

# PHOTOVOLTAIC MODULE GROUND MOUNT SYSTEM RBI SOLAR RACK MODEL: GM-2

FOR  
**LODESTAR ENERGY**  
AT  
**PLATT HILL  
PLATT HILL RD  
WINCHESTER, CT 06098  
41.887871, -73.115780**



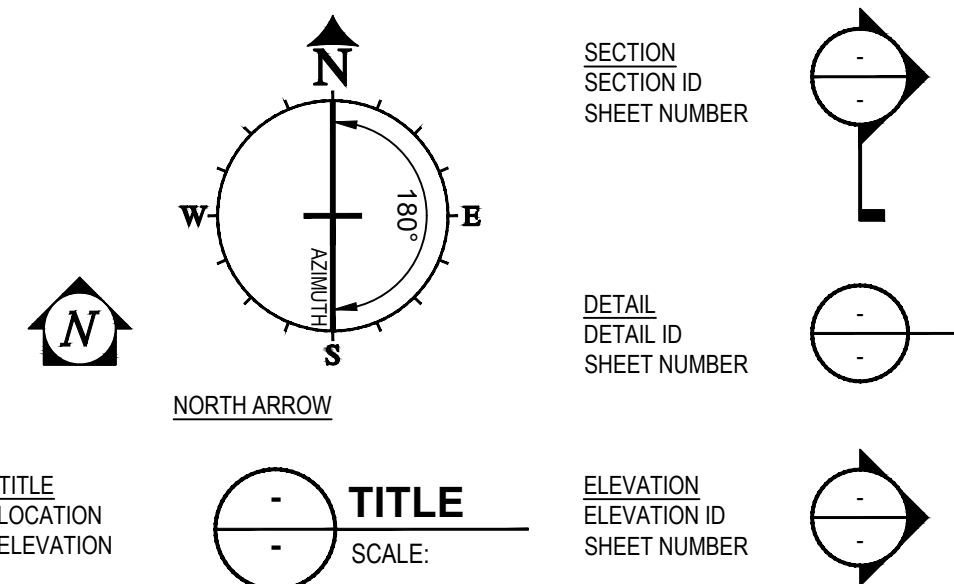
PROFESSIONAL SEAL

ENGINEER'S SEAL APPLIES TO DESIGN OF STRUCTURAL COMPONENTS ONLY

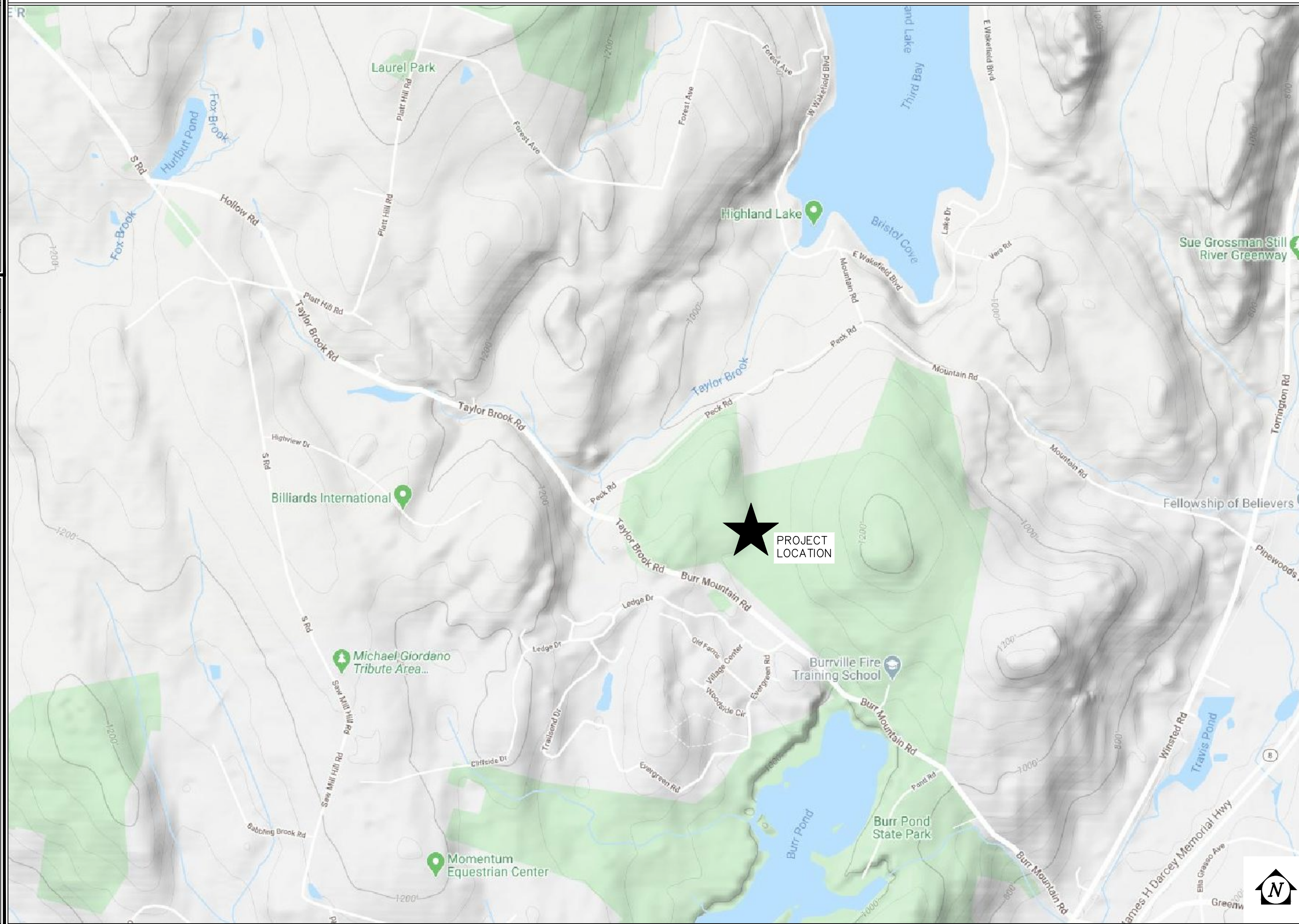


**GROUND MOUNT FOR CUSTOMER**

### SYMBOLS LEGEND



### VICINITY MAP



### SHEET INDEX

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### GOVERNING CODE

2018 CONNECTICUT STATE BUILDING CODE (IBC 2015)

RISK CATEGORY: I

DESIGN LOADS:

- DEAD LOADS:
    - STRUCTURE: 2.0 PSF
    - GLAZING: 3.0 PSF
    - 5.0 PSF
  - ROOF LIVE LOAD = 0 PSF
  - SNOW LOAD:
    - $P_g = 40.0$  PSF (GROUND SNOW)
    - $P_f = 30.0$  PSF (FLAT ROOF SNOW)
    - $P_s = 24.6$  PSF (SLOPED ROOF SNOW)
    - $C_d = 0.90$
    - $C_e = 1.20$
    - $C_g = 0.82$
    - $I_s = 0.80$
  - WIND LOAD: (MAIN WIND FORCE RESISTING SYSTEM)
    - $V = 105$  MPH
    - EXPOSURE: C
  - SEISMIC:
    - $S_s = 0.177$
    - $S_1 = 0.065$
    - $S_2 = 0.189$
    - $S_{d1} = 0.104$
    - $I_p = 1.00$
    - SITE CLASS: D
    - SEISMIC DESIGN CATEGORY: B
    - SEISMIC FORCE RESISTING SYSTEM = CANTILEVERED COLUMN SYSTEM
    - DESIGN BASE SHEAR:  $V = 0.085W$
    - $C_u = 0.095$
    - $R = 2.00$
- EQUIVALENT LATERAL FORCE ANALYSIS

### CUSTOMER SPECIFICATIONS

NOTE: THIS SUBMITTAL/CONSTRUCTION SET WAS PRODUCED FROM DOCUMENTS RECEIVED FROM CUSTOMER ON 06/14/2021.

PV MODULE MANUFACTURER	ASTRONERGY
PV MODULE MODEL #	CHSM72M(DG)F-BH
PV MODULE WATTAGE	405
# OF PV MODULES/STRING	26
# OF ACTIVE PV MODULES	7267
# OF INACTIVE PV MODULES	7
TOTAL # OF PV MODULES	7274
TOTAL PV SYSTEM WATTS	2,943 MW DC
TOPOGRAPHIC RELATIONSHIP	FOLLOW GRADE
ARRAY TILT	25° ±2°
MINIMUM MODULE CLEARANCE	2'-6"
ARRAY AZIMUTH	180° (NOT ADJUSTED FOR MAGNETIC DECLINATION)

RELEASE RECORD

MARK	DATE	DESCRIPTION
9	08/26/21	FOR CONSTRUCTION (R1)
8	08/26/21	FOR CONSTRUCTION
7	08/24/21	90% REVIEW (R1)
6	08/02/21	FOR PERMIT (R1)
5	08/02/21	75% REVIEW (R1)
4	07/20/21	90% REVIEW
3	06/21/21	FOR PERMIT
2	06/21/21	75% REVIEW
1	06/17/21	50% REVIEW

PROJECT INFORMATION

TITLE & ADDRESS:	
TITLE	
ADDRESS	
RBI SOLAR PROJECT No.: 20	
DRAWN BY:	REVIEWED BY:
SHEET TITLE:	
COVER SHEET	
SHEET No.:	
<b>SG001</b>	

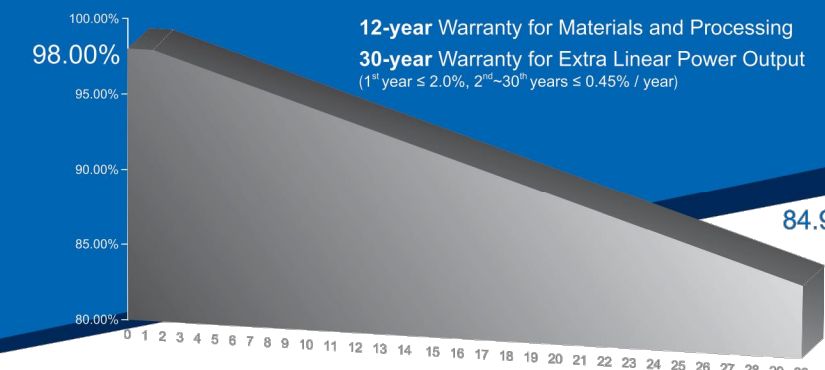
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# MODULE SPECIFICATION SHEETS

**AstroTwins™**  
Enjoy the Energy of the Universe

**400W~415W**  
P-type Monocrystalline PV Module  
CHSM72M(DG)/F-BH Series (158.75)

CHSM72M(DG)/F-BH is bifacial module with white glazed glass



### KEY FEATURES

- +5W OUTPUT POSITIVE TOLERANCE**  
Guaranteed 0+5W positive tolerance ensure power output reliability.
- EXCELLENT WEATHER RESISTANCE**  
Reduce the cell micro cracking and extended product warranty.
- BIFACIAL POWER**  
The backside makes use of the reflected and scattered light from the surroundings, the modules can yield up to 5%-30% power more, depending on the albedo.
- REDUCE INTERNAL MISMATCH LOSS**  
Reduce mismatch loss and improve output.
- APPLICABLE FOR MULTI DIFFERENT ENVIRONMENTS**  
The wide range of applications, such as BIPV, vertical installation, snow area, high humidity area and strong sandstorm area, etc.
- SNAIL TRAIL RESISTANCE**  
Reduce the probability of snail trails with zero water vapor transmittance.

### COMPREHENSIVE CERTIFICATES



First solar company which passed the TUV Nord IEC625 62941 certification audit.

