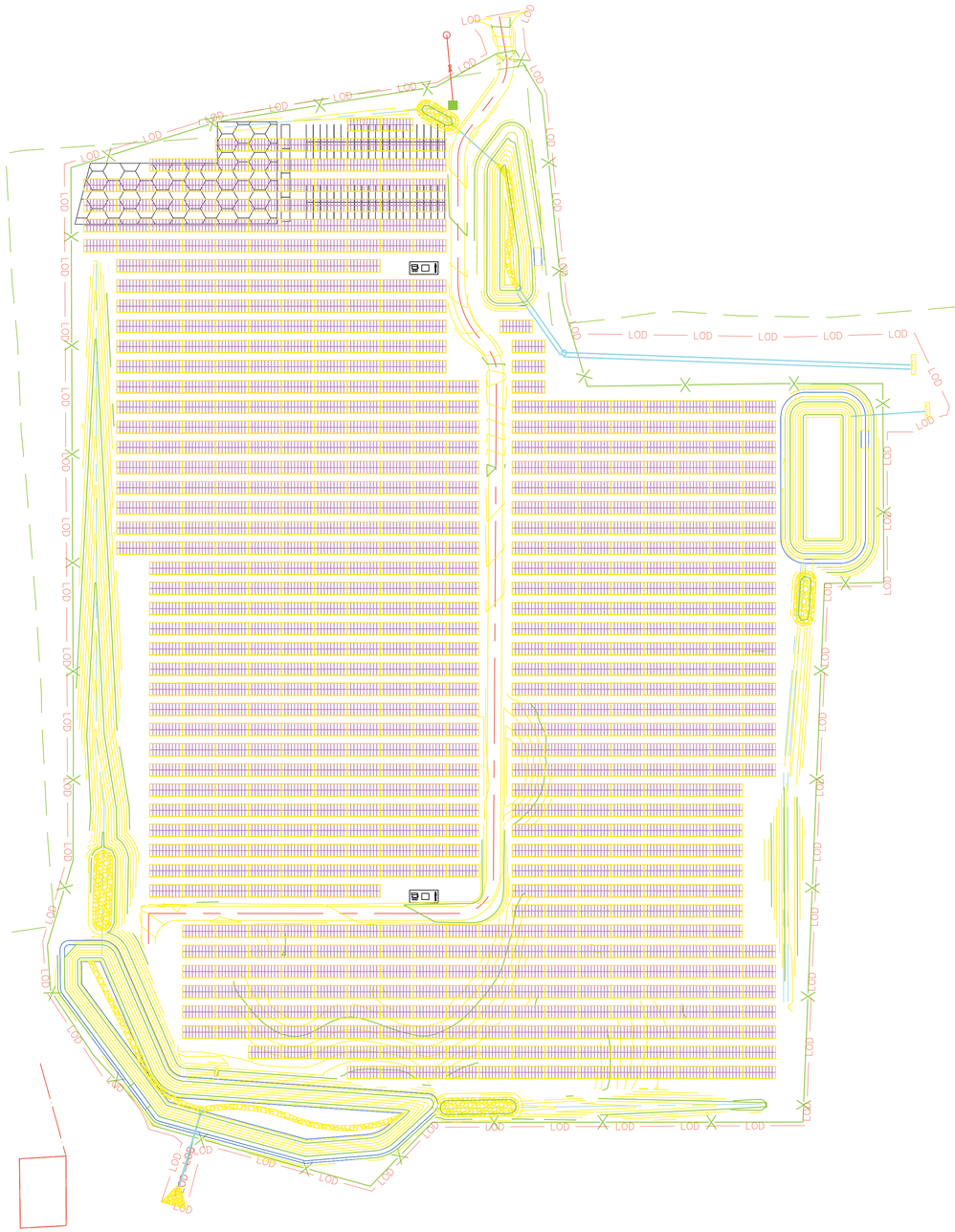

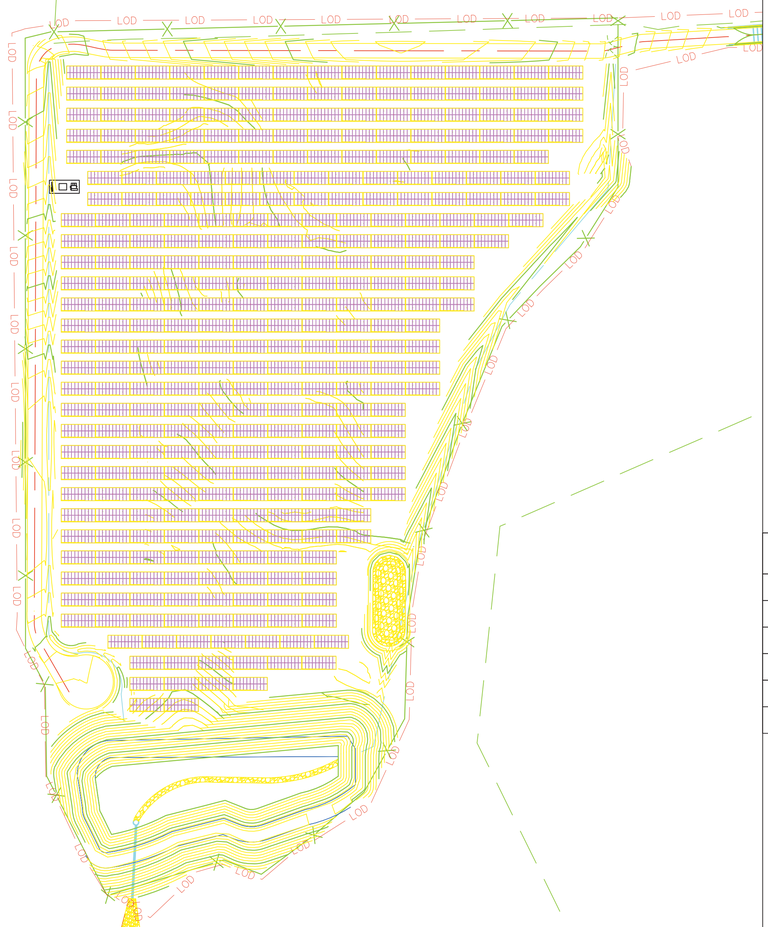

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PROJECT INFORMATION

TITLE & ADDRESS
428 Providence-New London Turnpike North Stonington, CT 06359
PROJECT NUMBER: 21-7597
DRAWN BY: SA
DRAWING TYPE: SITE LAYOUT
SHEET NUMBER 1

