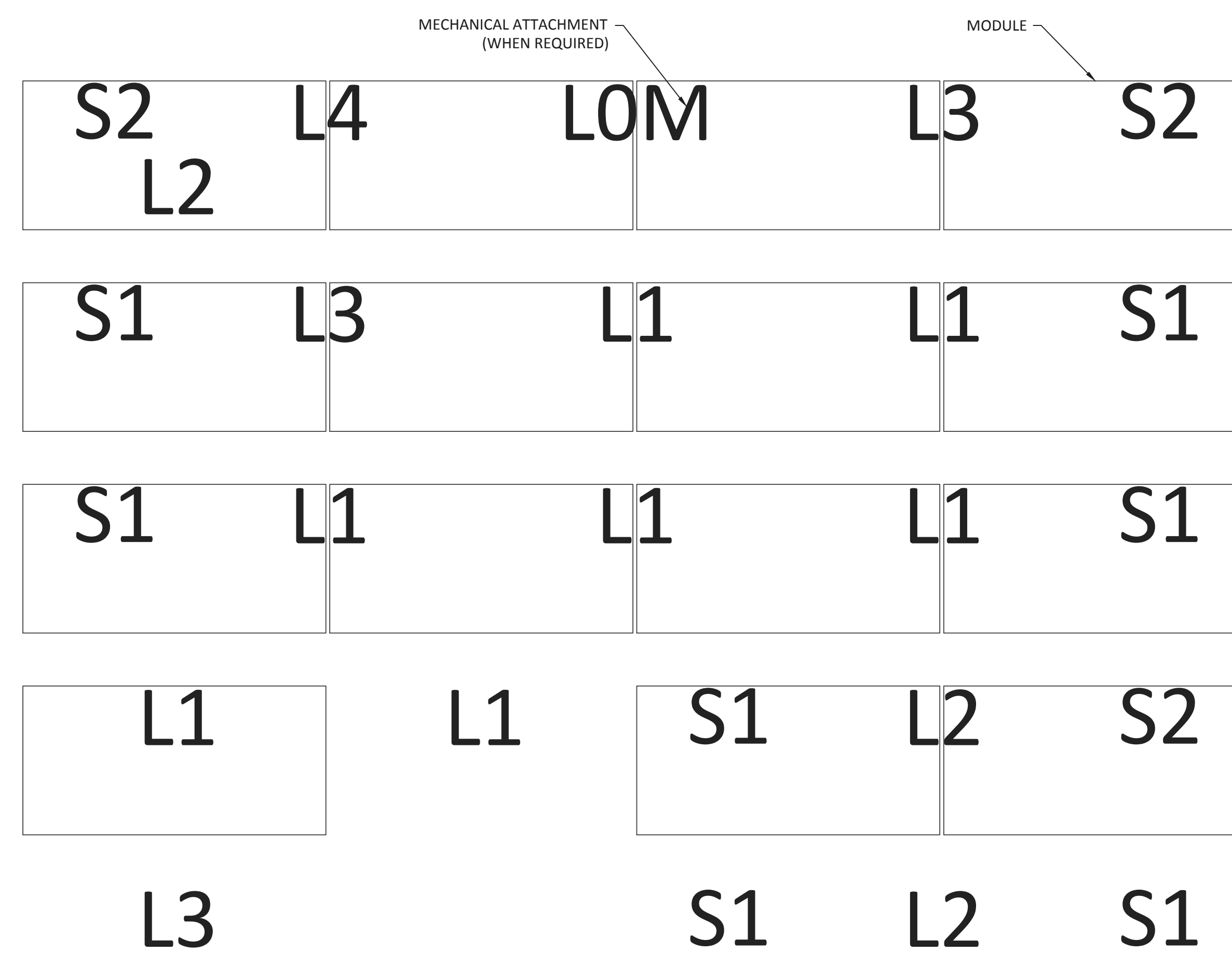
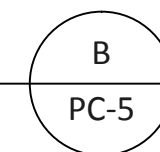
SUPPORT TO CLAW HOLE CONNECTION

SCALE: NTS



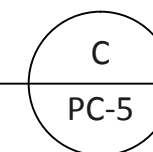
GENERIC BALLAST PLACEMENT LEGEND

SCALE: NTS



GENERIC TRAY, BALLAST, AND ATTACHMENT PLAN

SCALE: NTS



— TRAY AND BALLAST QUANTITY KEY:

"S"=SHORT TRAY
"L"=LONG TRAY
"# "=QUANTITY OF BALLAST BLOCK
IN TRAY
"M"=MECHANICAL ATTACHMENT
(WHEN REQUIRED)
SEE PROJECT PART QUANTITIES
TABLE PC-2 FOR LONG AND SHORT
TRAY PART NUMBERS.

NOTE:
REFERENCE THE
BALLAST MAP
SHEETS FOR ARRAY
SPECIFIC BALLAST
TRAY AND BALLAST
BLOCK QUANTITY
REQUIREMENTS.