For Global Market



### ELECTRICAL SPECIFICATIONS

Power rating (front)	400 Wp		405 Wp		410 Wp		415 Wp	
	Front	Back	Front	Back	Front	Back	Front	Back
STC rated output (P <sub>max</sub> Wp)*	400	282	405	285	410	289	415	292
Rated voltage (V <sub>mpp</sub> V) at STC	40.67	40.88	40.89	41.10	41.10	41.31	41.31	41.52
Rated current (I <sub>mp</sub> A) at STC	9.84	6.89	9.91	6.94	9.96	6.99	10.05	7.04
Open circuit voltage (V <sub>oc</sub> V) at STC	48.24	46.82	48.42	46.99	48.60	47.17	48.78	47.34
Short circuit current (I <sub>sc</sub> A) at STC	10.30	7.22	10.38	7.28	10.46	7.33	10.54	7.39
Module efficiency	19.4%	13.7%	19.7%	13.8%	19.9%	14.0%	20.2%	14.2%
Temperature coefficient (P <sub>max</sub> )			-0.35%/°C					
Temperature coefficient (I <sub>sc</sub> )			+0.04%/°C					
Temperature coefficient (V <sub>oc</sub> )			-0.28%/°C					
Nominal module operating temperature (NMOT)			44±2°C					
Maximum system voltage (IEC601)			1500V <sub>DC</sub>					
Number of diodes			3					
Junction box IP rating			IP 68					
Maximum series fuse rating			20 A					

### ELECTRICAL SPECIFICATIONS (integrated power)

P <sub>max</sub> gain	P <sub>max</sub>	V <sub>mp</sub>	I <sub>mp</sub>	V <sub>oc</sub>	I <sub>sc</sub>
5%	431 Wp	41.10 V	10.47 A	48.60 V	10.98 A
10%	451 Wp	41.10 V	10.97 A	48.60 V	11.51 A
15%	472 Wp	41.00 V	11.50 A	48.70 V	12.03 A
20%	492 Wp	41.00 V	12.00 A	48.70 V	12.55 A
25%	513 Wp	41.00 V	12.50 A	48.70 V	13.08 A

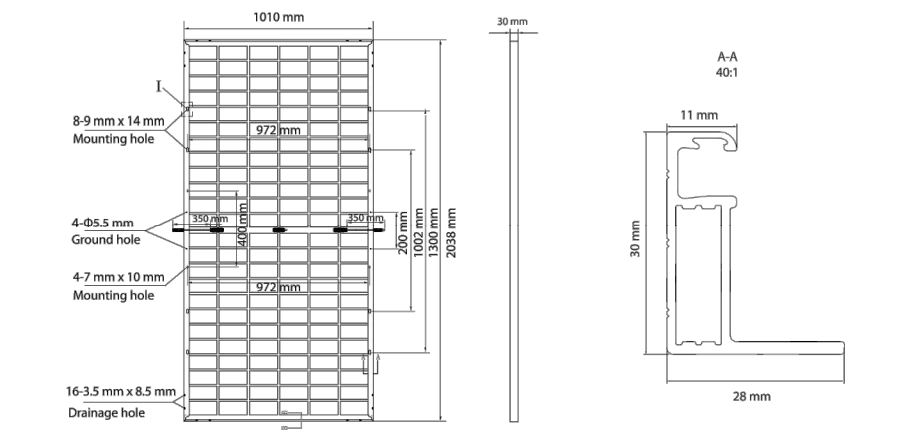
Electrical characteristics with different rear power gain (reference to 410W)

### MECHANICAL SPECIFICATIONS

Outer dimensions (L x W x H)	2038 x 1010 x 30 mm
Frame technology	Aluminum, silver anodized
Glass thickness	2.0 mm
Cable length (IECUL)	Portrait: 350 mm Landscape: 1200 mm
Cable diameter (IECUL)	4 mm <sup>2</sup> / 12 AWG
Maximum mechanical test load	5400 Pa (front) / 2400 Pa (back)
Connector type (IECUL)	MCA compatible

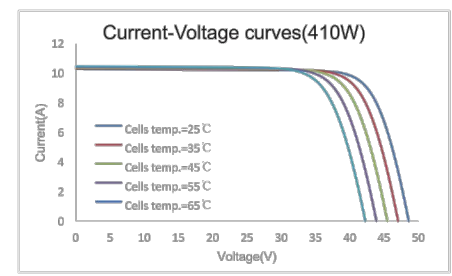
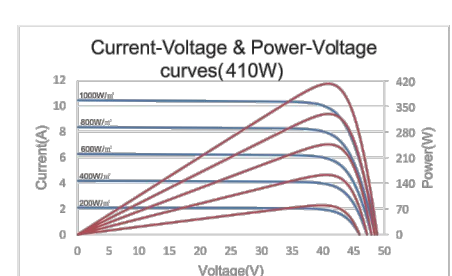
\* Refer to Astronomy crystalline installation manual or contact technical department.  
Maximum Mechanical Test Load=1.5\*Maximum Mechanical Design Load.

### MODULE DIMENSION DETAILS



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http://renergy.chint.com

### CURVE



### PACKING SPECIFICATIONS

Weight (module only)	28.3 kg
Packing unit	35 pcs / box
Weight of packing unit (for 40HQ container)	994 kg
Number of modules per 40HQ container	792 pcs

\* Tolerance ±1.1kg  
\* Subject to sales contract

# GENERAL NOTES

## GENERAL/CONSTRUCTION/SAFETY:

- ALL WORK SHALL CONFORM TO THE REQUIREMENTS OF THE APPLICABLE CONSTRUCTION CODE AND THE PROJECT SPECIFICATIONS.
- LOCATION OF UNDERGROUND UTILITIES SHALL BE VERIFIED PRIOR TO COMMENCEMENT OF CONSTRUCTION.
- DIMENSIONS SHOWN ON PLAN SHALL BE VERIFIED IN FIELD.
- LAYOUT IS SUBJECT TO CHANGE PER REQUEST AND/OR EXISTING CONDITIONS IN THE FIELD.
- ENGINEER SHALL NOT BE RESPONSIBLE FOR THE MEANS, METHODS, TECHNIQUES, SEQUENCES OR PROCEDURES OF CONSTRUCTION SELECTED BY CONTRACTOR.
- CONTRACTOR SHALL FIELD MEASURE AND VERIFY ALL EXISTING CONDITIONS AND DIMENSIONS. ANY UNEXPECTED CONDITIONS OR DISCREPANCIES WITH THE DESIGN DOCUMENTS SHALL BE REPORTED TO THE ENGINEER PRIOR TO INSTALLATION OR ERECTION OF MATERIALS.
- THE CONTRACTOR WILL BE SOLELY AND COMPLETELY RESPONSIBLE FOR CONDITIONS OF THE JOB SITE INCLUDING SAFETY OF ALL PERSONS AND PROPERTY DURING PERFORMANCE OF THE WORK. THIS REQUIREMENT WILL APPLY CONTINUOUSLY AND NOT BE LIMITED TO NORMAL WORKING HOURS. WHEN ON SITE, THE ENGINEER IS RESPONSIBLE FOR HIS OWN SAFETY BUT HAS NO RESPONSIBILITY FOR THE SAFETY OF OTHER PERSONNEL OR SAFETY CONDITIONS AT THE SITE.
- NO PERSONNEL SHALL STEP OR STAND ON PHOTOVOLTAIC (PV) MODULES (SOLAR PANELS) AT ANY TIME. RACK STRUCTURE AND PV MODULES ARE NOT DESIGNED FOR LIVE LOADS AND MAY VOID WARRANTY.
- THIS RBI SOLAR CONSTRUCTION SET IS DESIGNED FROM PV MODULE DATA SHEET(S) PROVIDED BY THE CUSTOMER. CUSTOMER IS RESPONSIBLE FOR VERIFYING THAT THE PV MODULE(S) DELIVERED TO SITE MATCH DATA SHEET(S) PROVIDED TO RBI SOLAR. RBI SOLAR IS NOT RESPONSIBLE FOR PV MODULE DIMENSIONAL DISCREPANCIES DUE TO FURNISHED PV MODULES NOT MATCHING CUSTOMER FURNISHED PV MODULE DATA SHEETS.

## SPECIAL FIELD INSPECTIONS:

- SPECIAL INSPECTION NOT REQUIRED BY RBI SOLAR, AS REQUIRED BY OWNER/CUSTOMER AND/OR AUTHORITY HAVING JURISDICTION, MINIMUM INSPECTION SHALL INCLUDE THE FOLLOWING NOTES AND TABLE:
- ALL SPECIAL INSPECTORS SHALL BE RETAINED BY OWNER/CUSTOMER. THE EXTENT OF THE INSPECTION SHALL COMPLY WITH THE CONTRACT DOCUMENTS, THE BUILDING CODE REQUIREMENTS, AND LOCAL JURISDICTION. IT IS THE OWNER/CUSTOMER'S RESPONSIBILITY TO GIVE PROPER NOTIFICATION TO THE SPECIAL INSPECTOR AND PROCEED WITH THE WORK ONLY AFTER THE SPECIAL INSPECTOR'S APPROVAL.
  - FAILURE TO NOTIFY THE SPECIAL INSPECTOR MAY RESULT IN OWNER/CUSTOMER HAVING TO REMOVE WORK FOR THE PURPOSE OF INSPECTION AT THE OWNER'S/CUSTOMER'S EXPENSE.
  - PREMATURE NOTIFICATION FOR INSPECTION WILL RESULT IN AN ADDITIONAL INSPECTION WITH ALL EXPENSES AND FEES PAID BY THE OWNER/CUSTOMER.
  - SPECIAL INSPECTORS SHALL KEEP RECORDS OF ALL INSPECTIONS. RECORDS SHALL BE FURNISHED TO THE OWNER, ENGINEER OF RECORD, AND LOCAL JURISDICTION AS REQUIRED. ANY AND ALL DISCREPANCIES SHALL IMMEDIATELY BE BROUGHT TO THE ATTENTION OF THE CONTRACTOR. CORRECTIONS SHALL BE MADE AND A FINAL REPORT OF INSPECTIONS SHALL BE PROVIDED NOTING COMPLETION OF INSPECTIONS AND CORRECTIONS OF DISCREPANCIES. FAILURE TO CORRECT DISCREPANCIES SHALL BE REPORTED TO THE ENGINEER OF RECORD AND THE LOCAL JURISDICTION AND MAY RESULT IN REMOVAL OF COMPLETED WORK AND ADDITIONAL WORK TO CORRECT DISCREPANCIES AT THE CONTRACTOR'S EXPENSE.

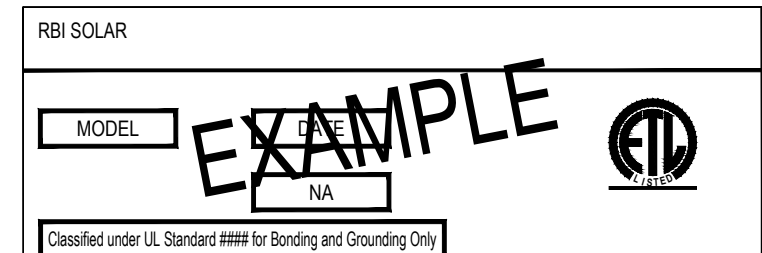
IBC TABLE 1705		
STRUCTURAL STEEL/ALUMINUM FABRICATION	CONTINUOUS	PERIODIC
MATERIAL IDENTIFICATION		X
HIGH STRENGTH BOLTS - MATERIAL IDENTIFICATION OF BOLTS, NUTS AND WASHERS		X
WELD FILLER MATERIALS - IDENTIFICATION AND CONFIRMATION OF COMPLIANCE WITH DESIGN DOCUMENTS		X
STRUCTURAL STEEL/ALUMINUM ERECTION		
MATERIAL IDENTIFICATION		X
INSTALLATION OF HIGH STRENGTH BOLTS		X
WELDED CONNECTIONS		X
MEMBER SIZES AND PLACEMENT		X
GENERAL CONFORMANCE WITH DESIGN DOCUMENTS		X
CONCRETE CONSTRUCTION		
MATERIAL IDENTIFICATION		X
MIX DESIGN VERIFICATION		X
SIZE AND PLACEMENT OF REINFORCING STEEL		X
PLACEMENT OF CONCRETE USING PROPER TECHNIQUES		X
CONCRETE SAMPLES FOR SLUMP, AIR CONTENT, TEMPERATURE, STRENGTH TESTS, ETC. IN ACCORDANCE WITH ACI 318		X
PROPER MAINTENANCE OF SPECIFIED CURING TEMPERATURE AND TECHNIQUES		X
FOUNDATIONS		
SIZE AND LOCATION OF FOUNDATION EXCAVATIONS		X
PLACEMENT OF REINFORCING STEEL AS REQUIRED		X

## WORK BY OTHERS:

- SITE WORK AND DEVELOPMENT.
- ALL ELECTRICAL WORK INCLUDING WIRING, CONDUIT, PANELS AND LIGHTS TO BE FURNISHED AND INSTALLED BY ELECTRICAL CONTRACTOR.
- GROUNDING REQUIREMENTS.
- ALL SHADING ANALYSIS AND/OR PRODUCTION ANALYSIS SHALL BE PERFORMED AND VERIFIED BY OTHERS. RBI SOLAR IS NOT RESPONSIBLE FOR PV SYSTEM DESIGN AS IT PERTAINS TO ELECTRICAL OR PV SYSTEM PRODUCTION.

## ETL CLASSIFIED:

THIS PROJECT CONTAINS RACKING LABELED AS ETL CLASSIFIED UNDER UL SUBJECT 2703 OR UL STANDARD 2703. LABELS ARE APPLIED AT THE FACTORY ON COMPONENTS THAT MAY BE ASSEMBLED AT THE FACTORY OR IN THE FIELD. SEE DETAIL SHEET IN THIS DRAWING SET FOR MORE INFORMATION.