INFORMATION

DATE:	07/27/2022
REV. NUMBER	2
MODULE	Q.PEAKDUO XL-G11.3 BFG
ORIENTATION	PORTRAIT
2x10 TABLES	1,055
TOTAL MODULES	21,100

N

GLIDE PORTRAIT

STRUCTURAL CALCULATION REPORT

MILLER BROS - SR NORTH STONINGTON	
PROJECT NUMBER	21-7597
REVISION	5

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ENGINEER OF RECORD

ZEYN B. UZMAN - CT PEN.0023151

V2.09

MILLER BROS - SR NORTH STONINGTON

GENERAL INFORMATION

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NOTES

1) TERRASMART RACKING CONFORMS TO UL2703 STANDARDS.
2) TERRASMART USES INFORMATION PROVIDED BY OUR CLIENT TO PROPERLY DESIGN OUR PRODUCT. IF CERTAIN INFORMATION IS NOT PROVIDED, GENERAL ASSUMPTIONS WILL BE MADE. IT IS THE RESPONSIBILITY OF THE CLIENT TO VERIFY AND APPROVE ALL DESIGN CRITERIA AND RACKING SPECIFICATIONS.
3) TERRASMART INTERNALLY CONDUCTS A FULL CALCULATION FOR EVERY MEMBER AND CONNECTION FOR ALL LOAD CASES WITH RACKING IN BOTH THE FLAT AND MAXIMUM SLOPE CONFIGURATION. ALL CAPACITIES AND APPLIED LOADS LISTED IN THIS DOCUMENT REPRESENT THE VALUES ASSOCIATED WITH THE CONTROLLING UNITY CHECK FOR THAT MEMBER OR CONNECTION. CALCULATIONS ARE IN ACCORDANCE WITH APPLICABLE IBC/STATE BUILDING CODE, ASCE, AISC, AISI, AND ACI STANDARDS.
4) TERRASMART IS NOT RESPONSIBLE FOR THE ACCURACY OF THE ENVIRONMENTAL DESIGN CRITERIA (WIND SPEED, SNOW LOAD, EXPOSURE, ETC.)
5) SNOW BANKING ANALYSIS WAS NOT PERFORMED BY TERRASMART AND WAS NOT CONSIDERED IN THE DESIGN OF THE STRUCTURE. THE FRONT EDGE CLEARANCE WAS PROVIDED BY THE CLIENT AND ADVERSE EFFECTS OF SNOW BANKING ARE BEYOND TERRASMART'S SCOPE. ANY SNOW MOUNDS THAT FORM ON THE GROUND NEAR THE MODULES MUST BE CLEARED AWAY FROM THE STRUCTURE BEFORE THEY INHIBIT THE SNOWS ABILITY TO SLIDE OFF OF THE MODULES.
6) TERRASMART IS NOT RESPONSIBLE FOR ANY DAMAGE TO PV MODULES MOUNTED TO TERRASMART RACKING DUE TO THE EXTREME VARIETY IN MODULE FRAME DESIGN, MOUNTING STYLE, AND MANUFACTURING PROCESS. TERRASMART RECOMMENDS THAT THE CLIENT WORK WITH THE MODULE MANUFACTURER TO UNDERSTAND ALL RESTRICTIONS AND LIMITATIONS.
7) MOUNTING OF COMBINER BOXES, STRING INVERTERS, OR OTHER ITEMS NOT INCLUDED IN TERRASMARTS CALCULATION PACKAGE TO THE RACKING MUST BE REVIEWED AND APPROVED BY TERRASMART.
8) TERRASMART STRUCTURAL CALCULATIONS APPLY TO RACKING INSTALLED WITHIN THE TOLERANCES AND INSTALL PROCEDURES PROVIDED IN THE RACKING CONSTRUCTION PLANS AND ASSOCIATED INSTALLATION MANUAL. ANY DEVIATION FROM THE SPECIFIED TOLERANCES OR INSTALL PROCEDURES MUST BE REVIEWED AND APPROVED BY TERRASMART.

MILLER BROS - SR NORTH STONINGTON

PROJECT SPECIFICATIONS

PROJECT LOCATION	
ADDRESS	428 PROVIDENCE/NL TURNPIKE
CITY	NORTH STONINGTON
STATE	CT
ZIP	06359

DESIGN CRITERIA	
EXPOSURE CATEGORY	C
RISK/OCCUPANCY CATEGORY	I
BASIC WIND SPEED (DESIGN LIFE 40YR WIND SPEED)	125 MPH (122.64 MPH)
GROUND SNOW LOAD	30.0 PSF
FLAT ROOF SNOW LOAD	30.0 PSF
MAPPED ACCELERATION, Ss	0.163 Ss - 0.059 S1
SEISMIC SITE CLASS	D
FROST DEPTH	20 IN - SOURCE:CORNELL ATLAS
GEOTECHNICAL REPORT	01/25/21 - TERRACON - J2185196
GROUND SCREW TEST REPORT	NO TESTING CONDUCTED - ESTIMATED CAPACITIES USED

PV MODULE SPECIFICATIONS (CLIENT PROVIDED)	
PV MODULE MODEL	Q.PEAKDUO XL-G11.3 BFG
SHORT EDGE DIMENSION	44.65 IN
LONG EDGE DIMENSION	95.12 IN
SHORT BOLT SPACING	42.99 IN
LONG BOLT SPACING	55.12 IN
THICKNESS	1.38 IN
WEIGHT	75.84 LBS
HARDWARE SIZE	OPTION 5

RACKING SPECIFICATIONS	
PRODUCT CODE	GP-2X10-R3-C90-G140
MODULE ORIENTATION (CLIENT PROVIDED)	PORTRAIT
FOUNDATION TYPE	GROUND SCREWS
MODULE ROWS (CLIENT PROVIDED)	2
MODULE COLUMNS (CLIENT PROVIDED)	10
TILT ANGLE (CLIENT PROVIDED)	25°
FRONT EDGE CLEARANCE (CLIENT PROVIDED)	24 IN
MAX E-W SLOPE (CLIENT PROVIDED)	15.0%
MAX NORTH FACING SLOPE (CLIENT PROVIDED)	15.0%
MAX SOUTH FACING SLOPE (CLIENT PROVIDED)	16.0%
E-W MODULE SPACING	0.53 IN
N-S MODULE SPACING	1.00 IN
EW SCREW SPACING	256.00 IN
NS SCREW SPACING	93.00 IN
OVERALL RACK WIDTH (E-W)	451.27 IN

ADDITIONAL SNOW CONSIDERATIONS
PEAK SNOW EVENTS ARE LIKLEY TO CAUSE THE GROUND SNOW HEIGHT TO INHIBIT THE SNOWS ABILITY TO SLIDE OFF OF THE MODULES WHEN INSTALLED AT OR ABOVE THE SPECIFIED EDGE CLEARANCE. THE SITE SHOULD BE MONITORED AND MAINTAINED PER NOTE 5 ON PAGE 2.

MILLER BROS - SR NORTH STONINGTON

DESIGN LOADS - ASCE

DEAD LOAD	
TOTAL MODULE WEIGHT	1516.80

SNOW LOAD	
EXPOSURE FACTOR, Ce	0.90
THERMAL FACTOR, Ct	1.20
IMPORTANCE FACTOR, Is	0.80
FLAT ROOF SNOW LOAD, Pf	30.0 PSF
SLOPE FACTOR, Cs	0.82
SLOPED ROOF SNOW LOAD, Ps	24.5 PSF

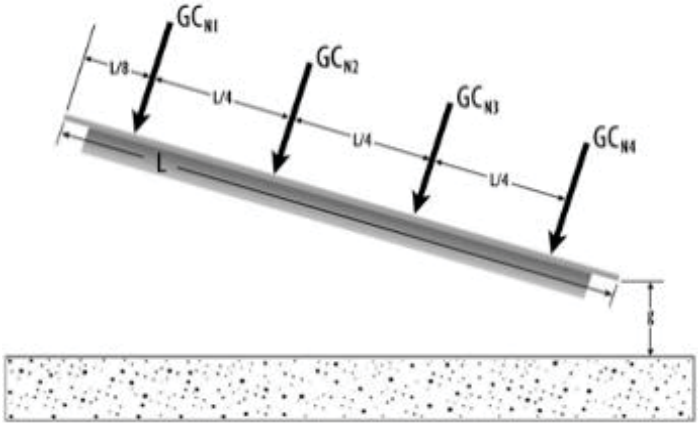
WIND LOAD	
IMPORTANCE FACTOR, I	1.00
VELOCITY PRESSURE COEF., Kz	0.85
TOPOGRAPHIC FACOR, Kzt	1.00
DIRECTIONALITY FACTOR, Kd	0.85
GUST FACTOR	0.85
VELOCITY PRESSURE, qz	27.8 PSF

WIND UP - ASCE CASE A	
GCN	COEFFICIENT
GCN 1	-1.60
GCN 2	-1.60
GCN 3	-1.67
GCN 4	-1.67

WIND DOWN - ASCE CASE A	
GCN	COEFFICIENT
GCN 1	1.90
GCN 2	1.90
GCN 3	1.83
GCN 4	1.83

WIND UP - ASCE CASE B	
GCN	COEFFICIENT
GCN 1	-2.43
GCN 2	-2.43
GCN 3	-0.37
GCN 4	-0.37

WIND DOWN - ASCE CASE B	
GCN	COEFFICIENT
GCN 1	0.80
GCN 2	0.80
GCN 3	2.33
GCN 4	2.33

GCN DIAGRAM


PRIMARY LOAD CASES
1.0D
1D + 0.6W
1.0D + 1.0S
1.0D + 0.45W + 0.75S
0.6D + 0.6W

MILLER BROS - SR NORTH STONINGTON

GROUND SCREW FOUNDATION DESIGN SUMMARY

GROUND SCREW MINIMUM REQUIRED TORQUE	
DESIGN TORQUE VARIABLE	285.29
DESIGN TORQUE EXPONENT	0.45
MINIMUM REQUIRED TORQUE	2000 N-m

GROUND SCREW ALLOWABLE CAPACITY (KIP)	
ALLOWABLE COMPRESSION	10.1 KIP
ALLOWABLE TENSION	7.3 KIP
ALLOWABLE LATERAL	2.6 KIP