NOT APPROVED FOR CONSTRUCTION



RACKING CONSTRUCTION SET

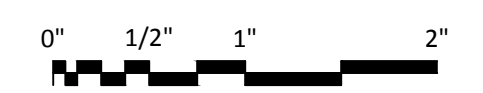
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REV	DESCRIPTION	PREP	CHECK	DATE
0	INITIAL BALLAST MAP LAYOUT	R/H	BG	2017-08-30

SCALE:



ORIGINAL SIZE 36"X24"
SHEET SIZE ARCH "D"

PREPARED FOR:

STRATA SOLAR

PROJECT:

INDEPENDENCE
ELEMENTARY SCHOOL

LOCATION:

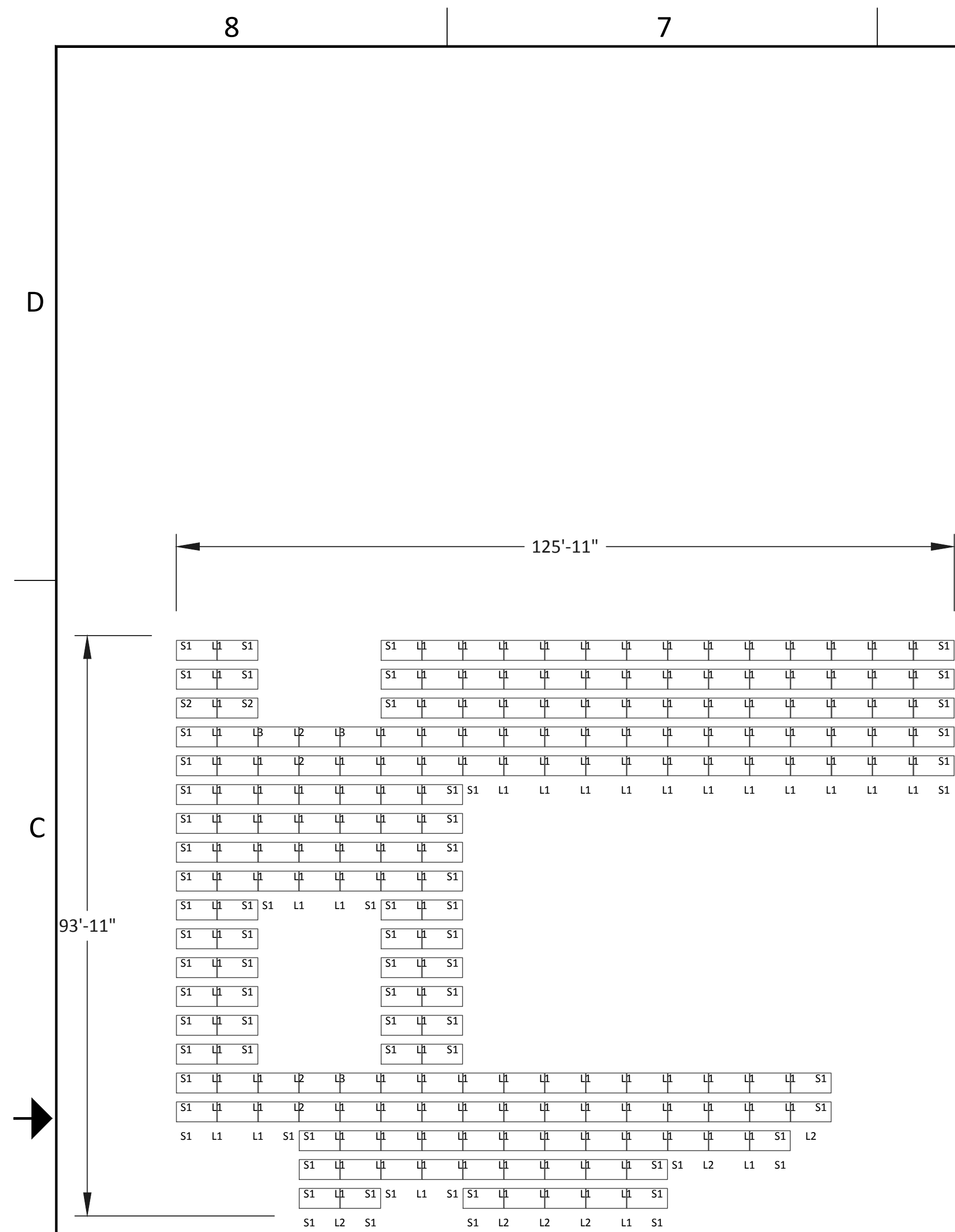
132 WEST SPRINGDALE RD
ROCK HILL SC 29730

SHEET TITLE:

BALLAST LEGEND

REVISION:
0

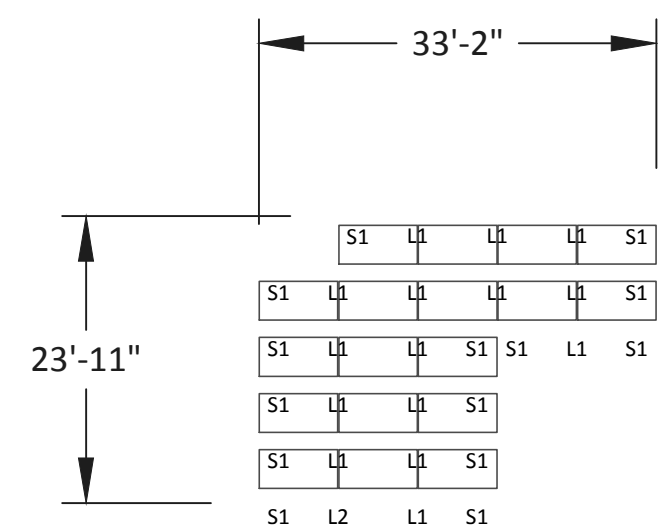
SHEET:
PC-5



BALLAST LAYOUT - ARRAY 1

SCALE: 1/16" = 1'-0"

1
PC-6



BALLAST LAYOUT - ARRAY 2

SCALE: 1/16" = 1'-0"