## STRUCTURAL STEEL:

- ALL STRUCTURAL STEEL SHALL BE DESIGNED, FABRICATED AND ERECTED IN ACCORDANCE WITH THE LATEST VERSION OF AISI "MANUAL OF STEEL CONSTRUCTION." LIGHT GAGE COLD-FORMED SECTIONS SHALL CONFORM TO LATEST VERSION OF AISI SPECIFICATIONS FOR COLD-FORMED STEEL STRUCTURAL MEMBERS.
- MATERIALS:
  - A. ROLLED SHAPES: ASTM A992 OR A572 GRADE 55, F<sub>y</sub> = 55 KSI MINIMUM
  - B. PLATES: ASTM A36
  - C. TUBULAR SHAPES: ASTM A500 GRADE C, F<sub>y</sub> = 50 KSI MINIMUM
  - D. FIELD BOLTS (TYP. U.N.O.): SAE J429 GRADE 5
  - E. SCREWS: #12 TEKs - GALVANIZED
  - F. COLD-FORMED/LIGHT GAGE: ASTM A653 GRADE 55
  - G. ANCHOR RODS: ASTM A307 (TYPICAL U.N.O.)
- TEK SCREWS ARE TO BE INSTALLED USING A 2500 RPM MAX. NON-IMPACTING VARIABLE SPEED DRILL WITH CLUTCH OUT.
- REFER TO THE LATEST RBI SOLAR MODEL GM-I OR GM-2 INSTALLATION GUIDE FOR STRUCTURAL CONNECTION TORQUE VALUES.
- ALL WELDING OF STEEL SHALL BE DONE IN ACCORDANCE WITH THE LATEST VERSION OF THE AMERICAN WELD SOCIETY'S SPECIFICATIONS - AWS D1.1. ELECTRODES SHALL BE E70 SERIES UNLESS NOTED OTHERWISE.
- GALVANIZING SPECIFICATIONS
  - A. STRUCTURAL SHAPES: HOT-DIPPED GALVANIZING SHALL BE PER ASTM A123.
  - B. PRE-GALVANIZED MATERIALS SHALL COMPLY WITH ASTM A653 - G90 MINIMUM.
  - C. ALL STRUCTURAL HARDWARE (NOT MODULE MOUNTING HARDWARE): HOT-DIPPED GALVANIZING SHALL BE PER ASTM F2329 UNLESS NOTED OTHERWISE.

## MISCELLANEOUS FASTENERS:

- ALL BOLTS SHALL BE THE TYPE AND SIZE INDICATED ON DRAWINGS.
- ALL HARDWARE USED FOR MOUNTING PV MODULES SHALL BE STAINLESS STEEL UNLESS NOTED OTHERWISE.
- ALL PV MODULE MOUNTING HARDWARE SHALL BE INSTALLED AND TORQUED PER THE LATEST RBI SOLAR MODEL GM-2 INSTALLATION GUIDE.

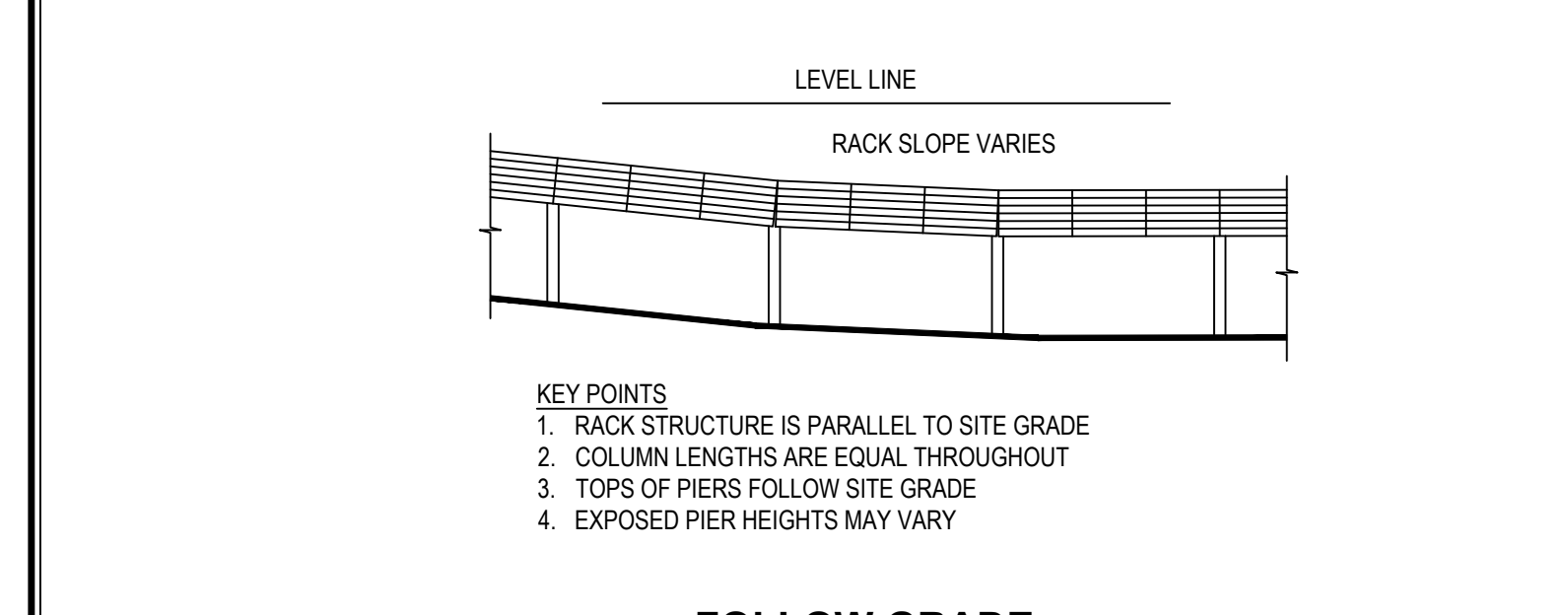
## FOUNDATIONS/CONCRETE:

- THE FOUNDATION DESIGN IS BASED ON ASSUMED MINIMUM CODE ALLOWABLE VALUES AND FIELD TESTS PERFORMED BY RBI SOLAR ON: 08/11/2021
- CONCRETE SPECIFICATIONS:  
STRENGTH: 2500 PSI MINIMUM @ 28 DAYS FOR FOOTINGS OR 4000 PSI MINIMUM @ 28 DAYS FOR BALLASTS  
AIR CONTENT: 4-6%     AGGREGATE SIZE: 3/4" MAXIMUM     MINIMUM COVER: 3" UNLESS NOTED OTHERWISE
- GROUT SPECIFICATIONS: 8000 PSI MINIMUM, NON-SHRINK
- REINFORCING STEEL: ASTM A615 GRADE 60 BILLET STEEL
- CUSTOMER IS RESPONSIBLE FOR VERIFYING FINAL SOIL CONDITIONS DURING CONSTRUCTION HAVE NOT BEEN PURPOSEFULLY ALTERED IN ANY WAY TO ENSURE THE SOIL IS CONSISTENT WITH FINDINGS INCLUDED IN GEOTECHNICAL REPORT, IF APPLICABLE, AND OR FIELD TESTS PERFORMED BY RBI SOLAR. VARIATIONS IN SOIL CONDITIONS SHALL BE REPORTED TO GEOTECHNICAL ENGINEER AND/OR ENGINEER OF RECORD RESPONSIBLE FOR FOUNDATION DESIGN PRIOR TO INSTALLATION OF ANY FOUNDATION MATERIALS.
- CUSTOMER IS RESPONSIBLE FOR VERIFYING CORROSION COMPATIBILITY WITH FOUNDATIONS AND/OR DRIVEN POSTS.
- INSTALLER/CONTRACTOR SHALL COORDINATE PLACEMENT OF FOUNDATIONS AND/OR ANCHOR BOLTS PER DESIGN DRAWINGS AND/OR MANUFACTURER'S SPECIFICATIONS.
- RBI SOLAR, INC. DESIGNS DRIVEN-PILE AND ALTERNATIVE FOUNDATIONS BASED ON SOIL PROPERTIES OUTLINED IN CERTIFIED GEOTECHNICAL REPORTS AND/OR DATA FROM FIELD TESTS. ALL DESIGNS ASSUME UNDISTURBED SOIL CONDITIONS, AND DO NOT TAKE INTO ACCOUNT TRENCHING NEAR FOUNDATIONS. FOR CASES WHERE TRENCHING FOR ELECTRICAL WORK IS AT OR NEAR A FOUNDATION, RBI SOLAR RECOMMENDS A MINIMUM OF 3'-0" CLEAR FROM THE EDGE OF THE TRENCH TO THE EDGE OF THE FOUNDATION FOR "NORMAL GOOD SOIL CONDITIONS." IN CASES OF "POOR SOIL" CONDITIONS, RBI SOLAR RECOMMENDS A MINIMUM CLEAR DISTANCE EQUAL TO OR GREATER THAN THE DEPTH OF THE FOUNDATION. IF IN DOUBT OF SOIL CONDITIONS, RBI SOLAR RECOMMENDS CONSULTING A QUALIFIED GEOTECHNICAL ENGINEER TO ASSESS SOIL CONDITIONS AT THE SITE.  
  
NOTE: TRENCHING/EXCAVATION WITHIN 3'-0" OF ANY RACK SUPPORT POST REQUIRES REPLACING THE ORIGINAL SOIL AND COMPACTION TO 90% MODIFIED PROCTOR DENSITY. FOR FURTHER CLARIFICATION ON COMPACTION REQUIREMENTS, RBI SOLAR RECOMMENDS CONSULTING A QUALIFIED GEOTECHNICAL ENGINEER.
- REFER TO SHEET SG302 FOR REFUSAL REMEDY PROCEDURE AND ALTERNATE FOUNDATION OPTIONS.

## SURVEYING REQUIREMENTS:

- ALL SURVEYING WORK MUST BE COMPLETED BY OTHERS PRIOR TO RBI SOLAR MOBILIZING ON-SITE UNLESS NOTED OTHERWISE.
- ALL SURVEYING FOR THE RACKING MUST BE BASED OFF OF RBI SOLAR'S LATEST DOCUMENT SET.
- THE FIRST AND LAST RACKING POST IN EVERY ROW MUST HAVE THE CENTER POINTS SURVEYED AND MARKED. THERE MUST BE A FIVE FOOT OFFSET TO THE WEST OF THE WESTERMOST POST LOCATION AND A FIVE FOOT OFFSET TO THE EAST OF THE EASTERMOST POST LOCATION IN EVERY ROW.
- FOR ROWS LONGER THAN 100 FEET, THE CENTERLINE LOCATION MUST BE MARKED WITHIN THE ROW AT EVERY 100 FEET MAXIMUM. THESE ADDITIONAL MARKS SHOULD NOT BE AT A POST LOCATION. DO NOT MARK EACH INDIVIDUAL POST LOCATION WITHIN A ROW AS IT WILL NOT BE ACCURATE DUE TO TOPOGRAPHY.
- EVERY INDIVIDUAL EQUIPMENT POST LOCATION MUST HAVE THE CENTER POINT SURVEYED AND MARKED.

## RACK SYSTEM TOPOGRAPHIC RELATIONSHIP



**RBI SOLAR**  
Total Solar Service: Design \* Fabrication  
Installation \* Parts \* Repair Service  
5513 VINE STREET  
CINCINNATI, OH 45217  
513.242.2051  
FAX: 513.242.0816

PROFESSIONAL SEAL  
ENGINEERS SEAL APPLIES TO DESIGN OF STRUCTURAL COMPONENTS ONLY

# GROUND MOUNT FOR CUSTOMER

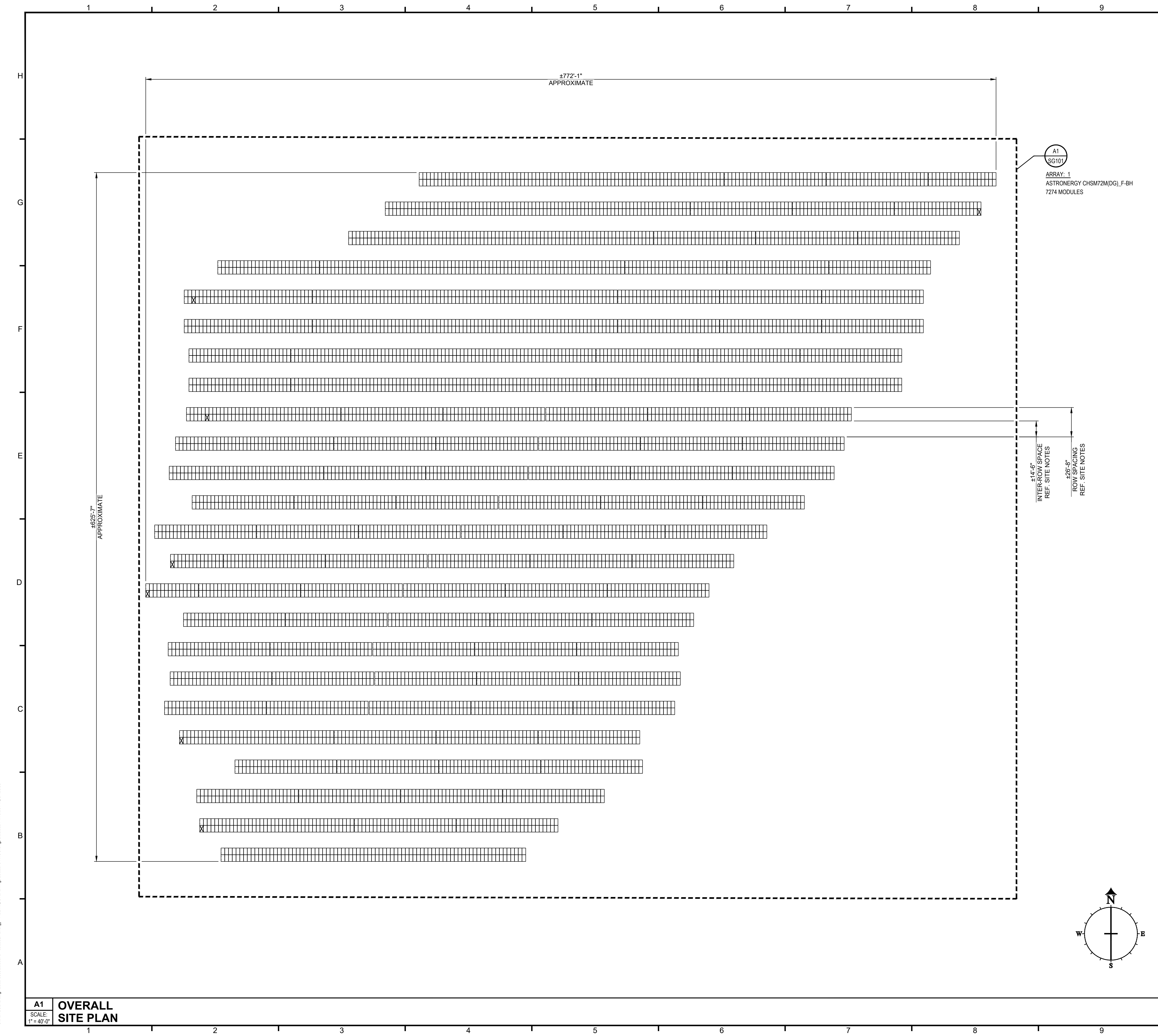
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5_08/02/21	75% REVIEW (R1)
4_07/20/21	90% REVIEW
3_06/21/21	FOR PERMIT
2_06/21/21	75% REVIEW
1_06/17/21	90% REVIEW