GROUND SCREW APPLIED LOADS (VALUES BASED ON LOCATION WITH HIGHEST UNITY RATIO) (KIP)	
APPLIED COMPRESSION	7.3 KIP
APPLIED TENSION	6.1 KIP
APPLIED LATERAL	1.8 KIP

UNITY CHECK	
GROUND SCREW STRESS	83%

FROST HEAVE ANALYSIS	
FOUNDATION EMBEDMENT DEPTH	73.68 IN
APPROXIMATE FROST DEPTH	20.00 IN
SCREW PENETRATION BELOW FROST DEPTH	53.68 IN
UPLIFT PRESSURE DUE TO ICE LENSING	0.3 PSI
UPLIFT PRESSURE DUE TO ADFREEZING	0.0 PSI
UPLIFT FORCE DUE TO ICE LENSING	0.0 KIP
UPLIFT FORCE DUE TO ADFREEZING	2.7 KIP
TOTAL FROST HEAVE FORCE	2.7 KIP
TOTAL DEAD LOAD	0.6 KIP
RESULTANT HEAVE FORCE	2.2 KIP
FROST HEAVE PREVENTION STRESS	30%

CORROSION ANALYSIS	
CORROSION DESIGN LIFE	40 YEARS
STEEL CORROSION LOSS	13.63 MILS
THREAD USAGE UNITY	37%
SUB-GRADE MOMENT UNITY	87%

MILLER BROS - SR NORTH STONINGTON

LEG & BRACING DESIGN SUMMARY

LEG MATERIAL PROPERTIES	
YIELD STRENGTH Fy	42 KSI

SOUTH LEG ALLOWABLE CAPACITY (VALUES BASED ON LOCATION WITH HIGHEST UNITY RATIO)	
ALLOWABLE MOMENT, Ma	17.8 KIP-IN
ALLOWABLE AXIAL	22.9 KIP

NORTH LEG ALLOWABLE CAPACITY (VALUES BASED ON LOCATION WITH HIGHEST UNITY RATIO)	
ALLOWABLE MOMENT, Ma	17.8 KIP-IN
ALLOWABLE AXIAL	14.7 KIP

SOUTH LEG APPLIED LOADS (VALUES BASED ON LOCATION WITH HIGHEST UNITY RATIO)	
APPLIED MOMENT, Ma	2.1 KIP-IN
APPLIED AXIAL	5.7 KIP

NORTH LEG APPLIED LOADS (VALUES BASED ON LOCATION WITH HIGHEST UNITY RATIO)	
APPLIED MOMENT	1.7 KIP-IN
APPLIED AXIAL	6.1 KIP

UNITY CHECKS	
SOUTH LEG COMBINED STRESS	36%
NORTH LEG COMBINED STRESS	50%

DIAGONAL AND HORIZONTAL BRACE MATERIAL PROPERTIES	
YIELD STRENGTH, Fy	42 KSI

LATERAL BRACE ALLOWABLE CAPACITY	
ALLOWABLE AXIAL	5.8 KIP

LATERAL BRACE APPLIED CAPACITY	
APPLIED AXIAL	3.7 KIP

SEISMIC CABLE BRACE CAPACITY	
CABLE BREAKING STRENGTH	2.3 KIP

SEISMIC CABLE BRACE APPLIED LOAD	
MAXIMUM TENSION	0.2 KIP

BRACE UNITY CHECKS	
LATERAL BRACE UNITY CHECK	63%
SEISMIC CABLE BRACE	9%

MILLER BROS - SR NORTH STONINGTON

RAFTER & CEE PURLIN DESIGN SUMMARY

RAFTER - PROPERTIES	
SECTION	HAT 6.1X5.76-0.1017
YEILD STRENGTH, Fy	80 KSI
TENSILE STRENGTH, Fu	82 KSI
DESIGN THICKNESS, t	0.102

CEE PURLIN - PROPERTIES	
SECTION	CEE 9X4-0.086
YEILD STRENGTH, Fy	80 KSI
TENSILE STRENGTH, Fu	82 KSI
DESIGN THICKNESS, t	0.086

RAFTER - AISI ALLOWABLE CAPACITY	
ALLOWABLE MOMENT, Max	135.0 KIP-IN
ALLOWABLE MOMENT, May	60.5 KIP-IN
ALLOWABLE SHEAR, Vy	34.2 KIP
ALLOWABLE SHEAR, Vx	13.2 KIP

CEE PURLIN - AISI ALLOWABLE CAPACITY	
ALLOWABLE MOMENT, Max	120.7 KIP-IN
ALLOWABLE MOMENT, May	46.7 KIP-IN
ALLOWABLE SHEAR, Vy	6.7 KIP
ALLOWABLE SHEAR, Vx	17.8 KIP

RAFTER - CONTROLLING ELEMENT FORCES	
APPLIED MOMENT, Mx	82.8 KIP-IN
APPLIED MOMENT, My	0.0 KIP-IN
APPLIED SHEAR, Vy	3.7 KIP
APPLIED SHEAR, Vx	0.0 KIP

CEE PURLIN - CONTROLLING ELEMENT FORCES	
APPLIED MOMENT, Mx	71.5 KIP-IN
APPLIED MOMENT, My	13.9 KIP-IN
APPLIED SHEAR, Vy	1.7 KIP
APPLIED SHEAR, Vx	0.3 KIP

RAFTER - AISI UNITY CHECKS	
AISI EQ H1.1-1	0%
AISI EQ H1.1-2	0%
AISI EQ H1.2-1	63%
AISI EQ H2-1 X	62%
AISI EQ H2-1 Y	0%
CONTROLLING LOAD CASE	1.0D-0.45W-0.75S-SLOPE WEST

CEE PURLIN - AISI UNITY CHECKS	
AISI EQ H1.1-1	61%
AISI EQ H1.1-2	89%
AISI EQ H1.2-1	0%
AISI EQ H2-1 X	55%
AISI EQ H2-1 Y	30%
CONTROLLING LOAD CASE	1.0D-0.45W-0.75S

CEE PURLIN - DEFLECTION CHECKS	
DEFLECTION RATIO	L/409
CLEARSPAN DEAD DEFLECTION	0.08 IN
CANTELIVER DEAD DEFLECTION	0.03 IN

MILLER BROS - SR NORTH STONINGTON

HARDWARE & CONNECTION DESIGN SUMMARY

PV MODULE TO C PURLIN BOLT	
HARDWARE SPECIFICATION	M8 - GRADE 18-8
APPLIED TENSION	0.4 KIP
APPLIED SHEAR	0.1 KIP
UNITY CHECK	20%

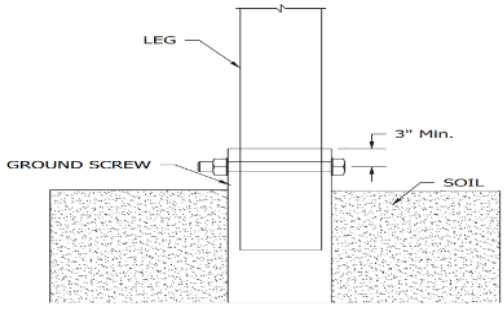
C PURLIN TO SLOPE BRACKET BOLT	
HARDWARE SPECIFICATION	1/2-13 - GRADE 5
APPLIED TENSION	0.6 KIP
APPLIED SHEAR	3.2 KIP
UNITY CHECK	51%

SLOPE BRACKET TO RAFTER BOLT	
HARDWARE SPECIFICATION	1/2-13 - GRADE 5
APPLIED TENSION	2.5 KIP
APPLIED SHEAR	0.4 KIP
UNITY CHECK	23%

RAFTER TO LEG BOLT	
HARDWARE SPECIFICATION	1/2-13 - GRADE 5
APPLIED TENSION	0.0 KIP
APPLIED SHEAR	6.1 KIP
UNITY CHECK	48%

GROUND SCREW TO LEG THRU BOLT (USE AS NEEDED)	
HARDWARE SPECIFICATION	1/2-13 - GRADE 5
APPLIED TENSION	0.0 KIP
APPLIED SHEAR	7.3 KIP
UNITY CHECK	57%

THRU BOLT FIGURE



LATERAL BRACE BOLTS	
HARDWARE SPECIFICATION	3/8-16 - GRADE 5
APPLIED TENSION	0.0 KIP
APPLIED SHEAR	3.7 KIP
UNITY CHECK	58%