2
PC-6

ARRAY 1		ARRAY 2	
ROOF INFORMATION		ROOF INFORMATION	
ROOF HEIGHT (FT)	12	ROOF HEIGHT (FT)	12
PARAPET HEIGHT (FT)	0	PARAPET HEIGHT (FT)	0
ROOF TILT (DEG)	1	ROOF TILT (DEG)	1
ROOF TYPE	ASPHALT	ROOF TYPE	ASPHALT
SPECIFICATIONS		SPECIFICATIONS	
NUMBER OF MODULES	198	NUMBER OF MODULES	18
MODULE POWER (W)	340	MODULE POWER (W)	340
ARRAY OUTPUT (Kw)	67.3	ARRAY OUTPUT (Kw)	6.1
ARRAY AZIMUTH	145	ARRAY AZIMUTH	145
PART QUANTITIES		PART QUANTITIES	
ITEM	QTY	ITEM	QTY
STANDARD SUPPORTS	334	STANDARD SUPPORTS	26
NORTH SUPPORTS	62	NORTH SUPPORTS	10
SOUTH SUPPORTS	62	SOUTH SUPPORTS	10
LONG BALLAST TRAY	192	LONG BALLAST TRAY	16
SHORT BALLAST TRAY	74	SHORT BALLAST TRAY	14
CLAWS	396	CLAWS	36
BALLAST BLOCKS	284	BALLAST BLOCKS	31
LOADING DETAILS		LOADING DETAILS	
SINGLE MODULE WT (LB)	52.9	SINGLE MODULE WT (LB)	52.9
SINGLE CMU WT (LB)	32.6	SINGLE CMU WT (LB)	32.6
TOTAL ARRAY WT (LB)	23484	TOTAL ARRAY WT (LB)	2327
ARRAY AREA (SQ. FT)	6235	ARRAY AREA (SQ. FT)	575
ARRAY LOAD (PSF)	3.8	ARRAY LOAD (PSF)	4.0

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RACKING CONSTRUCTION SET

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[illegible]

SCALE:



PREPARED FOR:

STRATA SOLAR

PROJECT:

INDEPENDENCE
ELEMENTARY SCHOOL

LOCATION:

132 WEST SPRINGDALE RD
ROCK HILL SC 29730

SHEET TITLE:

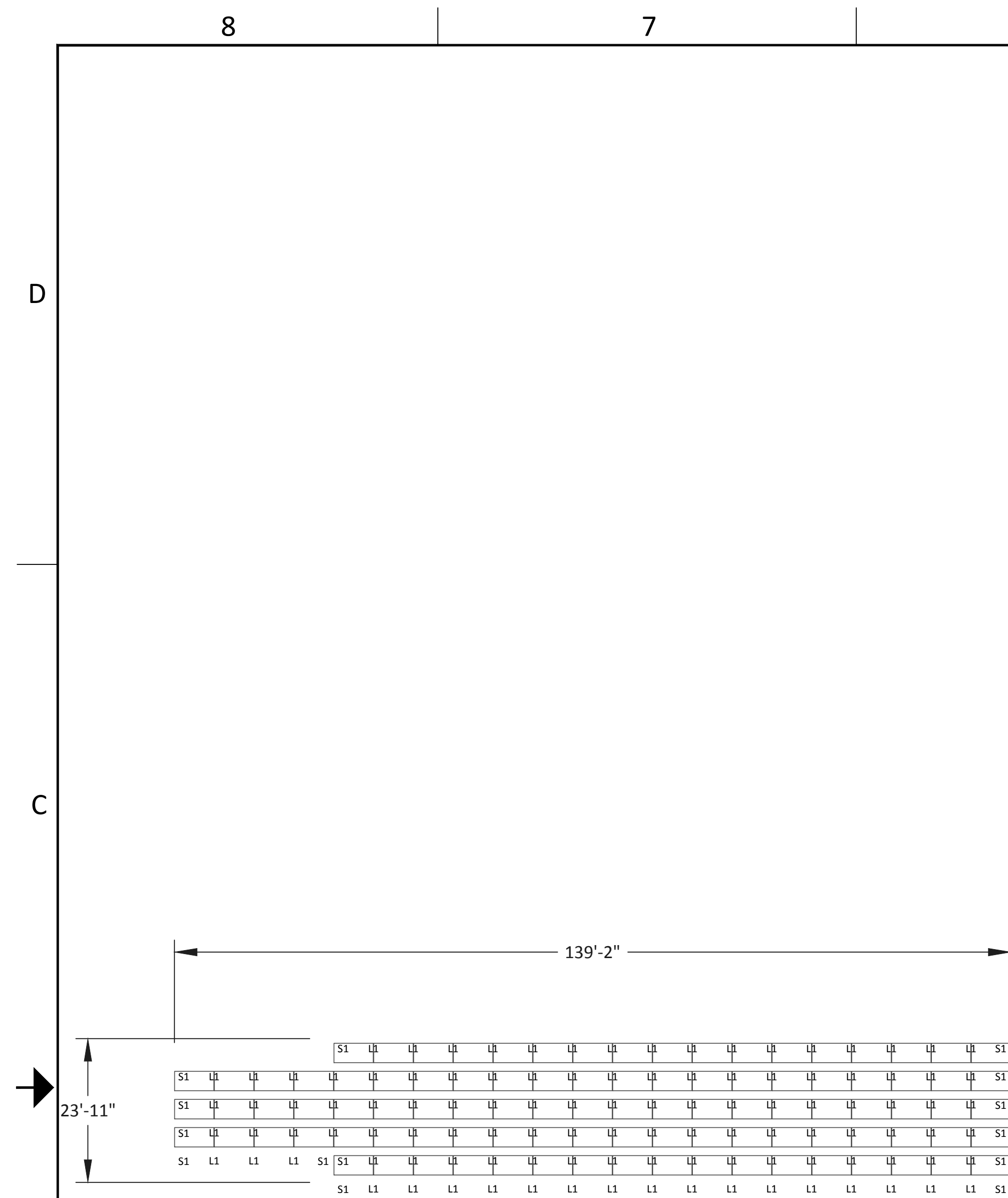
BALLAST
LAYOUT - 1

REVISION:

0

SHEET:

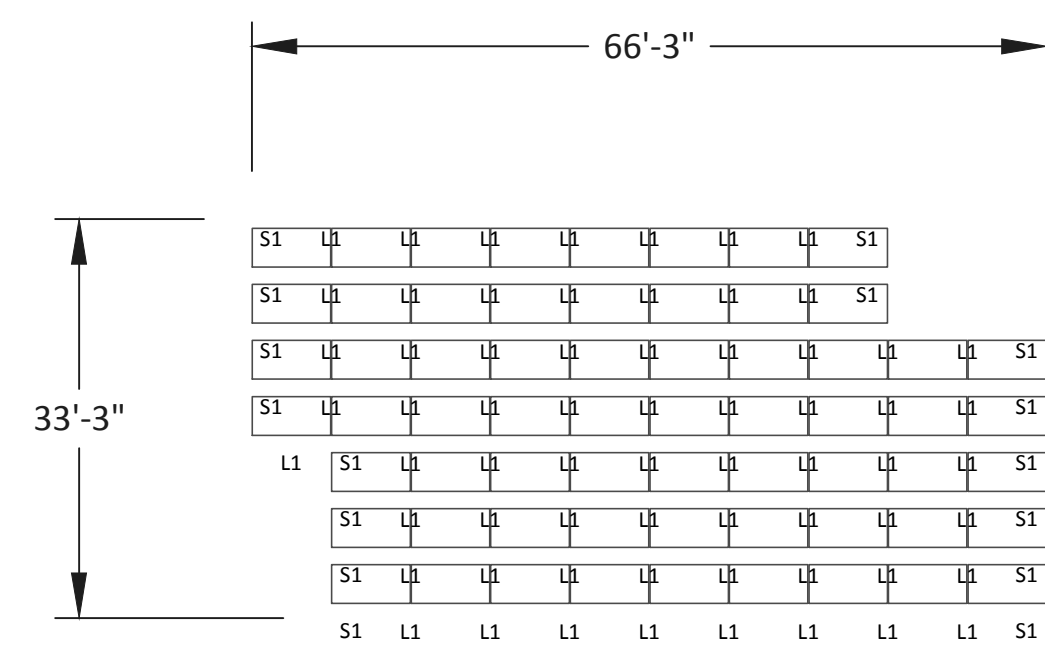
PC-6



BALLAST LAYOUT - ARRAY 5

SCALE: 1/16" = 1'-0"

1
PC-8



BALLAST LAYOUT - ARRAY 6

SCALE: 1/16" = 1'-0"

2
PC-8

ARRAY 5		ARRAY 6	
ROOF INFORMATION		ROOF INFORMATION	
ROOF HEIGHT (FT)	12	ROOF HEIGHT (FT)	12
PARAPET HEIGHT (FT)	0	PARAPET HEIGHT (FT)	0
ROOF TILT (DEG)	1	ROOF TILT (DEG)	1
ROOF TYPE	ASPHALT	ROOF TYPE	ASPHALT
SPECIFICATIONS		SPECIFICATIONS	
NUMBER OF MODULES	97	NUMBER OF MODULES	63
MODULE POWER (W)	340	MODULE POWER (W)	340
ARRAY OUTPUT (Kw)	33.0	ARRAY OUTPUT (Kw)	21.4
ARRAY AZIMUTH	145	ARRAY AZIMUTH	145
PART QUANTITIES		PART QUANTITIES	
ITEM	QTY	ITEM	QTY
STANDARD SUPPORTS	152	STANDARD SUPPORTS	106
NORTH SUPPORTS	42	NORTH SUPPORTS	20
SOUTH SUPPORTS	42	SOUTH SUPPORTS	20
LONG BALLAST TRAY	111	LONG BALLAST TRAY	65
SHORT BALLAST TRAY	14	SHORT BALLAST TRAY	16
CLAWS	194	CLAWS	126
BALLAST BLOCKS	125	BALLAST BLOCKS	81
LOADING DETAILS		LOADING DETAILS	
SINGLE MODULE WT (LB)	52.9	SINGLE MODULE WT (LB)	52.9
SINGLE CMU WT (LB)	32.6	SINGLE CMU WT (LB)	32.6
TOTAL ARRAY WT (LB)	11114	TOTAL ARRAY WT (LB)	7170
ARRAY AREA (SQ. FT)	3076	ARRAY AREA (SQ. FT)	1984
ARRAY LOAD (PSF)	3.6	ARRAY LOAD (PSF)	3.6

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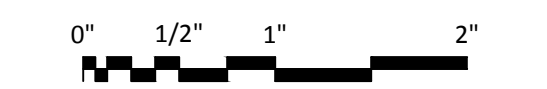
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SCALE:



ORIGINAL SIZE 36"X24"
SHEET SIZE ARCH "D"

PREPARED FOR:

STRATA SOLAR

PROJECT:

INDEPENDENCE
ELEMENTARY SCHOOL

LOCATION:

132 WEST SPRINGDALE RD
ROCK HILL SC 29730

SHEET TITLE:

BALLAST
LAYOUT - 3

REVISION:

0

SHEET:

PC-8

Partner Name: Strata Solar

Project Name: Independence Elementary School

**Project Location: 132 West Springdale Rd
Rock Hill, SC, 29730**

Racking System: Polar Bear III HD



Structural Calculations for Roof-Mounted Solar Array

Submittal Release: Rev 0

Engineering Seal

2.0 Snow Load:

Snow Calculations per ASCE 7-10, Chapter 7

2.1 Snow Load Data:

Ground Snow Load (P_g) =	10.00	psf	(ASCE, Figure 7-1)
Exposure Factor (C_e) =	1		(ASCE, Table 7-2)
Thermal Factor (C_t) =	1.2		(ASCE, Table 7-3)
Importance Factor (I_s) =	1.1		(ASCE, Table 1.5-2)

Flat Roof Snow Load (P_f) =	$0.7 * P_g * C_e * C_t * I_s =$	<u>9.24</u>	psf	(ASCE 7.3-1)
Min Snow Load for Low Slope Roof =	$P_g * I_s =$	<u>11.00</u>	psf	(ASCE 7.3.4)
Snow Load on Array (SL_A) =	<u>11.00</u>	psf		

SL_A

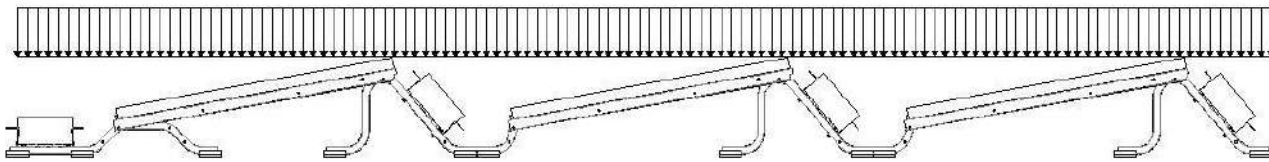


Fig. 2.1 - Uniform Roof Snow Load on Array

2.2 Snow Load Per Module:

$$\text{Snow Load per Module (SLM)} = \text{Module Projected Area} * SL_A$$

Where;

$$\text{Module Projected Area (Amp)} = \text{Module Area} * \cos(\text{Module Tilt})$$

Where;

Module Area =	21.46	sq.ft.
Module Tilt =	10.40	degrees

$$Amp = 21.11 \text{ sq.ft.}$$

$$SL_M = A_{mp} * SL_A = \underline{232.22} \text{ lb}$$

6.0 Design Loads - Downward:

6.1 Downward Wind Load Calculation:

$$WL_{in} = q_z * A_m * C_{fz} * \cos \theta$$

Where:

$$q_z = 23.04 \text{ psf}$$

(Ref. Pg. 3, Wind Load)

$$A_m = 21.46 \text{ sq.ft.} \quad (\text{Single Module Area})$$

(Ref. Pg. 1, Project Information)

$$\theta = 10.40 \text{ deg.}$$

(Ref. Pg. 1, Project Information)

$$C_{fz} = 1.13 \quad (\text{Inward})$$

(Proprietary Wind Tunnel Data)

$$C_{fz} = 0.30 \quad (\text{Inward with snow})$$

(ASCE 7-10 figure 30.4-2A)

$$WL_{in} (\text{no snow}) = \underline{550 \text{ lbs./module}}$$

$$WL_{in} (\text{with snow}) = \underline{146 \text{ lbs./module}}$$

Contact Pad by Location:

A = Northern

B = Northern

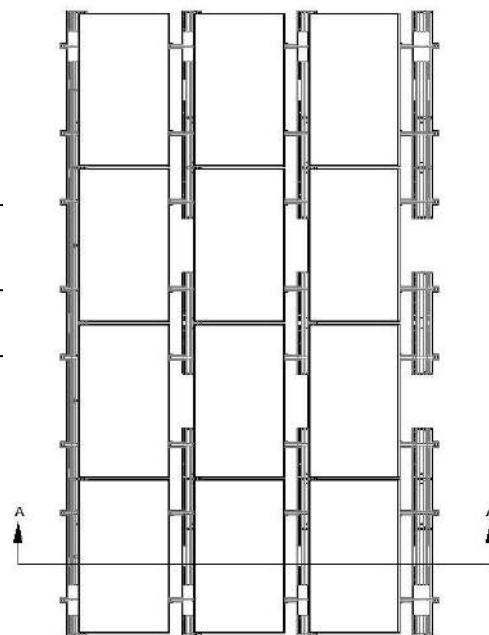
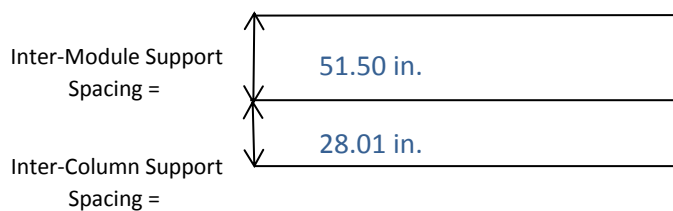
C = Interior