PROJECT INFORMATION  
TITLE ADDRESS  
RBI SOLAR PROJECT No.: 20  
DRAWN BY: - REVIEWED BY: -  
SHEET TITLE: GENERAL NOTES/ MODULE SPECIFICATION SHEETS  
SHEET No.: **SG002**

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### SITE NOTES

1. TOPOGRAPHY PROVIDED BY LODESTAR ENERGY ON 08/04/2020. DIMENSIONS SHOWN FOR REFERENCE ONLY. PRESUMPTIVE OR INADEQUATE TOPOGRAPHY USED FOR THIS DESIGN MAY REQUIRE ADDITIONAL MATERIALS. ACTUAL ON-SITE CONDITIONS SHALL BE FIELD VERIFIED AND RBI SOLAR SHALL BE NOTIFIED IF ON-SITE CONDITIONS ARE DIFFERENT THAN SHOWN OR PRESUMED.

### BAY INFORMATION

TYPE	QTY.
BAY TYPE 4EP2	115
BAY TYPE 4P2	348
BAY TYPE 4WP2	113
BAY TYPE 5P2	219
TOTAL # OF BAYS	795

### BILL OF MATERIALS

ITEM	QTY.
RACKING POST TYPE A	908
TOTAL # OF RACKING POSTS	908
<b>PURLINS:</b>	
PURLIN MARK ZAE	460
PURLIN MARK Z4	1392
PURLIN MARK Z4W	452
PURLIN MARK Z5	876
TOTAL # OF PURLINS	3180
TOTAL # OF TOP CHORD ASSEMBLIES	908
TOTAL # OF STANDARD POST TOP ASSEMBLIES	680
TOTAL # OF EXTENDED POST TOP ASSEMBLIES	228
42 1 1/16" x 2" SQ. 15 GA. GALVANIZED KNEE BRACES	908
69 9/16" x 2" SQ. 15 GA. GALVANIZED KNEE BRACES	908
KNEE BRACE CLIPS	3632
3/4" X 5" MAGNI BOLT WITH NUT	1816
3/8" X 1 1/4" GALV. BOLT WITH NUT	9080
1/2" x 3" GALV. BOLT WITH NUT	1816
3/8" X 3/4" GALV. BOLT WITH NUT	14528
3/8" X 5" GALV. BOLT WITH NUT	908
3/8" GALV. WASHER	3632
#12 X 1 1/4" HEX HEAD TEK SCREW	2272
MODULE S.S. HARDWARE STACK (BOLT, 2 WASHER, FLANGE NUT)	29096

**RBI SOLAR**  
Total Solar Service: Design \* Fabrication  
Installation \* Parts \* Repair Service

5513 VINE STREET  
CINCINNATI, OH 45217  
513.242.2051  
FAX: 513.242.0816

PROFESSIONAL SEAL

ENGINEER'S SEAL APPLIES TO DESIGN OF STRUCTURAL COMPONENTS ONLY

8-26-2021

## GROUND MOUNT FOR CUSTOMER

RELEASE RECORD

MARK DATE	DESCRIPTION
9 08/26/21	FOR CONSTRUCTION (R1)
8 08/26/21	FOR CONSTRUCTION
7 08/24/21	90% REVIEW (R1)
6 08/02/21	FOR PERMIT (R1)
5 08/02/21	75% REVIEW (R1)
4 07/20/21	90% REVIEW
3 06/21/21	FOR PERMIT
2 06/21/21	75% REVIEW
1 06/17/21	50% REVIEW

PROJECT INFORMATION

TITLE & ADDRESS:  
**TITLE**

ADDRESS

RBI SOLAR PROJECT No.:  
20


DRAWN BY: \_\_\_\_\_ REVIEWED BY: \_\_\_\_\_

SHEET TITLE:  
**SITE PLAN & BILL OF MATERIALS**

SHEET No.:  
**SG003**

S:\RBI Solar\Design\2021\_Jobs\203078 - Lodestar Energy - Plain Hill, CT\Drawings\203078-R1-CCO.dwg, 8/26/2021 1:40:30 PM, UH:bba

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PROFESSIONAL SEAL  
 ENGINEER'S SEAL APPLIES TO DESIGN OF STRUCTURAL COMPONENTS ONLY  


**GROUND MOUNT FOR CUSTOMER**



**LEGEND**

X' SYMBOL REPRESENTS X" WIDE ROW BREAK PER DETAIL G9/SG301

**POST SCHEDULE**

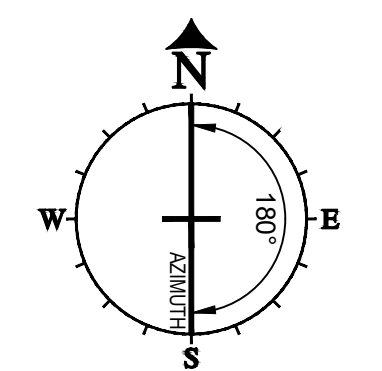
SYMBOL	MARK	DESCRIPTION	LENGTH	PIECES	DETAIL
X' #	A	W6x9	10'-9"	908	A6/SG301
OR					
PER PLAN					

POST SETTING NOTES:  
 1. ALL POST DIMENSIONS SHOWN ARE CENTERLINE TO CENTERLINE OF POST WEB.  
 2. REFERENCE DETAIL A6/SG301 FOR ADDITIONAL INFORMATION ON REQUIRED POST EMBED DEPTHS.  
 3. POST LENGTH INCLUDES ADDITIONAL MATERIAL TO ALLOW FOR TOPOGRAPHICAL VARIANCE.

**BAY SCHEDULE**

TYPE	QTY.	POST-POST	DESCRIPTION	PURLINS		DETAIL	
				MARK	#/BAY		
4EP2	115	SEE BAY PLAN	ASTRONERGY CHSM72M(DG)_F-BH PORTRAIT MODULES 4 WIDE x 2 HIGH WITH 1 CANTILEVER EAST SIDE AND 25.0° TILT	Z4E	4	460	C3/SG301
4P2	348	SEE BAY PLAN	ASTRONERGY CHSM72M(DG)_F-BH PORTRAIT MODULES 4 WIDE x 2 HIGH AND 25.0° TILT	Z4	4	1392	E3/SG301
4WP2	113	SEE BAY PLAN	ASTRONERGY CHSM72M(DG)_F-BH PORTRAIT MODULES 4 WIDE x 2 HIGH WITH 1 CANTILEVER WEST SIDE AND 25.0° TILT	Z4W	4	452	G3/SG301
5P2	219	SEE BAY PLAN	ASTRONERGY CHSM72M(DG)_F-BH PORTRAIT MODULES 5 WIDE x 2 HIGH AND 25.0° TILT	Z5	4	876	G6/SG301

NOTES THIS BAY:  
 1. PURLINS ARE 2 1/2" x 7" x 2 1/2" ZEE 16 GA. GALVANIZED UNLESS NOTED OTHERWISE.  
 2. TOP CHORDS ARE 126 1 1/16" x 4" x 4 3/4" CEE 14 GA. GALVANIZED UNLESS NOTED OTHERWISE.  
 3. LOWER KNEE BRACES ARE 42 1 1/16" x 2" SQ. 15 GA. GALVANIZED UNLESS NOTED OTHERWISE.  
 4. UPPER KNEE BRACES ARE 69 9/16" x 2" SQ. 15 GA. GALVANIZED UNLESS NOTED OTHERWISE.  
 5. INSTALL EXTENDED POST TOP ASSEMBLY AT EACH ROW END UNDER CANTILEVER BAY TYPES.



A1  
 SCALE: 1/32" = 1'-0"  
**ARRAY: 1**  
**COMPONENT LAYOUT**

RELEASE RECORD

MARK DATE	DESCRIPTION
9 08/26/21	FOR CONSTRUCTION (R1)
8 08/26/21	FOR CONSTRUCTION
7 08/24/21	90% REVIEW (R1)
6 08/02/21	FOR PERMIT (R1)
5 08/02/21	75% REVIEW (R1)
4 07/20/21	90% REVIEW
3 06/21/21	FOR PERMIT
2 06/21/21	75% REVIEW

PROJECT INFORMATION

TITLE & ADDRESS:  
**TITLE**

ADDRESS

RBI SOLAR PROJECT No.:  
 20


DRAWN BY: \_\_\_\_\_ REVIEWED BY: \_\_\_\_\_

SHEET TITLE:  
 ARRAY: 1  
 COMPONENT LAYOUT

SHEET No.:  
**SG101**

PROFESSIONAL SEAL

ENGINEER'S SEAL APPLIES TO DESIGN OF STRUCTURAL COMPONENTS ONLY



8-26-2021

# GROUND MOUNT FOR CUSTOMER

RELEASE RECORD

MARK	DATE	DESCRIPTION
9	08/26/21	FOR CONSTRUCTION (R1)
8	08/26/21	FOR CONSTRUCTION
7	08/24/21	90% REVIEW (R1)
6	08/02/21	FOR PERMIT (R1)
5	08/02/21	75% REVIEW (R1)
4	07/20/21	90% REVIEW
3	06/21/21	FOR PERMIT
2	06/21/21	75% REVIEW
1	06/17/21	50% REVIEW