SET BOLT	
ALLOWABLE VERTICAL FORCE	9.1 KIP
APPLIED VERTICAL FORCE	7.3 KIP
UNITY CHECK	80%

CEE PURLIN TO SLOPE BRACKET CONNECTION	
HOLE SIZE	0.500 IN
ALLOWABLE BEARING LOAD	5.6 KIP
APPLIED BEARING LOAD	3.2 KIP
UNITY CHECK	57.51%

SLOPE BRACKET CONNECTION	
ALLOWABLE UPLIFT FORCE	3.2 KIP
ALLOWABLE MOMENT	4.1 KIP-IN
APPLIED UPLIFT FORCE	2.5 KIP
APPLIED MOMENT	3.8 KIP-IN
UNITY CHECK	98.29%

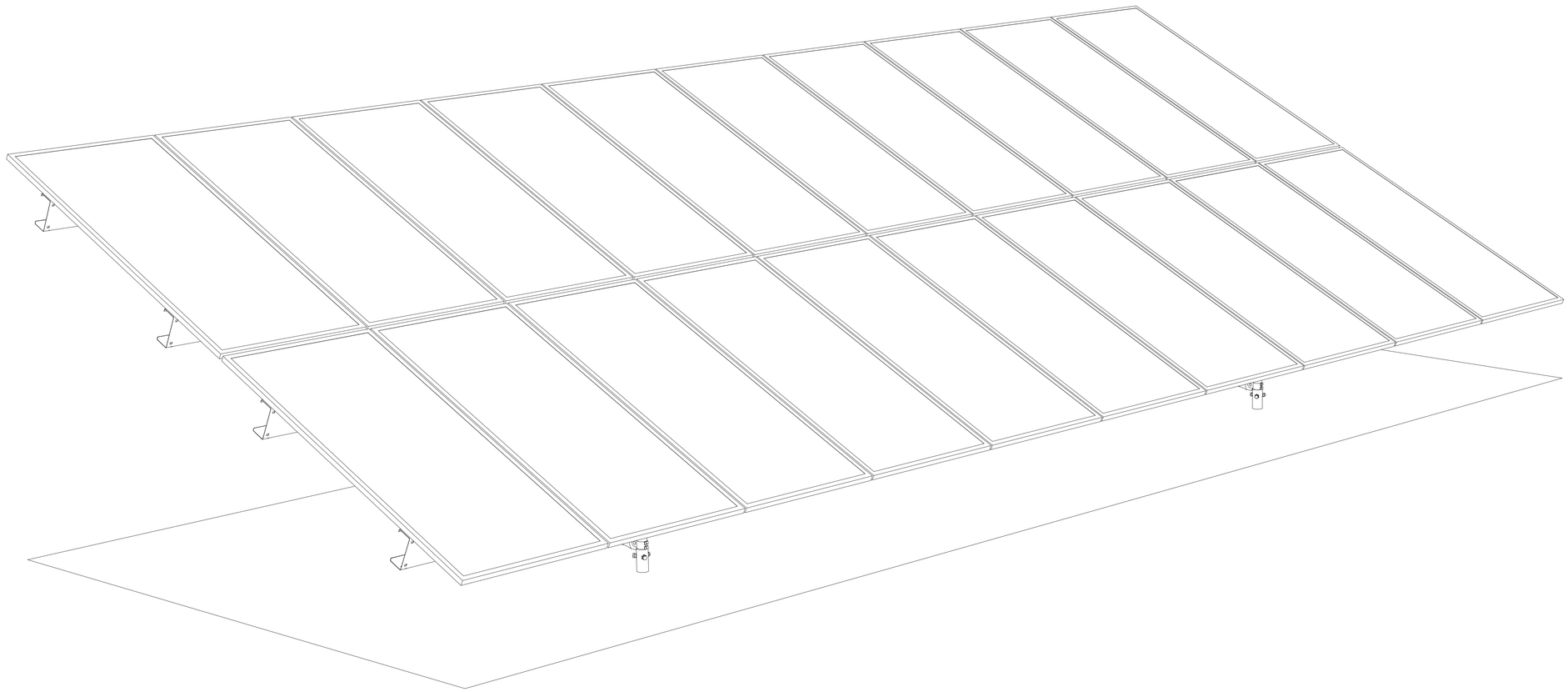
RAFTER TO LEG CONNECTION	
ALLOWABLE VERTICAL FORCE	7.5 KIP
APPLIED VERTICAL FORCE	5.0 KIP
UNITY CHECK	67.20%

RAFTER TO LATERAL BRACE CONNECTION	
HOLE SIZE	0.500 IN
ALLOWABLE BEARING LOAD	13.3 KIP
APPLIED BEARING LOAD	3.7 KIP
UNITY CHECK	27.44%

TERRAGLIDE RACKING ENGINEERING PLANS

MILLER BROS - SR NORTH STONINGTON

2X10 - TERRAGLIDE PORTRAIT - 25° RACK - Q.PEAKDUO XL-G11.3 BFG



ZEYN B. UZMAN
CT PE# PEN.0023151

NOTES:
1. INTERPRET DIMENSIONS AND TOLERANCES PER ASME Y14.5-2009

DESIGN CRITERIA
ASCE = 7-10
WIND SPEED = 122.63834588 MPH
WIND LOAD BUILDING CATEGORY = I
WIND LOAD EXPOSURE CATEGORY = C
GROUND SNOW LOAD, Pg = 30 PSF
FLAT ROOF SNOW LOAD, Pf = 30 PSF
SEISMIC SITE CLASS = D
SEISMIC Ss = 0.163
SEISMIC S1 = 0.059

GROUND SCREW
KRINNER G SERIES GROUND SCREW
SOUTH SCREW - 76mm X 2100mm
NORTH SCREW - 76mm X 2100mm
MODULE DIMENSIONS
NORTH/ SOUTH EDGE - 95.12 (2416mm)
EAST/ WEST EDGE - 44.65 (1134mm)
NORTH/ SOUTH BOLT SPACING - 55.12 (1400mm)
EAST/ WEST BOLT SPACING - 42.99 (1092mm)
THICKNESS - 1.38 (35mm)

PROJECT SPECIFICATIONS:
TILT ANGLE - 25°
RACK SIZE - 2X10
MODULE ORIENTATION - PORTRAIT

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DRAWN BY: TMC - 11/11/2022	CHECKED BY: BS - 11/11/2022	SHEET NUMBER: 1 OF 6
ENG. APPROVED BY: MF - 11/11/2022	PROJ. ENG. APPROVED BY: BS - 11/11/2022	REV: 5
MFG. APPROVED BY: SS - 11/11/2022	PROJECT NAME: SR NORTH STONINGTON	
PROJECT NUMBER: 21-7597	CLIENT: MILLER BROS	MODULE: Q.PEAKDUO XL-G11.3 BFG