D = Interior

E = Southern

F = Southern

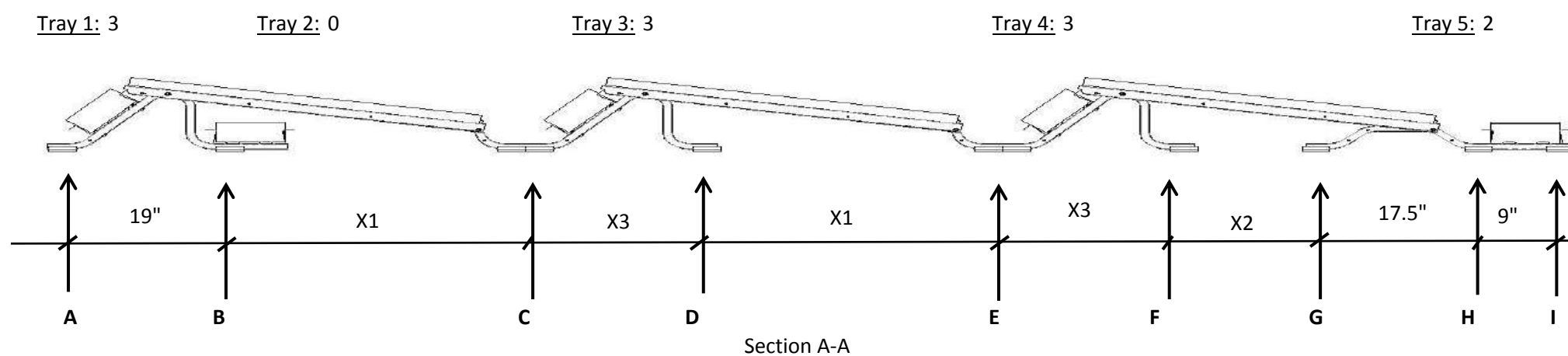
6.2 Racking Dimensions for Point Loads:



Typical Array Plan View
(Section A-A on Next Page)

6.0 Design Loads - Downward (CONT.):

6.2 Racking Dimensions for Point Loads (Cont.):



Distances Between Supports (Unless Noted):

X1 = 34.25 in.

X2 = 14.33 in.

X3 = 21.77 in.

6.3 Point Load Summary:

DLsys = 73

Total DL = (Varies on location and ballast quantity)

SLm = 232 lbs./module

Wlin (no snow) = 550 lbs./module

Wlin (with snow) = 146 lbs./module

Extreme Point Load Summary Table				
		load combinations (ASD)		
Location	Load	DL + SLm	DL + 0.6 X Wlin	DL + 0.75 X SLm + 0.75(0.6 X Wlin)
Northern	A	71 lbs.	83 lbs.	72 lbs.
Northern	B	54 lbs.	67 lbs.	55 lbs.
Interior	C	109 lbs.	133 lbs.	111 lbs.
Interior	D	93 lbs.	117 lbs.	95 lbs.
Interior	E	109 lbs.	133 lbs.	111 lbs.
Interior	F	93 lbs.	117 lbs.	95 lbs.
Southern	G	25 lbs.	34 lbs.	26 lbs.
Southern	H	42 lbs.	50 lbs.	42 lbs.
Southern	I	42 lbs.	50 lbs.	42 lbs.
For Checking	Σ	637 lbs.	784 lbs.	649 lbs.

Table 6.1-A Extreme Point Load Summary

Ballast Block Point Load Summary - (LB/Single Block Applied at Tray Location)						
Location		Point Loads (lb/single block) at each Tray Location				
		Tray 1	Tray 2	Tray 3	Tray 4	Tray 5
Northern	A	11 lbs.				
Northern	B	5 lbs.	16 lbs.			
Interior	C			11 lbs.		
Interior	D			5 lbs.		
Interior	E				11 lbs.	
Interior	F				5 lbs.	
Southern	G					
Southern	H					8 lbs.
Southern	I					8 lbs.

Table 6.1-B Single Block Point Load Summary

powered by

Q.ANTUM

Q.PLUS L-G4.2 330-340

Q.ANTUM SOLAR MODULE

The **Q.ANTUM** solar module **Q.PLUS L-G4.2** is the strongest module of its type on the market globally. Powered by 72 Q CELLS solar cells **Q.PLUS L-G4.2** was specially designed for large solar power plants to reduce BOS costs. Only Q CELLS offers German engineering quality with our unique triple Yield Security.



Q.ANTUM TECHNOLOGY: LOW LEVELIZED COST OF ELECTRICITY

Higher yield per surface area and lower BOS costs and higher power classes.



INNOVATIVE ALL-WEATHER TECHNOLOGY

Optimal yields, whatever the weather with excellent low-light and temperature behaviour.



ENDURING HIGH PERFORMANCE

Long-term yield security with Anti PID Technology¹, Hot-Spot Protect and Traceable Quality Tra.Q™.



EXTREME WEATHER RATING

High-tech aluminium alloy frame, certified for high snow (5400 Pa) and wind loads (2400 Pa).



A RELIABLE INVESTMENT

Inclusive 12-year product warranty and 25-year linear performance warranty².



THE IDEAL SOLUTION FOR:



Ground-mounted solar power plants.

Engineered in **Germany**

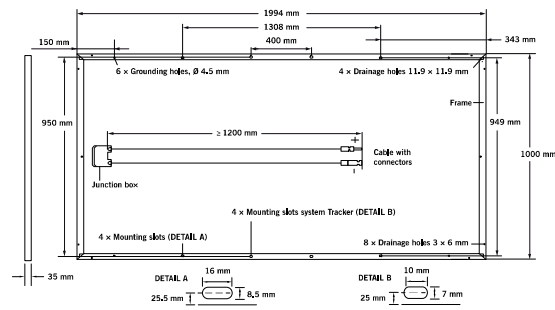
¹ APT test conditions: Cells at -1500V against grounded, with conductive metal foil covered module surface, 25°C, 168h

² See data sheet on rear for further information.