PROJECT INFORMATION

TITLE & ADDRESS:  
**TITLE**  
 ADDRESS

RBI SOLAR PROJECT No.:  
 20

DRAWN BY: \_\_\_\_\_ REVIEWED BY: \_\_\_\_\_

SHEET TITLE:  
**RACK SECTION & BAY PLAN VIEWS**  
 SHEET No.:  
**SG301**

NOT USED

**G1**  
SCALE: 1/4" = 1'-0"  
**BAY PLAN VIEW**

**E1**  
SCALE: 1/4" = 1'-0"  
**BAY PLAN VIEW**

**C1**  
SCALE: 1/4" = 1'-0"  
**BAY PLAN VIEW**

**A1**  
SCALE: 1/4" = 1'-0"  
**BAY PLAN VIEW**

**G3**  
SCALE: 1/4" = 1'-0"  
**4WP2 BAY PLAN VIEW**

**E3**  
SCALE: 1/4" = 1'-0"  
**4P2 BAY PLAN VIEW**

**C3**  
SCALE: 1/4" = 1'-0"  
**4EP2 BAY PLAN VIEW**

**A3**  
SCALE: 1/4" = 1'-0"  
**3P2 BAY PLAN VIEW**

**G6**  
SCALE: 1/4" = 1'-0"  
**5P2 BAY PLAN VIEW**

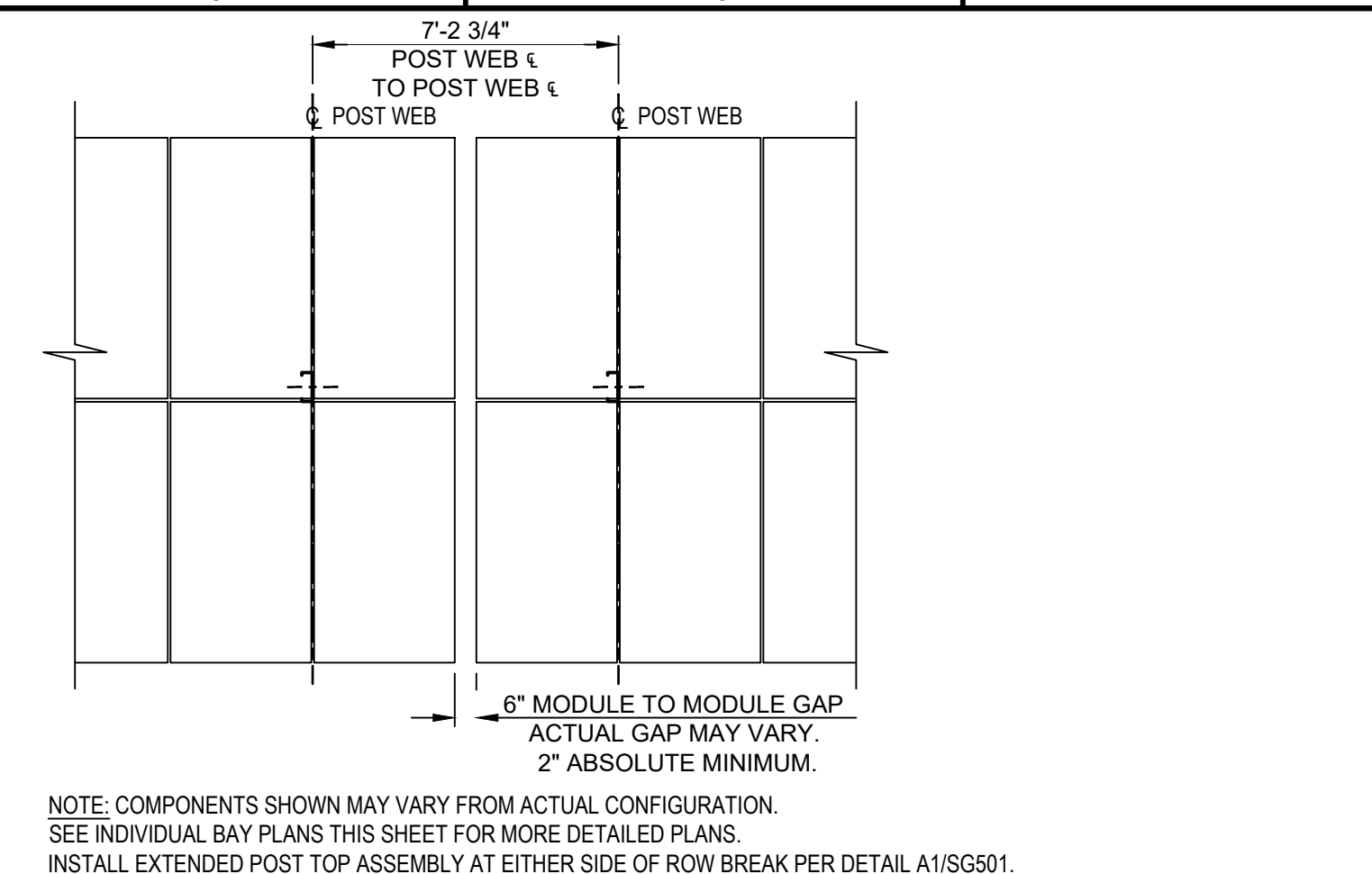
**A6**  
SCALE: 1" = 1'-0"  
**DESIGN RACK SECTION**

NOTE:  
IF DESIGN EMBEDMENT IS NOT ACHIEVED, REFERENCE REFUSAL REMEDY PROCEDURE NOTES ON SHEET SG302.

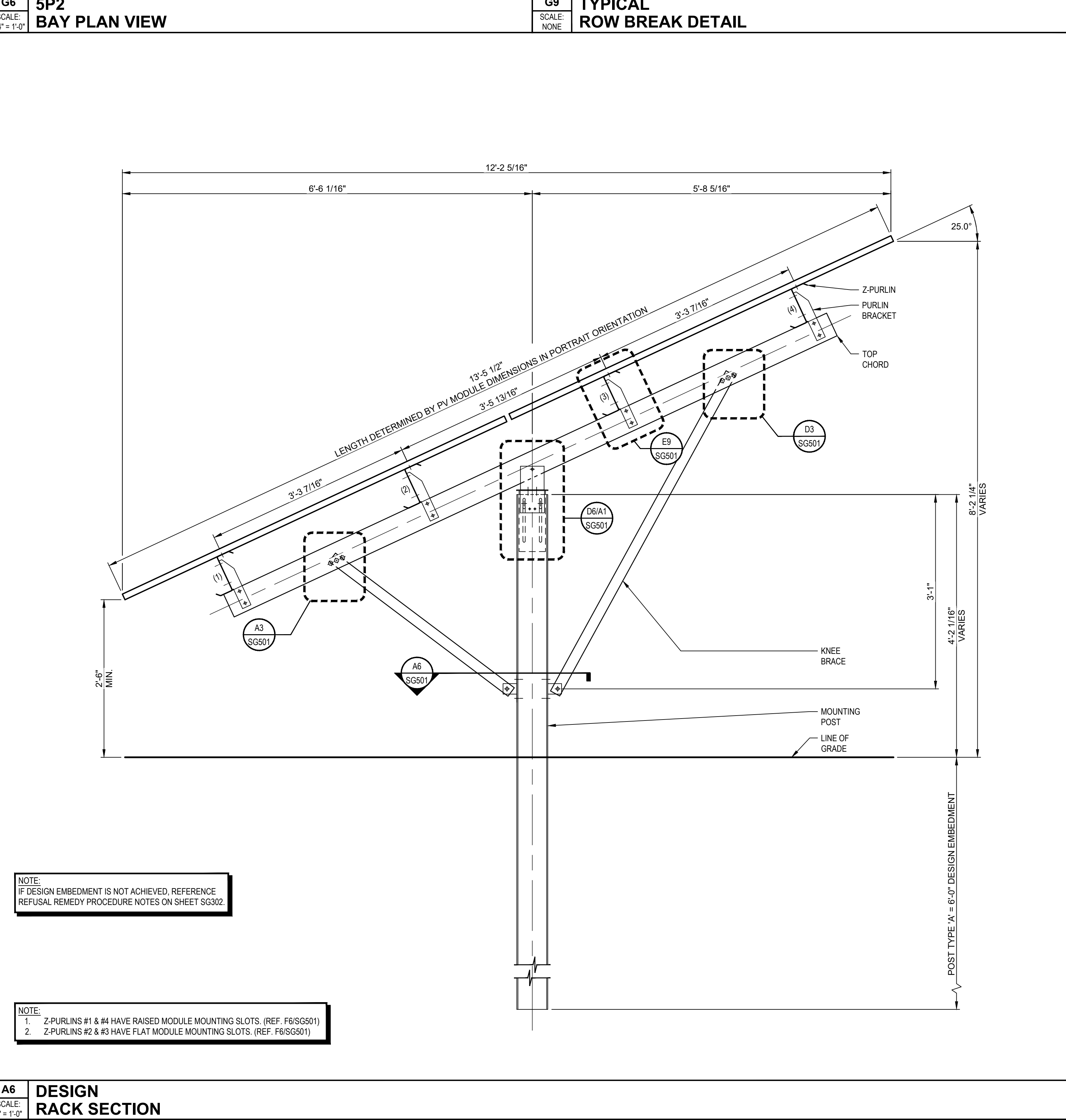
NOTE:  
1. Z-PURLINS #1 & #4 HAVE RAISED MODULE MOUNTING SLOTS. (REF. F6/SG501)  
2. Z-PURLINS #2 & #3 HAVE FLAT MODULE MOUNTING SLOTS. (REF. F6/SG501)

**G9**  
SCALE: NONE  
**TYPICAL ROW BREAK DETAIL**

NOTE: COMPONENTS SHOWN MAY VARY FROM ACTUAL CONFIGURATION. SEE INDIVIDUAL BAY PLANS THIS SHEET FOR MORE DETAILED PLANS. INSTALL EXTENDED POST TOP ASSEMBLY AT EITHER SIDE OF ROW BREAK PER DETAIL A1/SG501.



NOTE: IF DESIGN EMBEDMENT IS NOT ACHIEVED, REFERENCE REFUSAL REMEDY PROCEDURE NOTES ON SHEET SG302.



Labels in Rack Section: A3, A6, D6/A1, E9, D3, Z-PURLIN, PURLIN BRACKET, TOP CHORD, KNEE BRACE, MOUNTING POST, LINE OF GRADE.

Dimensions: 6'-6 1/16", 12'-2 5/16", 5'-8 5/16", 25.0", 3'-3 7/16", 13'-5 1/2", 3'-5 13/16", 3'-3 7/16", 3'-3 7/16", 3'-3 7/16", 2'-6" MIN., 8'-2 1/4" VARIES, 4'-2 1/16" VARIES, 3'-1", 6'-0" DESIGN EMBEDMENT VARIES.

**REFUSAL REMEDY PROCEDURE:**

WHEN DRIVEN POSTS DO NOT ACCOMPLISH DESIGN EMBEDMENT DEPTH(S) AS SPECIFIED ON A6/SG301 DUE TO REFUSAL, FOLLOW THIS PROCEDURE:

- WHEN REFUSAL IS ENCOUNTERED, EFFORTS TO DRIVE THE POST FURTHER SHOULD BE STOPPED AND DRIVEN POST DEPTH AND LOCATION SHALL BE RECORDED.
- ATTEMPT TO DRIVE RELOCATED POST TO THE DESIGN EMBEDMENT DEPTH SPECIFIED ON A6/SG301. IF POST DOES NOT REACH THE MINIMUM EMBEDMENT DEPTH OF 5.0 FEET, AN ALTERNATE FOUNDATION SHALL BE REQUIRED.
- IF POST DOES NOT REACH DESIGN EMBEDMENT DEPTH SPECIFIED ON A6/SG301 BUT REACHED THE MINIMUM EMBEDMENT DEPTH OF 5.0 FEET, THE POST MUST PASS THE FOLLOWING VERTICAL AND LATERAL TESTS:
  - VERTICAL TEST - MINIMUM UPLIFT FORCE 3600 LBS. RESULTING IN VERTICAL DEFLECTION LESS THAN 1/2".
  - LATERAL TEST - MINIMUM LATERAL FORCE 3000 LBS. APPLIED AT 4 FEET ABOVE GRADE AND POST DEFLECTION < 1.00 INCH MEASURED AT GRADE.
- ANY POST BELOW THE DESIGN EMBEDMENT DEPTH THAT DOES NOT PASS THE VERTICAL AND LATERAL TEST SHALL REQUIRE AN ALTERNATE FOUNDATION.
- IF THE POST REACHED THE MINIMUM EMBEDMENT DEPTH OF 5.0 FEET AND PASSED THE VERTICAL AND LATERAL TESTS SPECIFIED ABOVE, THE POST CAN BE FIELD-CUT AND DRILLED ACCORDINGLY.
- ALL FIELD-CUT SURFACES SHALL BE PAINTED WITH BRUSH-ON GALVANIZING PAINT. RBI SOLAR DOES NOT RECOMMEND SPRAY GALVANIZING FOR REPAIR AND PAINTING OF CUT SURFACES.
- FOR INSTANCES WHERE IT IS DESIRED TO REDUCE THE POST EMBEDMENT BUT REFUSAL IS NOT ENCOUNTERED, PLEASE CONTACT THE RBI SOLAR ENGINEERING DEPARTMENT FOR RECOMMENDATIONS.

**A2 REFUSAL REMEDY PROCEDURE**  
SCALE: NONE

**E5 ALTERNATE FOUNDATION PIER FOOTING DETAIL**  
SCALE: 1" = 1'-0"

**NOTE:**

- POST NOT REQUIRED TO BE CENTERED IN HOLE.
- CONTACT RBI SOLAR PROJECT MANAGER FOR PRE-DRILL AND DRIVE PROCEDURE.
- POST SHOULD BOTTOM OUT AT THE HOLE.