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I. PERMITTING, CONSTRUCTION, AND ERECTION NOTES

1. FRAME AND FOUNDATION CONFORMS TO THE REQUIREMENTS OF THE INTERNATIONAL BUILDING CODE BASED UPON DESIGN CRITERIA AS OUTLINED ON THE COVER SHEET. TERRASMART MAKES NO REPRESENTATION AS TO THE ACCURACY OF THE DESIGN CRITERIA AS IT WAS SUPPLIED BY CLIENT. PLEASE REFER TO STRUCTURAL CALCULATIONS FOR FRAME AND FOUNDATION DESIGN.
2. THE STRUCTURAL INTEGRITY OF THE TERRAGLIDE RACK DEPENDS ON INTERACTION OF VARIOUS CONNECTED COMPONENTS. PROVIDE ADEQUATE BRACING, SHORING, AND OTHER TEMPORARY SUPPORTS AS REQUIRED TO SAFELY COMPLETE THE WORK.
3. FOUNDATION INSTALLATION SUB-CONTRACTOR SHALL COORDINATE WITH THE ENGINEER IF ANY UNFORESEEN CONFLICTS ARISE, SUCH AS EXISTING UNDULATION THAT COULD POTENTIALLY CAUSE RACKING INSTALLATION ISSUES.
4. STRUCTURAL STEEL SHALL BE ERECTED IN ACCORDANCE WITH AISC SPECIFICATIONS, UNLESS OTHERWISE NOTED.
5. DIMENSIONS ARE IN INCHES UNLESS OTHERWISE NOTED.
6. CROSS BRACING TO BE FIT ON SITE, PER INSTALLATION MANUAL.
7. COLD GALVANIZING COMPOUND SHALL BE USED PER MANUFACTURER'S DIRECTIONS AND IN ACCORDANCE WITH ASTM-A780 IN AREAS WHERE GALVANIZATION WAS REMOVED DURING TRANSPORTATION, OR ERECTION/INSTALLATION.
8. BOLTS TO BE TIGHTENED PER THE PROCEDURES DESCRIBED IN THE INSTALLATION MANUAL.
9. THIS STRUCTURAL DRAWING DOES NOT INCLUDE INFORMATION REGARDING ELECTRICAL CONNECTIONS, INCLUDING GROUNDING. REFER TO INSTALLATION MANUAL AND ELECTRICAL PLANS PREPARED BY OTHERS.
10. SHADING ANALYSIS WAS NOT PERFORMED BY TERRASMART AND WAS NOT CONSIDERED IN THE LAYOUT OF THE FOUNDATION. TERRASMART RECOMMENDS CONSULTING A SOLAR SHADING EXPERT PRIOR TO INSTALLATION TO AVOID POWER REDUCTION DUE TO SHADOWS.
11. SNOW BANKING ANALYSIS WAS NOT PERFORMED BY TERRASMART AND WAS NOT CONSIDERED IN THE STRUCTURAL DESIGN. THE FRONT EDGE CLEARANCE WAS SUPPLIED BY CLIENT AND IT IS ASSUMED THAT THE SYSTEM OWNER WILL REMOVE SNOW AS NEEDED TO MAINTAIN AN UNOBSTRUCTED FRONT EDGE. ADVERSE EFFECTS OF SNOW BANKING, INCLUDING SHADING OR OTHER STRUCTURAL CONSIDERATIONS ARE BEYOND TERRASMART'S SCOPE.
12. MINIMUM AND TYPICAL FRONT EDGE CLEARANCE SHOWN ON SIDE ELEVATION. MAXIMUM FRONT EDGE CLEARANCE DETERMINED PER FIELD CONDITIONS.
13. SOUTHERN EDGES OF MODULES SHALL BE ALIGNED WITHIN 2" HORIZONTALLY OF THE SOUTHERN EDGE OF MODULES OF THE ADJACENT RACK.
14. EASTERN AND WESTERN EDGES OF MODULES SHALL BE ALIGNED WITHIN 2" VERTICALLY AND HORIZONTALLY OF THE SOUTHERN EDGE OF MODULES OF THE ADJACENT RACK.
15. TILT ANGLE TOLERANCE: ± 2° FROM ANGLE SHOWN ON SIDE ELEVATION.
16. RACK SPACING TOLERANCE: 6" TYPICAL, 4" MINIMUM, FOR SECTIONS OF THE SITE THAT HAVE A RIDGE OR VALLEY, TERRASMART RECOMMENDS INCREASING THE TABLE SPACING TO 10 INCHES AS MEASURED BETWEEN THE CLOSEST MODULES EDGE BETWEEN ADJACENT RACKS. REFER TO CIVIL ENGINEERING PLANS FOR MORE INFORMATION AND FURTHER DETAIL.
17. AZIMUTH TOLERANCE: ± 2° FROM APPROVED CIVIL ENGINEERING PLANS.
18. TERRAGLIDE RACKING IS DESIGNED TO ACCOMMODATE A MAXIMUM EAST/WEST SLOPE OF 15%, A MAXIMUM NORTH FACING SLOPE OF 15%, AND A MAXIMUM SOUTH FACING SLOPE OF 16%. THESE SLOPES WERE PROVIDED BY THE CLIENT.
19. PANEL SPACING TOLERANCE: MINIMUM 1/4" FOR N/S AND E/W SPACING DIMENSION, AS SHOWN ON SIDE ELEVATION AND REAR ELEVATION TO SUIT FIELD CONDITIONS.
20. FOR MODULE MOUNTING HARDWARE, TERRASMART PROVIDES STAINLESS STEEL HEX BOLT WITH INTEGRATED STAR WASHER AND SERRATED FLANGE NUT. THE CLIENT IS RESPONSIBLE TO CONFIRM THAT TERRASMART'S MODULE MOUNTING HARDWARE IS COMPATIBLE WITH THE MODULE THAT THE CLIENT WILL PROVIDE.

II. SITE PREPARATION

1. PRIOR TO COMMENCING WORK AND FOR THE DURATION OF THE PROJECT, GENERAL CONTRACTOR SHALL ENSURE THE SITE IS PREPARED AND MAINTAINED AS FOLLOWS (TO AVOID CHANGE ORDERS):
   A. ALL REQUIRED PERMITS SHALL BE OBTAINED AND CURRENT.
   B. LOCATE ALL UNDERGROUND UTILITIES AND ENSURE THAT THE PROPOSED INSTALLATION DOES NOT CONFLICT WITH ANY EXISTING INFRASTRUCTURE. MARKINGS SHALL BE MAINTAINED FOR THE DURATION OF THE PROJECT.
   C. ALL REQUIRED EROSION AND SEDIMENT CONTROL MEASURES SHALL BE IN PLACE AND OPERATIONAL.
   D. GRASS SHALL BE MOWED WITH BLADES NO HIGHER THAN 3" TALL.
   E. ALL VEGETATION, INCLUDING TREES AND SHRUBS SHALL BE CLEARED AND ROOT SYSTEMS GRUBBED. ALL ORGANIC MATTER SHALL BE STRIPPED AND REMOVED FROM THE BUILDING ENVELOPE BEFORE EARTH WORK OCCURS, IF ANY.
   F. LOOSE SURFACE IMPEDIMENTS, INCLUDING ROCKS, COBBLES, BOULDERS, CONSTRUCTION DEBRIS, AND OTHER OBSTRUCTIONS SHALL BE REMOVED.
   G. SITE SHALL BE SAFE FOR OPERATING MACHINERY AND FOR PERSONNEL ON FOOT. SITE CONDITIONS SHALL NOT BE AN ENCUMBRANCE TO THE PERFORMANCE OF WORK.
   H. GROUND WATER, INCLUDING WATER TABLE AND PERCHED WATER, SHALL NOT ENCROACH BETWEEN THE GROUND SURFACE AND THE EMBEDMENT DEPTH OF THE GROUND SCREW. DEWATERING IS REQUIRED IF GROUND WATER IS ENCOUNTERED DURING PILOT HOLE DRILLING AND/OR GROUND SCREW INSTALLATION.
   I. SITE SHALL BE GRADED TO PROVIDE CONTROLLED POSITIVE DRAINAGE AWAY FROM FOUNDATIONS. STANDING WATER AND/OR WATER WITH SUFFICIENT VELOCITY TO ERODE SOIL IS NOT ALLOWED WITHIN 20 FEET OF THE FOUNDATION.
   J. NO FINISHED GRADE SOIL SHALL BE DISTURBED WITHIN 24" OF THE PROPOSED OR INSTALLED LOCATION OF A GROUND SCREW. SEE ADDITIONAL REQUIREMENTS FOR TRENCHES AND OTHER EXCAVATIONS IN SECTION II.3.
2. ALL EARTHWORK SHALL BE NOTED ON THE PLANS AND PROPERLY AS-BUILTED. CUT AREAS SHALL BE PROOF ROLLED AFTER REMOVAL OF SOIL. FILL AREAS SHALL BE STRIPPED OF ALL VEGETATION AND PROOF ROLLED PRIOR TO PLACING FILL MATERIAL.
3. TRENCHES AND OTHER EXCAVATIONS MAY BE CUT EITHER BEFORE OR AFTER GROUND SCREW INSTALLATION PROVIDED THEY MEET THE REQUIREMENTS OF II.1, II.5. IF THEY ARE CUT AFTER GROUND SCREW INSTALLATION, THE HORIZONTAL DISTANCE BETWEEN THE GROUND SCREW AND THE EDGE OF THE EXCAVATION MUST BE GREATER THAN OR EQUAL TO THE VERTICAL DEPTH OF THE EXCAVATION (1:1 RATIO), PLUS 24". 2. IF THEY ARE CUT BEFORE GROUND SCREW INSTALLATION, THE HORIZONTAL DISTANCE BETWEEN EXCAVATION AND PROPOSED GROUND SCREW LOCATION SHOULD BE 24" OR GREATER.
4. IMPORTED GRANULAR FILL MATERIAL SHALL BE USED FOR EARTHWORK UNLESS ON-SITE SOILS MEET THE FOLLOWING REQUIREMENTS:
   A. FREE OF PARTICLES LARGER THAN 2" IN DIAMETER, ORGANIC MATTER, AND OTHER DELETERIOUS MATERIALS; AND
   B. CAN BE PROPERLY MOISTURE CONDITIONED.
5. GRANULAR ON-SITE SOILS OR IMPORTED GRANULAR MATERIAL MAY BE USED AS FILL AS LONG AS THEY MEET THE FOLLOWING REQUIREMENTS:
   A. WELL GRADED BETWEEN COARSE AND FINE SIZES;
   B. CONTAINING NO CLAY BALLS, ROOTS, ORGANIC MATTER OR OTHER DELETERIOUS MATERIALS;
   C. MAXIMUM PARTICLE SIZE OF 2", WITH LESS THAN 12% PASSING THE U.S. NO. 200 SIEVE; AND
   D. IMPORTED FILL MATERIALS SHALL BE SAMPLED AND TESTED BY A GEOTECHNICAL ENGINEER OR OTHER QUALIFIED SOIL TESTING AGENCY PRIOR TO BEING TRANSPORTED TO THE SITE.
6. FILL SOILS SHALL BE COMPACTED AT MOISTURE CONTENTS THAT ARE NEAR OPTIMUM. THE OPTIMUM MOISTURE CONTENT VARIES WITH THE SOIL GRADATION AND SHALL BE EVALUATED DURING CONSTRUCTION. FILL MATERIAL THAT IS NOT NEAR OPTIMUM MOISTURE CONTENT SHALL BE MOISTURE CONDITIONED. FILL MATERIAL SHALL BE PLACED IN UNIFORM, HORIZONTAL LIFTS, AND BE COMPACTED WITH APPROPRIATE EQUIPMENT TO AT LEAST 90% OF THE MAXIMUM DRY DENSITY PER ASTM D1557. THE MAXIMUM LIFT THICKNESS WILL VARY DEPENDING ON THE MATERIAL AND COMPACTION EQUIPMENT USED, BUT SHALL NOT BE GREATER THAN 12" AND SHOULD BE CONSISTENT THROUGHOUT THE DEPTH OF THE COMPACTED SOIL.
7. TERRASMART REQUIRES THAT FILL COMPACTION BE TESTED BY A GEOTECHNICAL ENGINEER OR OTHER QUALIFIED SOIL TESTING AGENCY DURING THE PLACEMENT AND COMPACTION OF FILL TO VALIDATE THE WORK.
8. ROCK DRILLING SHALL BE PERFORMED IF REQUIRED BY PRESENCE OF UNDERGROUND ROCK. PILOT HOLE DIAMETER SHALL BE DETERMINED BY ONSITE TESTING AND APPROVED BY TERRASMART.