Q CELLS

MECHANICAL SPECIFICATION

Format	1994 mm × 1000 mm × 35 mm (including frame)
Weight	24 kg
Front Cover	3.2 mm thermally pre-stressed glass with anti-reflection technology
Back Cover	Composite film
Frame	Anodised aluminium
Cell	6 × 12 Q.ANTUM solar cells
Junction box	85-111 × 60-80 × 15-19 mm, Protection class ≥ IP67, with bypass diodes
Cable	4 mm ² Solar cable; (+) ≥ 1200 mm, ≥ (-) 1200 mm
Connector	Amphenol UTX, IP68



ELECTRICAL CHARACTERISTICS

POWER CLASS			330	335	340
MINIMUM PERFORMANCE AT STANDARD TEST CONDITIONS, STC ¹ (POWER TOLERANCE +5W /- 0W)					
Minimum	Power at MPP ²	P _{MPP}	330	335	340
	Short Circuit Current*	I _{SC}	9.49	9.54	9.59
	Open Circuit Voltage*	V _{OC}	46.55	46.81	47.07
	Current at MPP*	I _{MPP}	8.91	8.97	9.03
	Voltage at MPP*	V _{MPP}	37.02	37.33	37.63
	Efficiency ²	η	≥16.5	≥16.8	≥17.1
MINIMUM PERFORMANCE AT NORMAL OPERATING CONDITIONS, NOC ³					
Minimum	Power at MPP ²	P _{MPP}	244.7	248.4	252.1
	Short Circuit Current*	I _{SC}	7.65	7.69	7.73
	Open Circuit Voltage*	V _{OC}	43.44	43.68	43.92
	Current at MPP*	I _{MPP}	6.99	7.04	7.09
	Voltage at MPP*	V _{MPP}	35.01	35.29	35.56

¹1000 W/m², 25°C, spectrum AM 1.5G

²Measurement tolerances STC ±3%; NOC ±5%

³800 W/m², NOCT, spectrum AM 1.5G

* typical values, actual values may differ

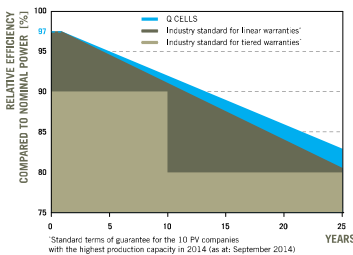
¹ 1000 W/m², 25°C, spectrum AM 1.5G

² Measurement tolerances STC ±3%; NOC ±5%

³ 800 W/m², NOCT, spectrum AM 1.5G

* typical values, actual values may differ

Q CELLS PERFORMANCE WARRANTY

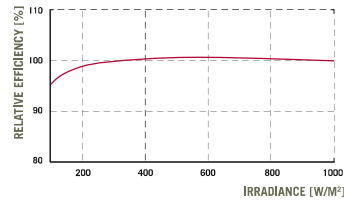


At least 97 % of nominal power during first year. Thereafter max. 0.6 % degradation per year.
At least 92 % of nominal power after 10 years.
At least 83 % of nominal power after 25 years.

All data within measurement tolerances. Full warranties in accordance with the warranty terms of the Q CELLS sales organisation of your respective country.

¹ Standard terms of guarantee for the 10 PV companies with the highest production capacity in 2014 (as at September 2014)

PERFORMANCE AT LOW IRRADIANCE



Typical module performance under low irradiance conditions in comparison to STC conditions (25°C, 1000 W/m²).

TEMPERATURE COEFFICIENTS

Temperature Coefficient of I _{SC}	α	[%/K]	+0.04	Temperature Coefficient of V _{OC}	β	[%/K]	-0.29
Temperature Coefficient of P _{MPP}	γ	[%/K]	-0.40	Normal Operating Cell Temperature	NOCT	[°C]	45

PROPERTIES FOR SYSTEM DESIGN

Maximum System Voltage	V _{sys}	[V]	1500 (IEC) / 1500 (UL)	Safety Class	II
Maximum Reverse Current	I _R	[A]	15	Fire Rating	C / TYPE 1
Wind/Snow Load (in accordance with IEC 61215)		[Pa]	2400/5400	Permitted Module Temperature On Continuous Duty	-40°C up to +85°C

QUALIFICATIONS AND CERTIFICATES

IEC 61215 (Ed.2); IEC 61730 (Ed.1), Application class A
This data sheet complies with DIN EN 50380.



PARTNER

NOTE: Installation instructions must be followed. See the installation and operating manual or contact our technical service department for further information on approved installation and use of this product.

Hanwha Q CELLS Corp.
Hanwha Building, 86 Cheonggyecheon-ro Jung-gu, Seoul, Republic of Korea 101-797
TEL +82 (0) 2729 1312 | **WEB** www.q-cells.com

Specifications subject to technical changes © Hanwha Q CELLS Q.PLUS L-04_2_330-340_2016-06_Rev01_EN



Q.PLUS L-G4.2 330-340

Q.ANTUM SOLAR MODULE

The Q.ANTUM solar module Q.PLUS L-G4.2 is the strongest module of its type on the market globally. Powered by 72 Q CELLS solar cells Q.PLUS L-G4.2 was specially designed for large solar power plants to reduce BOS costs. Only Q CELLS offers German engineering quality with our unique triple Yield Security.



Q.ANTUM TECHNOLOGY: LOW LEVELIZED COST OF ELECTRICITY

Higher yield per surface area and lower BOS costs and higher power classes.



INNOVATIVE ALL-WEATHER TECHNOLOGY

Optimal yields, whatever the weather with excellent low-light and temperature behaviour.



ENDURING HIGH PERFORMANCE

Long-term yield security with Anti PID Technology¹, Hot-Spot Protect and Traceable Quality Tra.Q™.



EXTREME WEATHER RATING

High-tech aluminium alloy frame, certified for high snow (5400 Pa) and wind loads (2400 Pa).



A RELIABLE INVESTMENT

Inclusive 12-year product warranty and 25-year linear performance warranty².