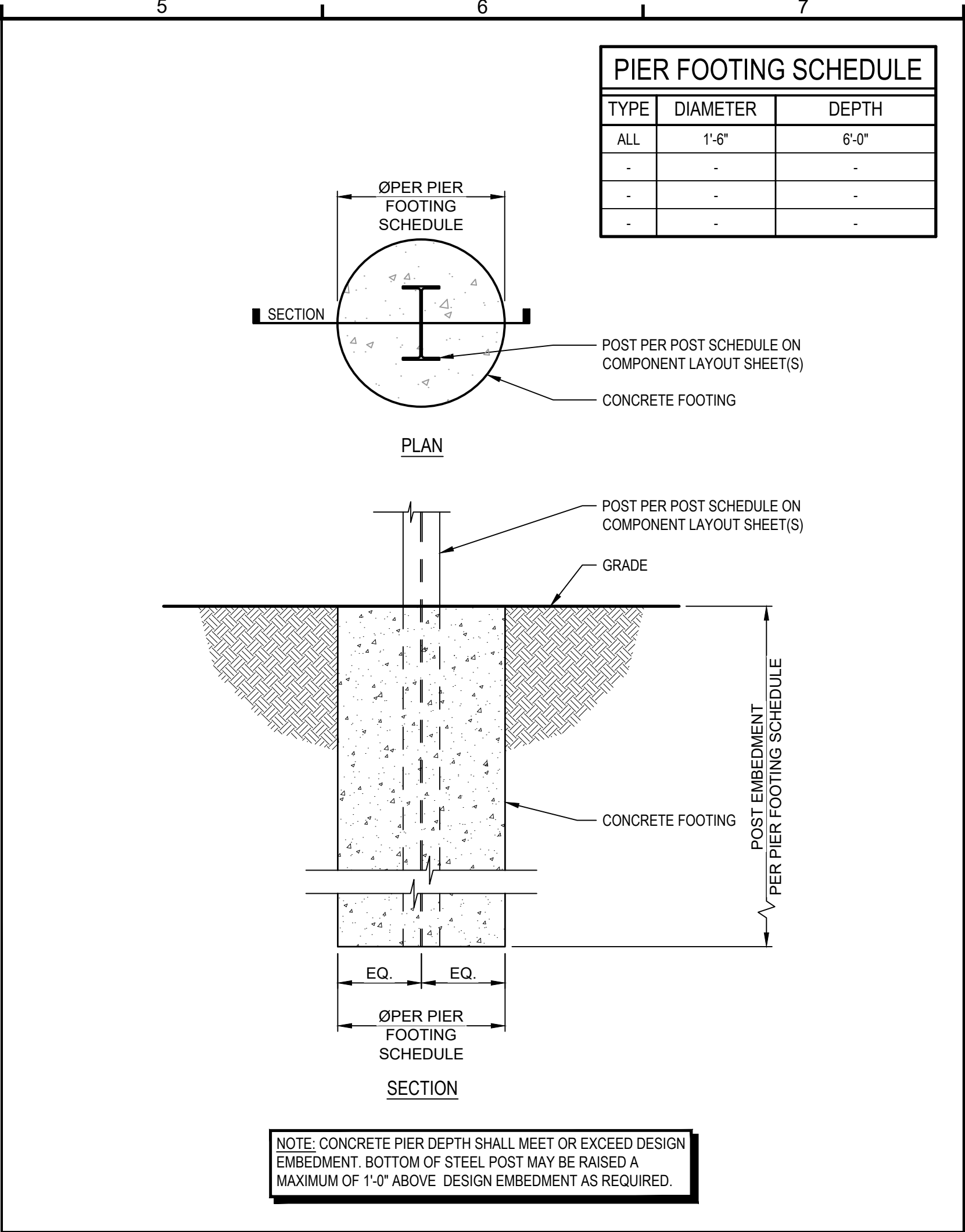
**AGGREGATE MATERIAL SPECIFICATION FOR PRE-DRILL, FILL, AND DRIVE**

SIEVE	% PASSING	
	OPTION A	OPTION B
1"	100	100
3/4"	50-85	60-100
#4	35-65	50-85
#10	25-50	40-70
#40	15-30	25-45
#200	<6	<6

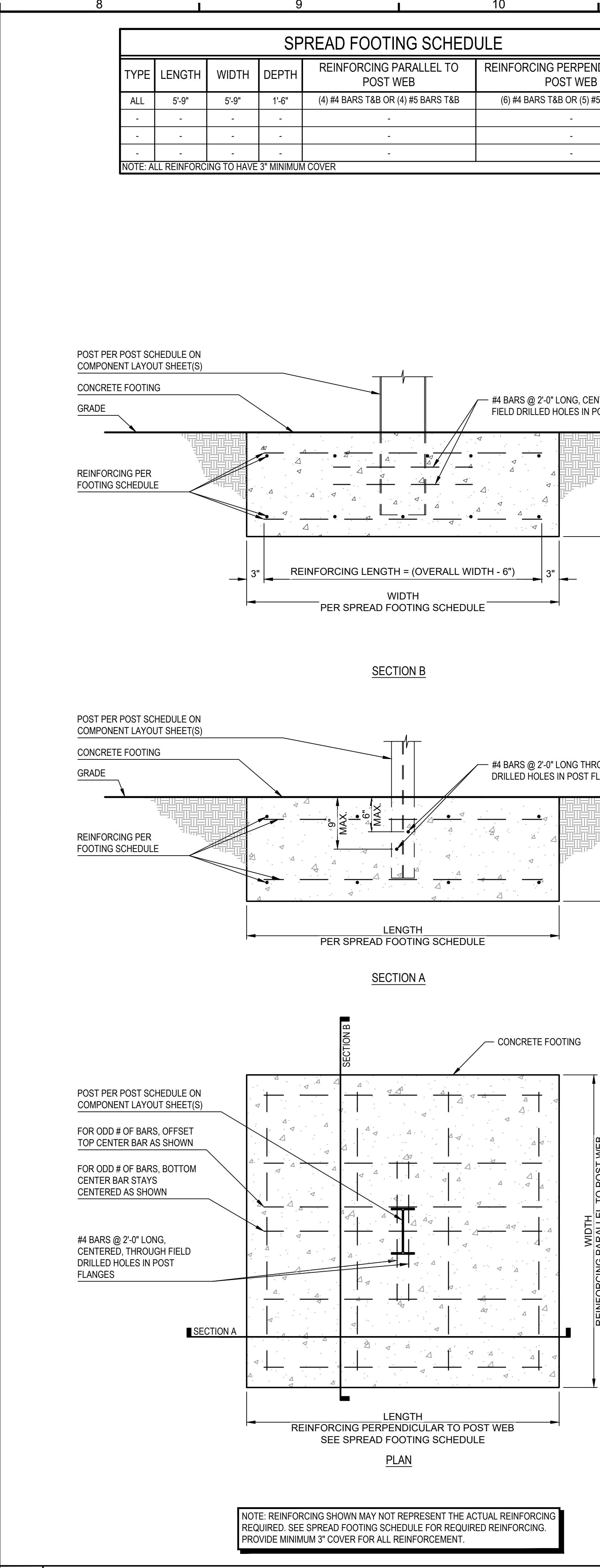
**NOTE:**

- AGGREGATE SHALL BE CRUSHED STONE, SLAG, GRAVEL, OR CHERT.
- FINES ARE TO BE MANUFACTURED SAND OR OTHER FINE MATERIALS NATURALLY CONTAINED OR ADDED TO MEET SPECIFICATIONS ABOVE.
- AGGREGATE TO BE WELL GRADED.

**A5 ALTERNATE FOUNDATION PRE-DRILL, FILL, AND DRIVE DETAIL**  
SCALE: 1" = 1'-0"



**A8 ALTERNATE FOUNDATION SPREAD FOOTING DETAIL**  
SCALE: 1" = 1'-0"



**SG302**

**RBI SOLAR**  
Total Solar Service: Design \* Fabrication  
Installation \* Parts \* Repair Service  
5513 VINE STREET  
CINCINNATI, OH 45217  
513.242.2051  
FAX: 513.242.0816

PROFESSIONAL SEAL

ENGINEER'S SEAL APPLIES TO DESIGN OF STRUCTURAL COMPONENTS ONLY

**GROUND MOUNT FOR CUSTOMER**

**RELEASE RECORD**

MARK DATE	DESCRIPTION
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08/02/21	75% REVIEW (R1)
07/20/21	90% REVIEW
06/21/21	FOR PERMIT
06/21/21	75% REVIEW
06/17/21	90% REVIEW

**PROJECT INFORMATION**

TITLE & ADDRESS:  
**TITLE**

ADDRESS

RBI SOLAR PROJECT No.:  
20

DRAWN BY: \_\_\_\_\_ REVIEWED BY: \_\_\_\_\_

SHEET TITLE:  
ALTERNATE FOUNDATIONS SECTIONS & DETAILS

SHEET No.:  
**SG302**

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PROFESSIONAL SEAL

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**GROUND MOUNT FOR CUSTOMER**

RELEASE RECORD

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2 06/21/21	75% REVIEW
1 06/17/21	50% REVIEW