III. FOUNDATION NOTES

1. GROUND SCREW FOUNDATIONS SHALL BE INSTALLED IN ACCORDANCE WITH THE MANUFACTURER SPECIFICATIONS BY A CERTIFIED INSTALLER TRAINED ON THIS TECHNOLOGY.
2. GROUND SCREW FOUNDATIONS SHALL BE INSTALLED IN UNDISTURBED, NATURAL SOIL, UNLESS OTHERWISE NOTED AND PROPERLY PREPARED AS DESCRIBED IN SECTION II. SITE PREPARATION.
3. FOUNDATION INSTALLATION SUB-CONTRACTOR SHALL DETERMINE DIAMETER AND DEPTH OF PRE-DRILLED PILOT HOLE AS REQUIRED BY SITE CONDITIONS.
4. SHOULD UNFORESEEN LOOSE SOIL CONDITIONS BE ENCOUNTERED ONSITE, CONCRETE OR OTHER ADDITIVES MAY BE USED TO STABILIZE THE SOIL AT CLIENTS EXPENSE. SHOULD UNDERGROUND WATER BE ENCOUNTERED, THE CLIENT SHALL REMEDIATE THE ISSUE.
5. THE USE OF WATER AS LUBRICANT IS ALLOWED.
6. TOLERANCES IN THE POSTION OF EACH SCREW ARE ± 2" LATERALLY (NORTH-SOUTH AND EAST-WEST) AND ± 3" VERTICALLY (UP-DOWN) WITH A TYPICAL 76.7" EMBEDMENT, AS MEASURED FROM GRADE. IN THE RARE CASE THAT A GROUND SETTLEMENT OCCURS, NO REMEDIATION IS REQUIRED IF THE SETTLEMENT RESULTS IN A RACKING CONFIGURATION THAT IS STILL WITHIN TOLERANCE OF THE PROJECT'S CONSTRUCTION PLANS OR INSTALLATION MANUAL AND DOES NOT OVER STRESS THE RACKING STRUCTURE.
7. MINIMUM REQUIRED TORQUE FOR GROUND SCREW INSTALLATION: 2000 N-m.
8. AT THIS TIME NO GROUND SCREW TESTING DATA IS AVAILABLE. GROUND SCREW FOUNDATIONS HAVE BEEN DESIGNED BASED ON EXTENSIVE TESTING IN MEDIUM/ DENSE SOILS.
9. GROUND SCREW FOUNDATIONS HAVE BEEN DESIGNED BASED ON THE PROJECT GEOTECHNICAL REPORT PROVIDED BY THE CLIENT (TERRACON, REPORT NUMBER J2185196, DATED 01/25/2021).

ZEYN B. UZMAN
CT PE# PEN.0023151

v-1.11

GROUND SCREW
KRINNER G SERIES GROUND SCREW
SOUTH SCREW - 76mm X 2100mm
NORTH SCREW - 76mm X 2100mm
MODULE DIMENSIONS
NORTH/ SOUTH EDGE - 95.12 (2416mm)
EAST/ WEST EDGE - 44.65 (1134mm)
NORTH/ SOUTH BOLT SPACING - 55.12 (1400mm)
EAST/ WEST BOLT SPACING - 42.99 (1092mm)
THICKNESS - 1.38 (35mm)

PROJECT SPECIFICATIONS:
TILT ANGLE - 25°
RACK SIZE - 2X10
MODULE ORIENTATION - PORTRAIT

TERRASMART, LLC
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TMC - 11/11/2022	BS - 11/11/2022	2 OF 6
ENG. APPROVED BY	PROJ. ENG. APPROVED BY	REV
MF - 11/11/2022	BS - 11/11/2022	5
MFG. APPROVED BY	PROJECT NAME	
SS - 11/11/2022	SR NORTH STONINGTON	
PROJECT NUMBER	CLIENT	MODULE
21-7597	MILLER BROS	Q.PEAKDUO XL-G11.3 BFG

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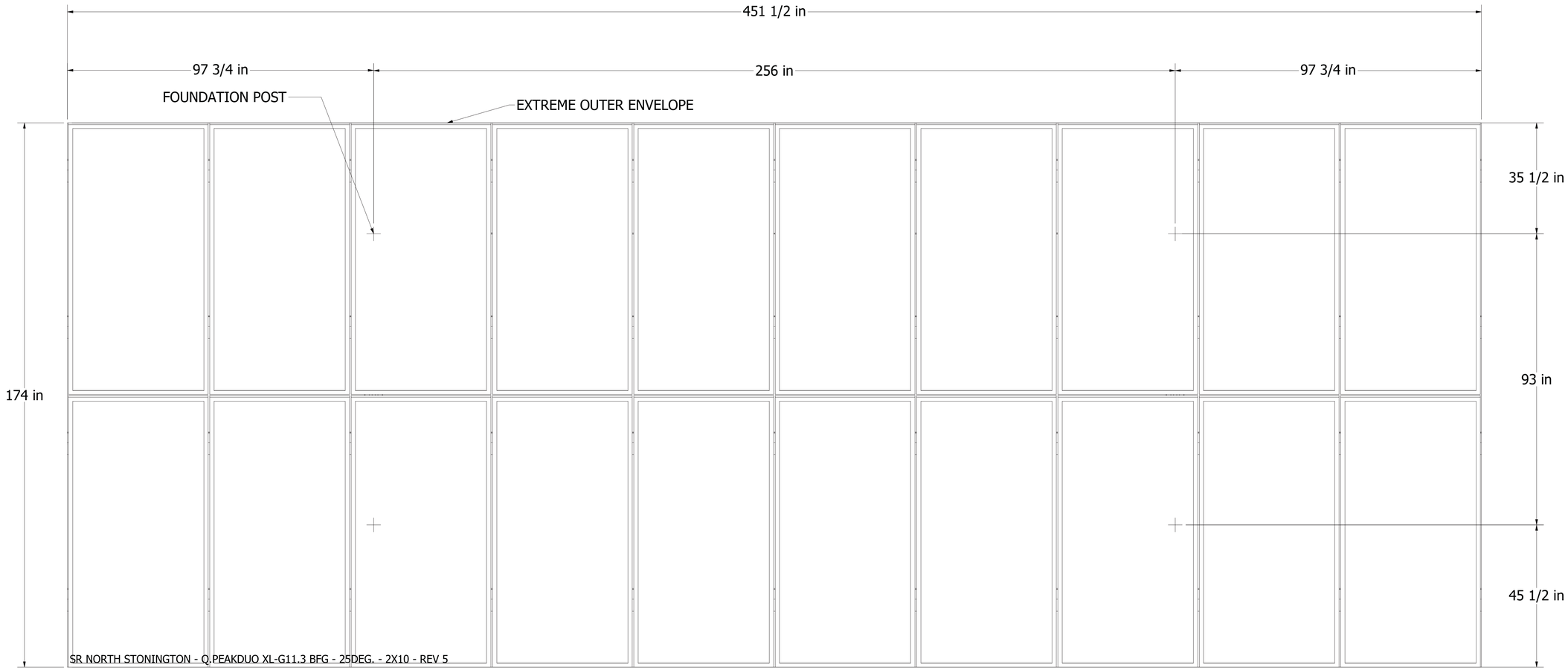