THE IDEAL SOLUTION FOR:



Ground-mounted solar power plants

Engineered in Germany

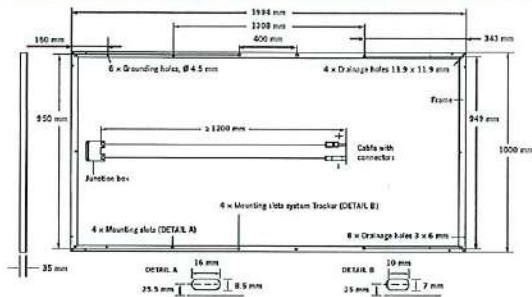
Q CELLS

¹ APT test conditions: Cells at -1500V against grounded, with conductive metal foil covered module surface, 25°C, 168 h

² See data sheet on rear for further information.

MECHANICAL SPECIFICATION

Format	1994 mm × 1000 mm × 35 mm (including frame)
Weight	24 kg
Front Cover	3.2 mm thermally pre-stressed glass with anti-reflection technology
Back Cover	Composite film
Frame	Anodised aluminium
Cell	6 × 12 Q.ANTUM solar cells
Junction box	85-111 × 60-80 × 15-19 mm, Protection class ≥ IP67, with bypass diodes
Cable	4 mm ² Solar cable; (+) ≥ 1200 mm, ≥ (-) 1200 mm
Connector	Amphenol UTX, IP68



ELECTRICAL CHARACTERISTICS

POWER CLASS			330	335	340
MINIMUM PERFORMANCE AT STANDARD TEST CONDITIONS, STC ¹ (POWER TOLERANCE +5 W /- 0 W)					
Minimum	Power at MPP ²	P _{MPP}	330	335	340
	Short Circuit Current ⁴	I _{SC}	9.49	9.54	9.59
	Open Circuit Voltage ⁴	V _{OC}	46.55	46.81	47.07
	Current at MPP ⁴	I _{MPP}	8.91	8.97	9.03
	Voltage at MPP ⁴	V _{MPP}	37.02	37.33	37.63
	Efficiency ²	η	≥16.5	≥16.8	≥17.1
MINIMUM PERFORMANCE AT NORMAL OPERATING CONDITIONS, NOC ³					
Minimum	Power at MPP ²	P _{MPP}	244.7	248.4	252.1
	Short Circuit Current ⁴	I _{SC}	7.65	7.69	7.73
	Open Circuit Voltage ⁴	V _{OC}	43.44	43.68	43.92
	Current at MPP ⁴	I _{MPP}	6.99	7.04	7.09
	Voltage at MPP ⁴	V _{MPP}	35.01	35.29	35.56

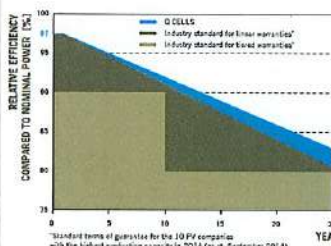
¹1000 W/m², 25°C, spectrum AM 1.5G

²Measurement tolerances STC ±3%; NOC ±5%

³800 W/m², NOCT, spectrum AM 1.5G

⁴typical values, actual values may differ

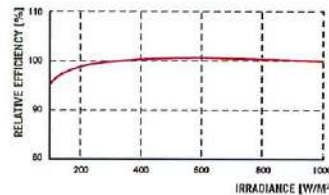
Q CELLS PERFORMANCE WARRANTY



At least 97% of nominal power during first year. Thereafter max. 0.6% degradation per year.
At least 92% of nominal power after 10 years.
At least 83% of nominal power after 25 years.

All data within measurement tolerances. Full warranties in accordance with the warranty terms of the Q CELLS sales organisation of your respective country.

PERFORMANCE AT LOW IRRADIANCE



Typical module performance under low irradiance conditions in comparison to STC conditions (25°C, 1000W/m²).

TEMPERATURE COEFFICIENTS

Temperature Coefficient of I _{SC}	α	[%/K]	+0.04	Temperature Coefficient of V _{OC}	β	[%/K]	-0.29
Temperature Coefficient of P _{MPP}	γ	[%/K]	-0.40	Normal Operating Cell Temperature	NOCT	[°C]	45

PROPERTIES FOR SYSTEM DESIGN

Maximum System Voltage	V _{sys}	[V]	1500 (IEC) / 1500 (UL)	Safety Class	II
Maximum Reverse Current	I _R	[A]	15	Fire Rating	C / TYPE 1
Wind/Snow Load (in accordance with IEC 61215)		[Pa]	2400/5400	Permitted Module Temperature On Continuous Duty	-40°C up to +85°C

QUALIFICATIONS AND CERTIFICATES

IEC 61215 (Ed. 2); IEC 61730 (Ed. 1), Application class A
This data sheet complies with DIN EN 50380.



PARTNER

NOTE: Installation instructions must be followed. See the installation and operating manual or contact our technical service department for further information on approved installation and use of this product.

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Engineered in Germany

Q CELLS

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EXHIBIT D: Drawing



Solar Array Schedule					
Array ID	Total # of Modules	Nominal Module Power (W)	System Size (kWp)	Azimuth	Tilt Angle
A	216	340 W	73.4 kW	147°	10°
B	96	340 W	32.6 kW	147°	10°
C	96	340 W	32.6 kW	147°	10°
D	216	340 W	73.4 kW	147°	10°
E	216	340 W	73.4 kW	147°	10°
Grand total	840		285.6 kW		



132 W SPRINGDALE RD
ROCK HILL, SC 29730

ELECTRICAL SITE PLAN
STRATA SOLAR
INDEPENDENCE ELEMENTARY SCHOOL

E2.1
17-17102-00
SEPTEMBER 20, 2017
REVISIONS