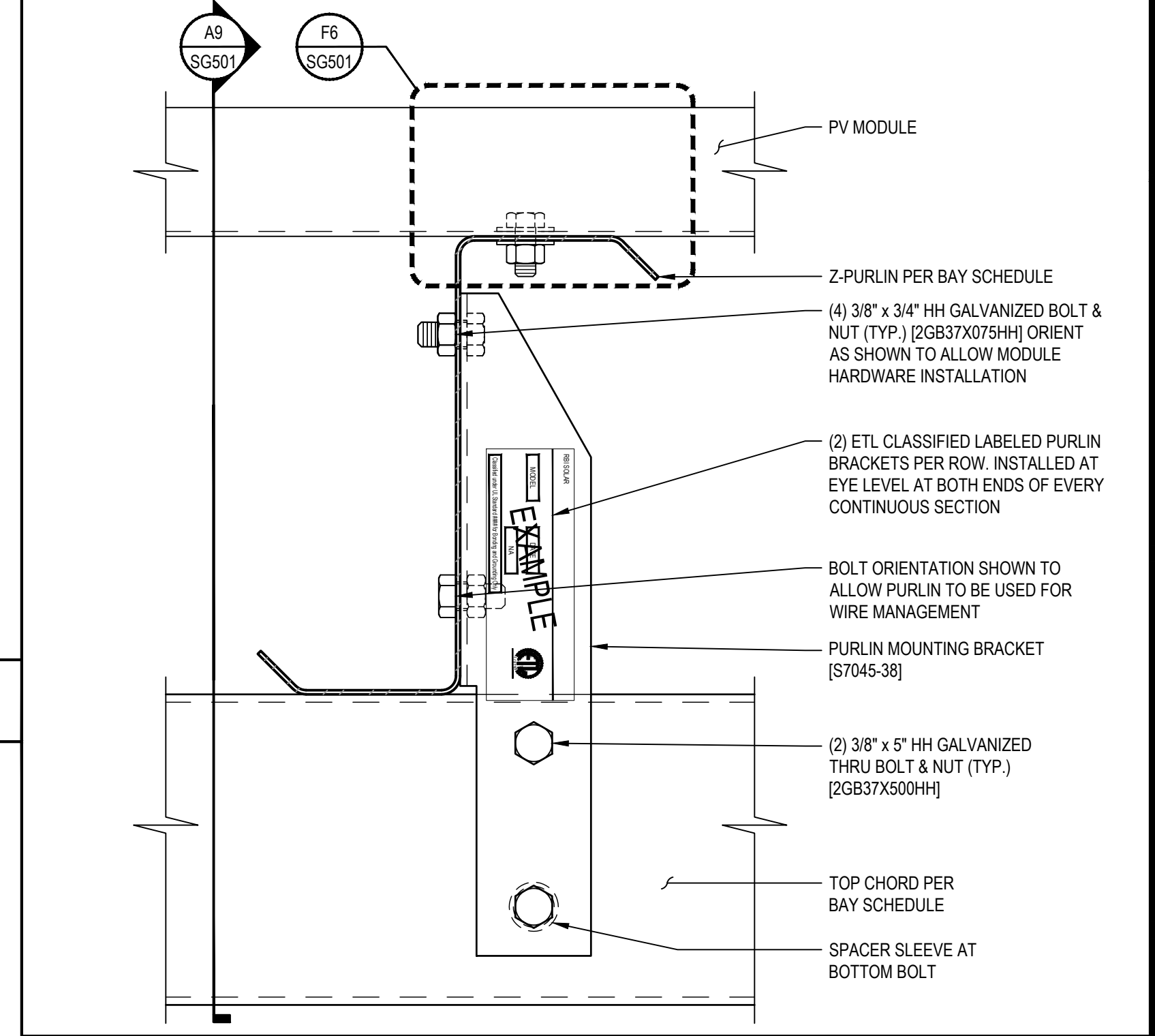
PROJECT INFORMATION

TITLE & ADDRESS:  
**TITLE**  
 ADDRESS

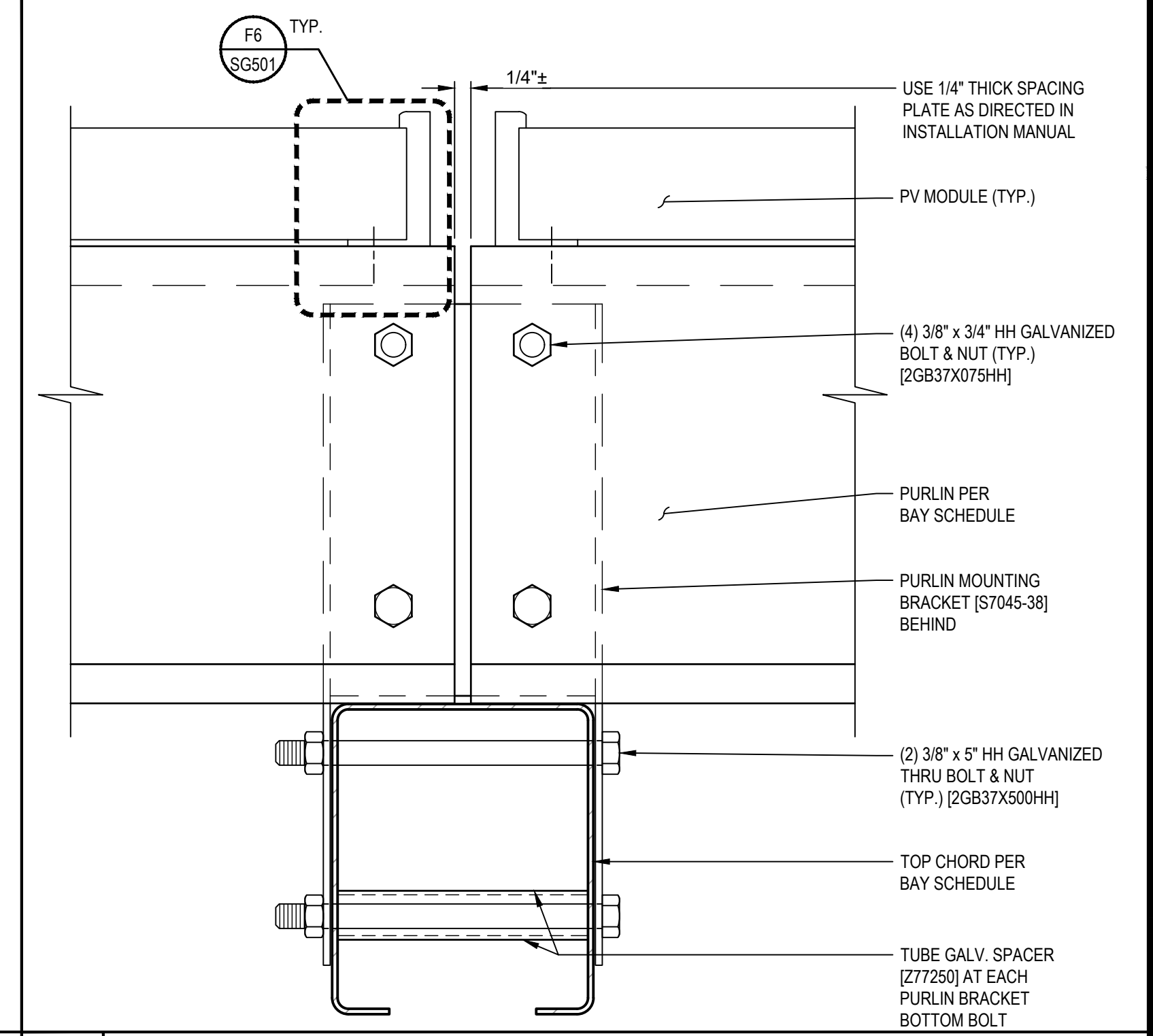
RBI SOLAR PROJECT No.:  
 20

DRAWN BY: \_\_\_\_\_ REVIEWED BY: \_\_\_\_\_

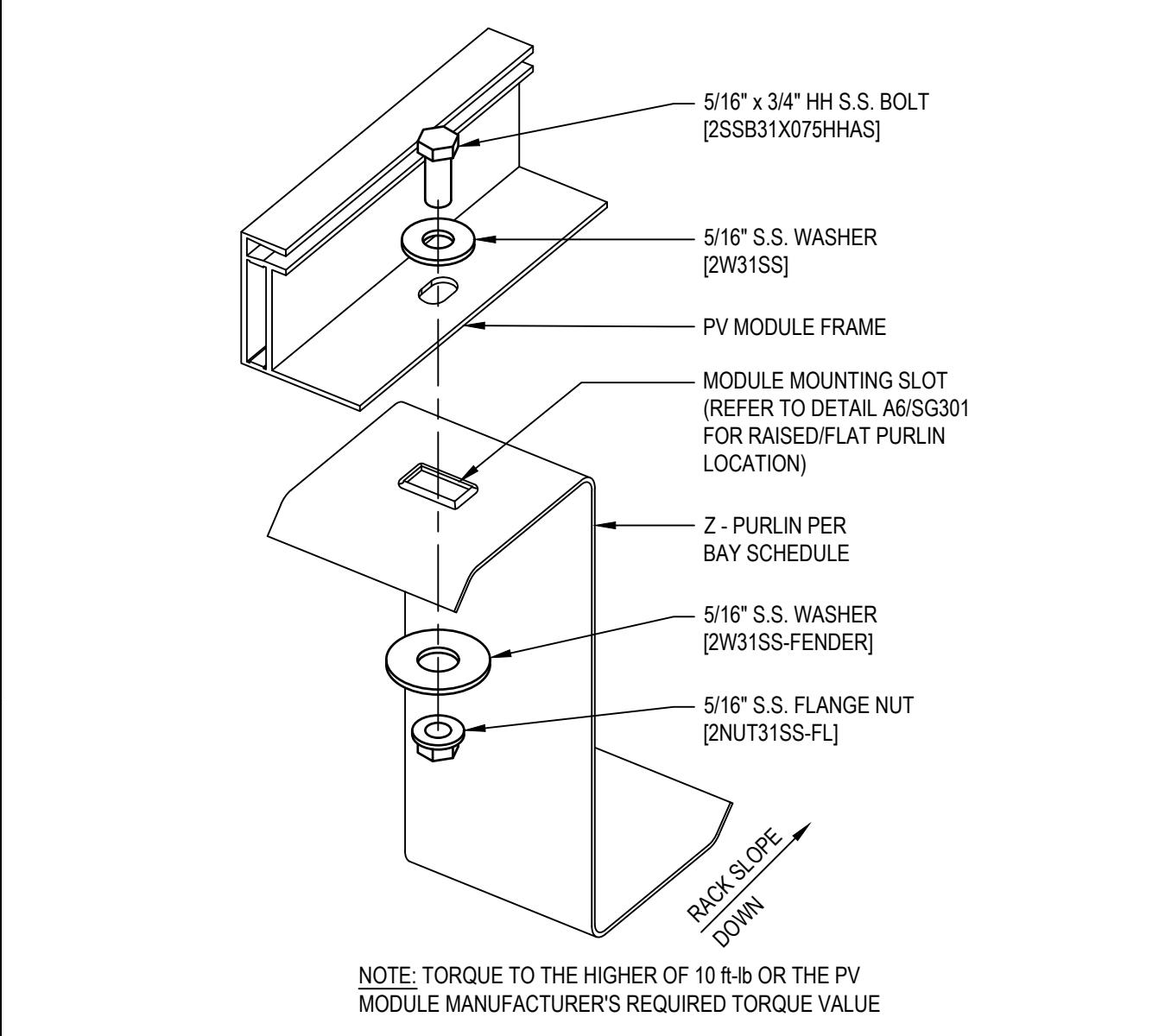
SHEET TITLE:  
**DETAILS**  
 SHEET No.:  
**SG501**



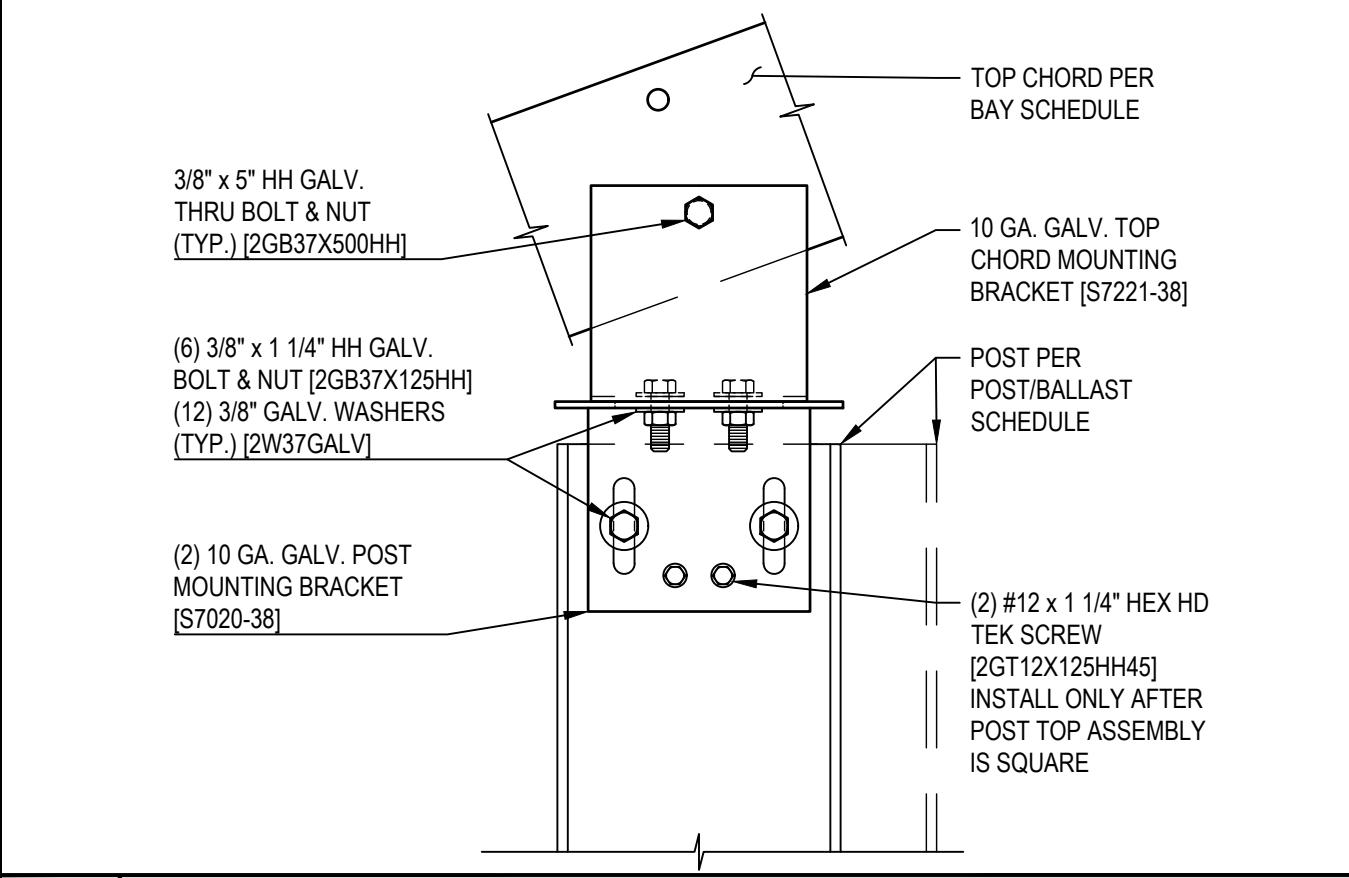
**E9 TRANSVERSE PURLIN CONNECTION DETAIL**  
 SCALE: 6" = 1'-0"



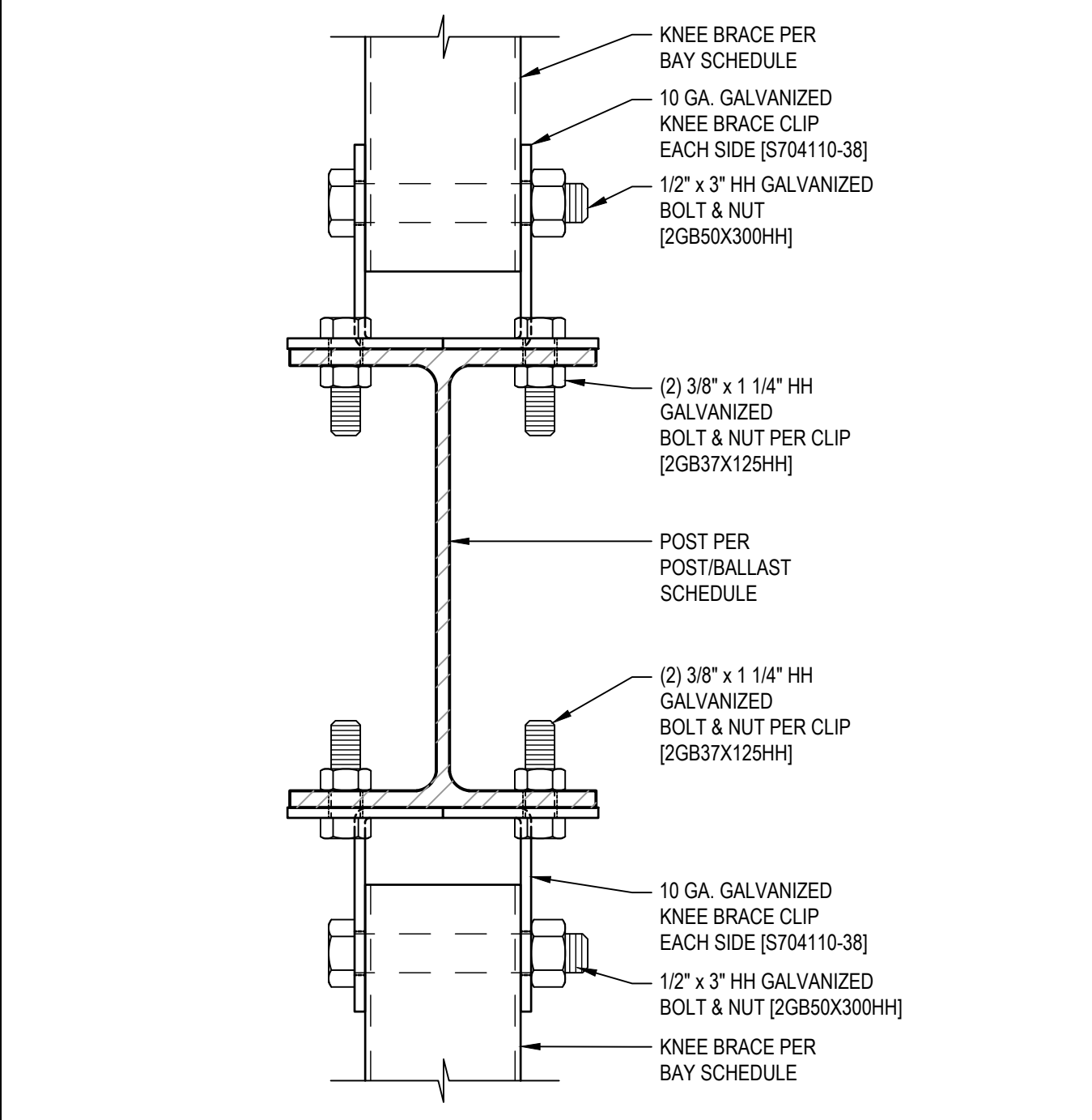
**A9 LONGITUDINAL PURLIN CONNECTION DETAIL**  
 SCALE: 6" = 1'-0"