FLATTENED LAYOUT
SCALE 1/18

ZEYN B. UZMAN
CT PE# PEN.0023151

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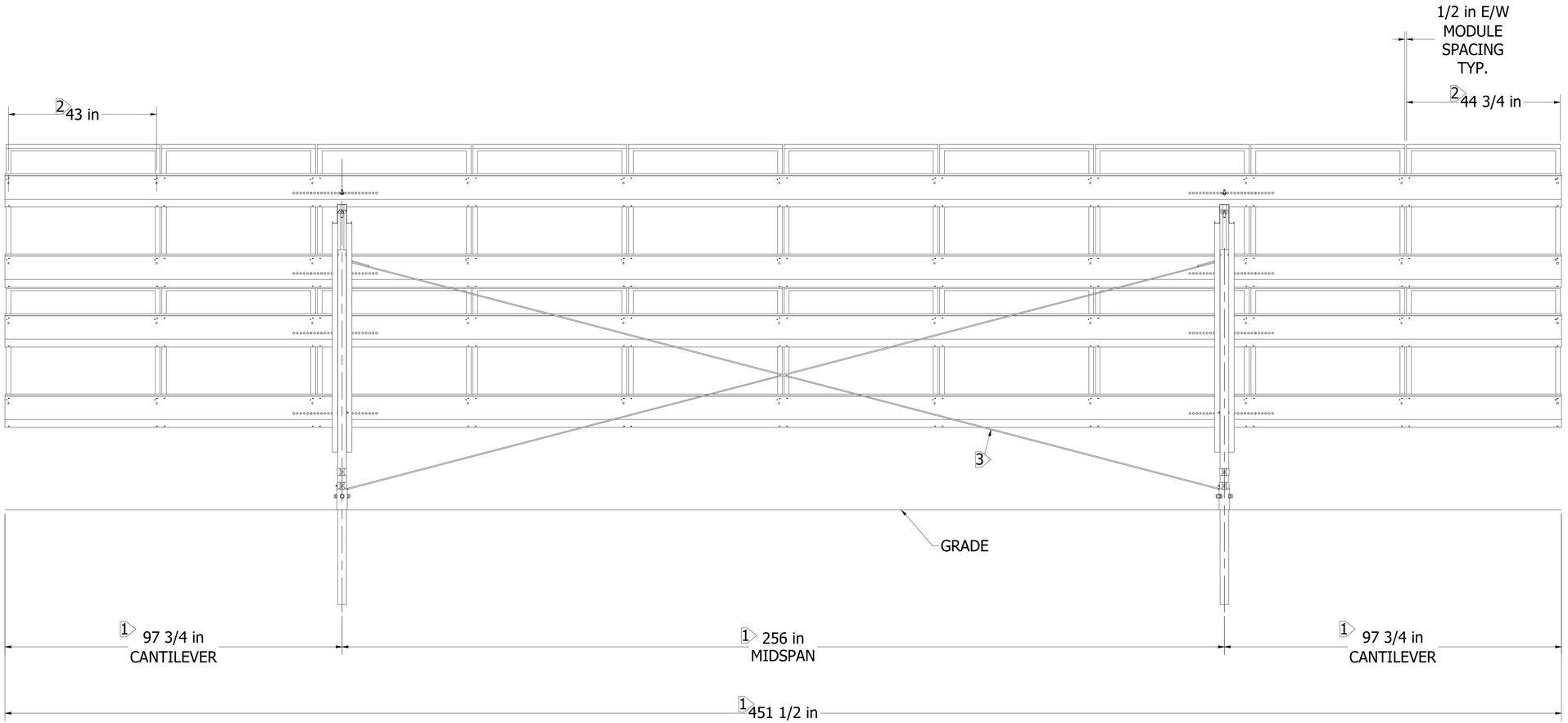

REAR ELEVATION VIEW
SCALE 1/18

ZEYN B. UZMAN
CT PE# PEN.0023151

NOTES:
1. TYPICAL INSTALLATION DIMENSIONS MAY BE ADJUSTED TO SUIT FIELD CONDITIONS WITHIN THE TOLERANCES PROVIDED.
2. PURLIN SPACING IS DEPENDENT ON MODULE SPECIFICATIONS, REFER TO PROJECT NOTES FOR MODULE SPECIFICATIONS.
3. SEISMIC CROSS BRACING TO BE FIELD FIT.

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KRINNER G SERIES GROUND SCREW
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PROJECT NUMBER	CLIENT	MODULE
21-7597	MILLER BROS	Q.PEAKDUO XL-G11.3 BFG

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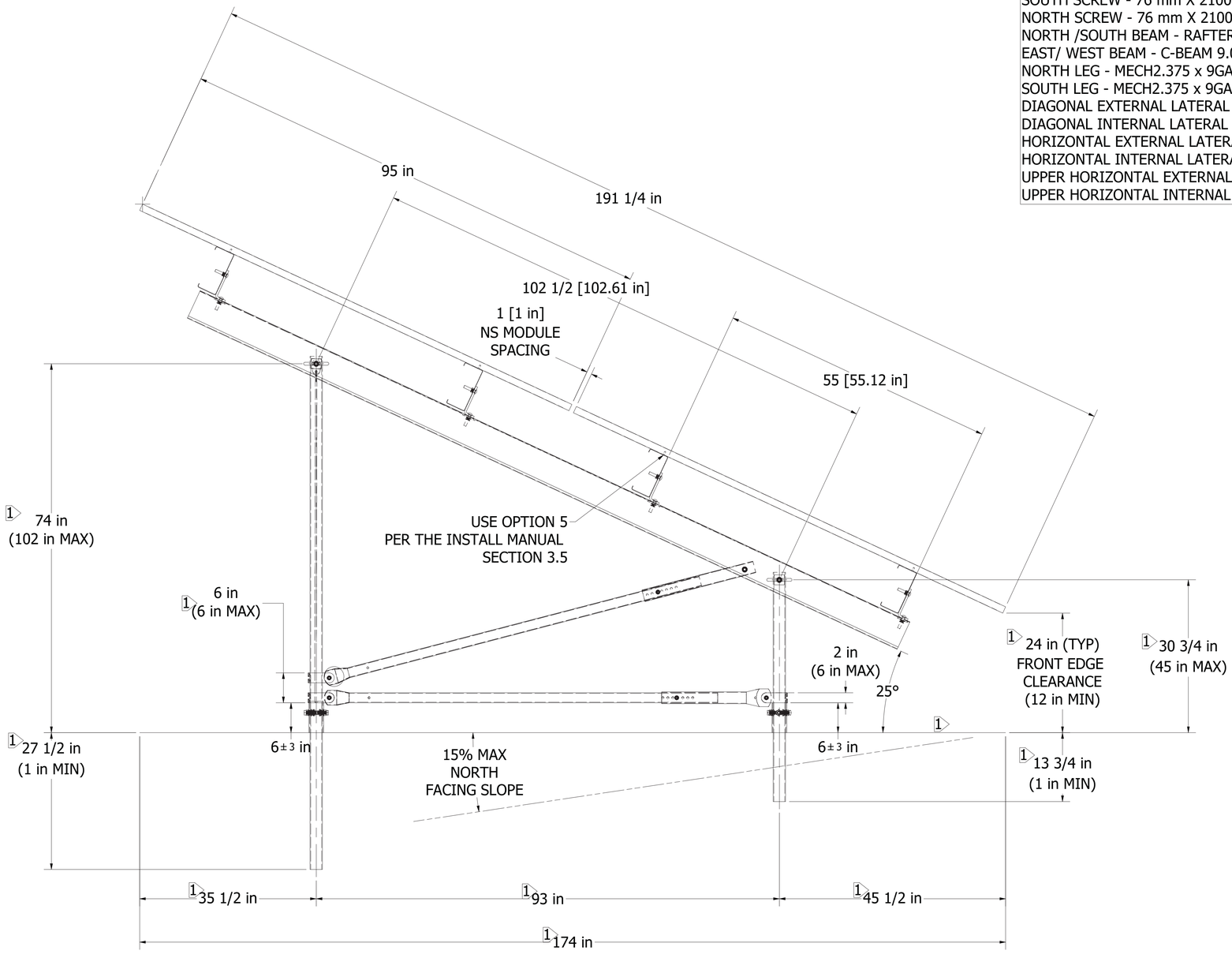
MEMBER PROPERTIES