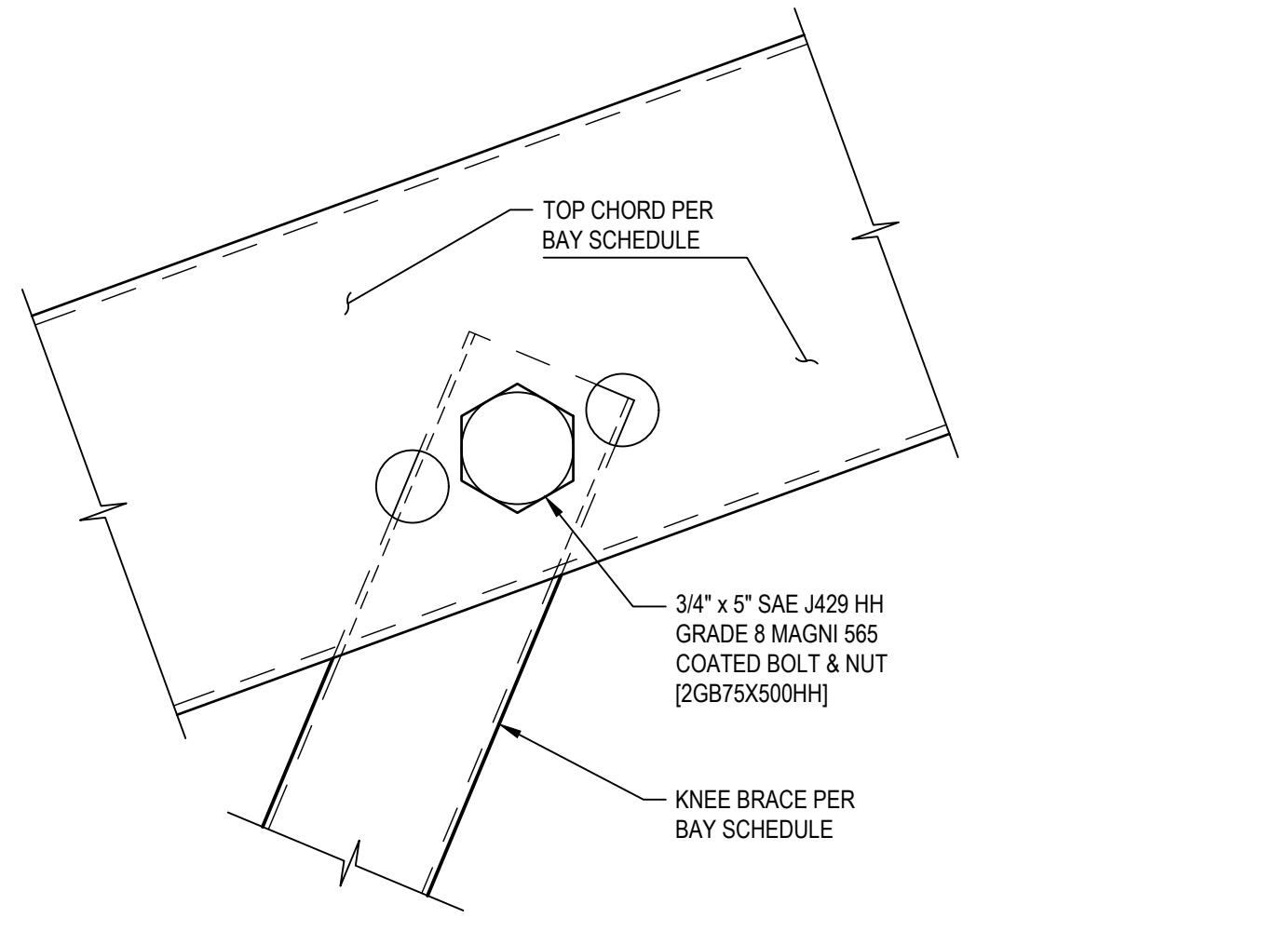
**F6 PV MODULE TO PURLIN CONNECTION DETAIL**  
 SCALE: NONE



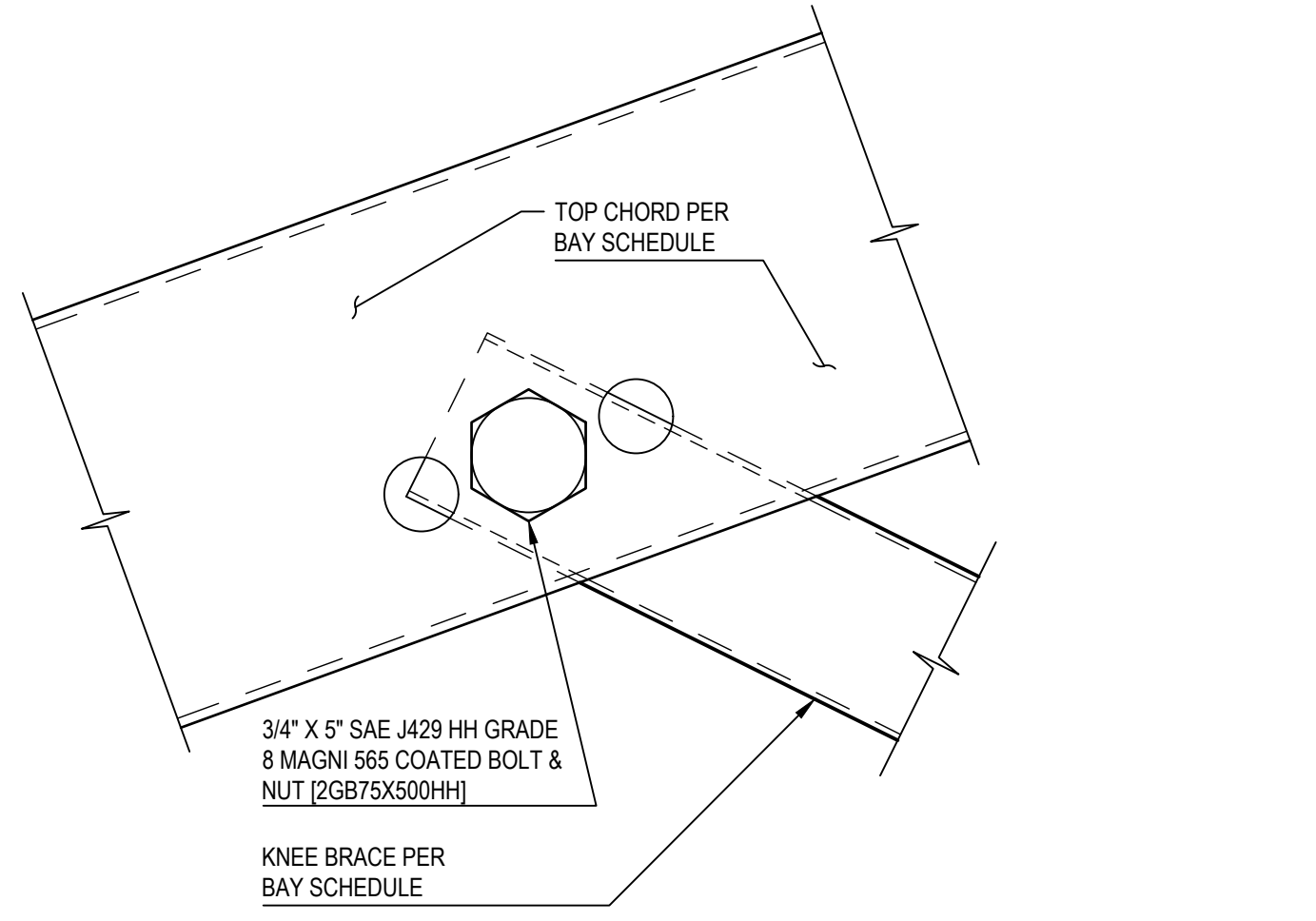
**D6 TOP CHORD TO POST CONNECTION DETAIL**  
 SCALE: 3" = 1'-0"



**A6 KNEE BRACE TO POST CONNECTION DETAIL**  
 SCALE: 6" = 1'-0"



**D3 UPPER KNEE BRACE TO TOP CHORD CONNECTION DETAIL**  
 SCALE: 6" = 1'-0"



**A3 LOWER KNEE BRACE TO TOP CHORD CONNECTION DETAIL**  
 SCALE: 6" = 1'-0"

**G1 X-BRACE TO POST CONNECTION DETAIL**  
 SCALE: 2" = 1'-0"

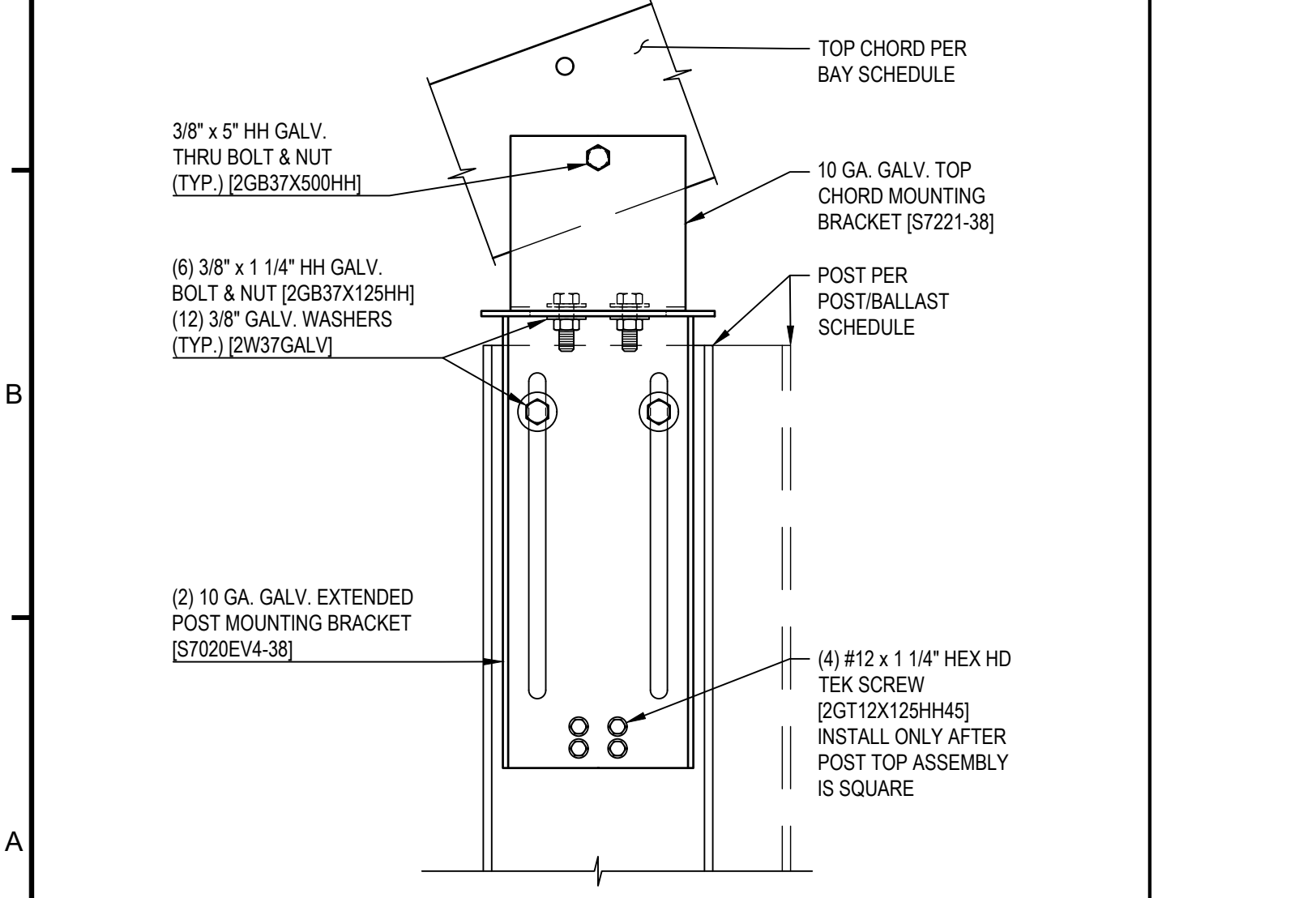
NOT USED

**G3 X-BRACING ELEVATION**  
 SCALE: 2" = 1'-0"

NOT USED

**D1 WEEB PV MODULE BONDING WASHER DETAIL**  
 SCALE: NONE

NOT USED



**A1 TOP CHORD TO POST CONNECTION DETAIL (EXTENDED)**  
 SCALE: 3" = 1'-0"