SOUTH SCREW - 76 mm X 2100 mm
NORTH SCREW - 76 mm X 2100 mm
NORTH /SOUTH BEAM - RAFTER - LENGTH = 157.25 in - N/A
EAST/ WEST BEAM - C-BEAM 9.0x4.0x0.0820 - LENGTH = 451.61 in - N/A
NORTH LEG - MECH2.375 x 9GA. - LENGTH = 103.00 in
SOUTH LEG - MECH2.375 x 9GA. - LENGTH = 46.00 in
DIAGONAL EXTERNAL LATERAL BRACE - MECH2.360 x 13GA. - LENGTH = 23 in
DIAGONAL INTERNAL LATERAL BRACE - MECH2.000x12GA. - LENGTH = 78 in
HORIZONTAL EXTERNAL LATERAL BRACE - MECH2.360 x 13GA. - LENGTH = 22 in
HORIZONTAL INTERNAL LATERAL BRACE - MECH2.000x12GA. - LENGTH = 79 in
UPPER HORIZONTAL EXTERNAL LATERAL BRACE - MECH2.360 x 13GA. - LENGTH = N/A
UPPER HORIZONTAL INTERNAL LATERAL BRACE - MECH2.000x12GA. - LENGTH = N/A



SIDE ELEVATION VIEW
SCALE 1/12

ZEYN B. UZMAN
CT PE# PEN.0023151

NOTES:
1. TYPICAL INSTALLATION DIMENSIONS MAY BE ADJUSTED TO SUIT FIELD CONDITIONS WITHIN THE TOLERANCES PROVIDED.
2. LEGS SHALL BE INSTALLED PLUMB, IF MECHANICALLY POSSIBLE. MAXIMUM 3° OUT OF PLUMB.
3. LATERAL BRACES ARE DESIGNED TO ALLOW FOR 7" OF TOTAL ADJUSTMENT. IF FIELD CONDITIONS REQUIRE ADDITIONAL ADJUSTMENT AND LATERAL BRACES ARE TOO LONG, THEY MAY BE CUT DOWN AND DRILLED TO FIT BY THE RACK INSTALLER. IF THEY ARE TOO SHORT, NEW LATERAL BRACES MAY BE ORDERED TO FIT AT THE PURCHASER'S EXPENSE.
4. FOR SOUTH FACING SLOPES, THE DIAGONAL AND HORIZONTAL LATERAL BRACES CAN BE SWITCHED TO PROVIDE ADDITIONAL ADJUSTABILITY.
5. ON NORTH FACING SLOPES LEGS CAN BE FULLY EXTENDED TO MEET MINIMUM FRONT EDGE REQUIREMENTS. ALL LEGS REQUIRE A MINIMUM OF 1 INCH EMBEDMENT BELOW GRADE. FULL EXTENSION OF LEGS MAY RESULT IN LATERAL BRACES NOT FITTING. IF THEY ARE TOO SHORT, NEW LATERAL BRACES MAY BE ORDERED TO FIT AT THE PURCHASER'S EXPENSE.

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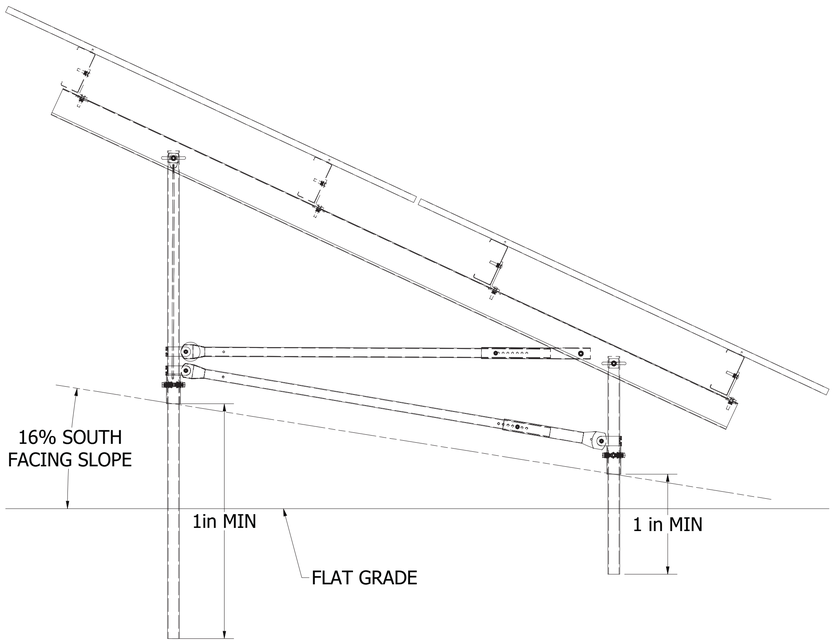
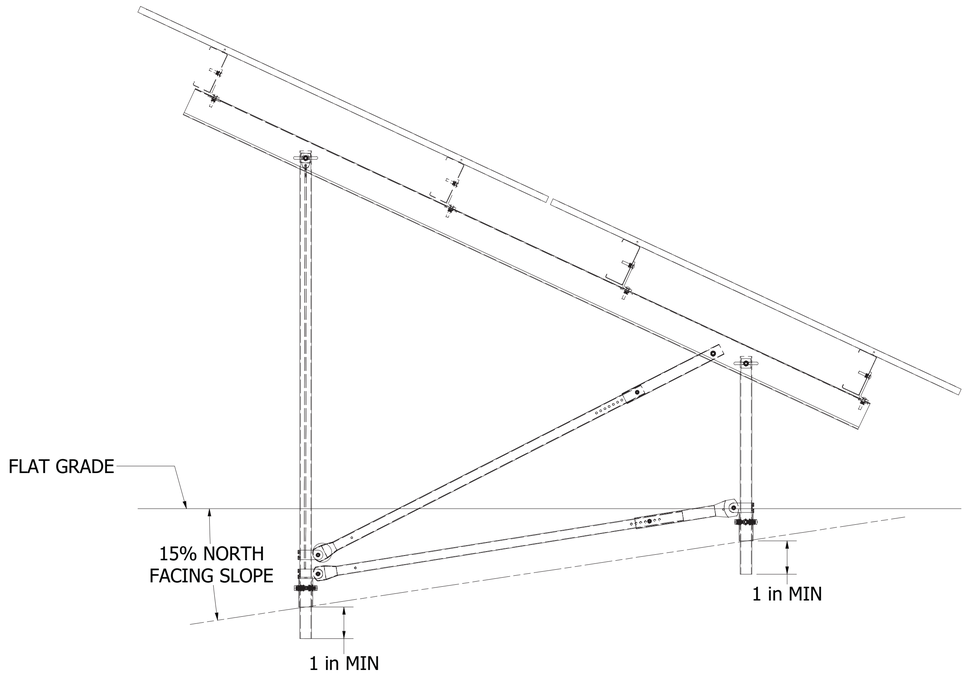


SOUTH FACING SLOPE
SCALE 1/16



NORTH FACING SLOPE
SCALE 1/16

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