



CENTRAL COAST
684 Clarion Court
San Luis Obispo, CA 93401
805.547.2000

SOUTHERN CA
553 S. Oak Knoll Ave.
Pasadena, CA 91101
626.793.7438

NORTHERN CA
416 B St., Suite C
Santa Rosa, CA 95401
707.636.4900

800.579.3881
www.taylorsyfan.com

STRUCTURAL CALCULATIONS, NOTES, & SPECIFICATIONS

PREPARED FOR:

PROJECT TYPE:

Everest Crossrail Solar Ground Mount - Texas

DESIGNER:

Everest Solar Systems
3809 Ocean Ranch Blvd., Suite 111
Oceanside, CA 92056

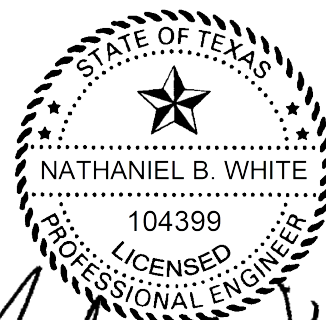
PROJECT ENGINEER:

Garrett Parkinson

PROJECT MANAGER:

Joel J. Neal, P.E., LEED AP

T&S Job No. 19075



Date Signed: 02/22/2019

This stamped approval packet is valid for the attached, numbered 40-page document. Production of this document in part is not valid..



CENTRAL COAST
 684 Clarion Court
 San Luis Obispo, CA 93401
 805.547.2000

SOUTHERN CA
 553 S. Oak Knoll Ave.
 Pasadena, CA 91101
 626.793.7438

NORTHERN CA
 416 B St., Suite C
 Santa Rosa, CA 95401
 707.636.4900

800.579.3881
www.taylorisyfan.com

Job No.: 19075
Job Name: TX Solar Ground Mount - Everest

TABLE OF CONTENTS

Title Page	S1
Table of Contents	S2
 SUMMARY LETTER	 S3 - S7
 ALLOWABLE SPAN CHART	 S8
 STRUCTURAL SPECIFICATIONS	 S9 - S11
LOADING CHARTS	S12 - S14
Wind Forces	S13
Snow Forces	S14
 EXAMPLE RISA ANALYSIS	 S15 - S32
RISA Loads & Member Data	S16 - S24
Member Stress Analysis	S25 - S26
RISA Data Summary	S27 - S29
Foundation Analysis	S30 - S32
 APPENDIX A (Everest Reference Documents)	 A1 - A8



CENTRAL COAST
 684 Clarion Court
 San Luis Obispo, CA 93401
 805.547.2000

SOUTHERN CA
 553 S. Oak Knoll Ave.
 Pasadena, CA 91101
 626.793.7438

NORTHERN CA
 416 B St., Suite C
 Santa Rosa, CA 95401
 707.636.4900

800.579.3881
www.taylorsyfan.com

Summary Letter

Date: February 22, 2019

To: Tyler Wiggins
 Manager of Certification & Compliance
 Lead Product Engineer
 Everest Solar Systems

From: Garrett Parkinson
 Taylor & Syfan Consulting Engineers, Inc.

Project: Everest Ground Mount System - Texas

T&S Job No.: 19075

Subject: Summary Letter for Everest Ground Mount System

INTRODUCTION

This Project Summary Letter is in reference to the Structural Calculation Packet for the Everest Ground Mount System, dated February 22, 2019. The calculations have been performed in accordance with the 2015 *International Building Code* (IBC). The 2015 IBC references the 2010 *Minimum Design Loads for Buildings and Other Structures*, including Supplements No. 1, No. 2, and Errata, by the American Society of Civil Engineers (ASCE), referred to as ASCE 7-10. The system has been designed to withstand code-prescribed forces due to the self-weight of the racking system, weight of the solar panels, snow loads, wind loads, and seismic loads.



CENTRAL COAST
684 Clarion Court
San Luis Obispo, CA 93401
805.547.2000

SOUTHERN CA
553 S. Oak Knoll Ave.
Pasadena, CA 91101
626.793.7438

NORTHERN CA
416 B St., Suite C
Santa Rosa, CA 95401
707.636.4900

800.579.3881
www.taylorsyfan.com

Summary Letter

SUMMARY CHARTS & LOADS

The attached pages of this summary contain charts relating the solar array's overall size and tilt angle with varying wind speeds and snow loads. Along with the Structural Notes & Specifications, these charts may be used as a quick reference for looking up maximum allowed span conditions on the array location and site conditions; however, varying site and loading conditions must be determined by a registered professional engineer who can evaluate the exact topographic conditions for the specific site and exact loading conditions for that array prior to construction. Array span charts are only valid for the various site-specific conditions noted for which they were designed.

SITE-SPECIFIC ANALYSIS

Each racking configuration summarized and labeled within the following chart has been analyzed. Because there are many different possible configurations, a common case has been provided in this report as an example calculation. Site-specific racking configurations with calculations producing the overall results shown in the following charts can be provided upon request.

A site-specific analysis may be required if the location of the solar panel installation or configuration corresponds to any of the following criteria (but not limited to):

- The pitch of the solar panels (solar panel pitch) exceeds 20 degrees above the horizontal.
 - A topographic factor applies to the location. Topographic factors apply, for general purposes, when the structure is on the upper one-half of a hill, or escarpment (mesa or bluff). For complete descriptions of topographic factors, please refer to ASCE 7-10 Section 26.8.1.
 - The site specific ground snow load is greater than 20 psf.
-



CENTRAL COAST
 684 Clarion Court
 San Luis Obispo, CA 93401
 805.547.2000

SOUTHERN CA
 553 S. Oak Knoll Ave.
 Pasadena, CA 91101
 626.793.7438

NORTHERN CA
 416 B St., Suite C
 Santa Rosa, CA 95401
 707.636.4900

800.579.3881
www.taylorsyfan.com

Summary Letter

- The site specific design wind speed is greater than 105 mph (3 second gust speed). Note that ASCE 7-10 uses a Mean Recurrence Interval (MRI) of 700 years and this design wind speed should NOT be compared to those provided in previous versions of ASCE 7.
- Soil conditions other than those described in the Structural Specifications.
- Adjacent to a body of water or other flat surface (such as salt flats) that exceeds 5,000 ft. (Exposure "D" per ASCE 7-10 26.7.3.)
- A combination of loads and/or site conditions applies that is not addressed in the attached span and foundation charts.
- Risk Category II, III or IV.
- Seismic Design Category "F."

If one or more of these factors applies to the project location, please contact Taylor & Syfan, and we will be able to analyze the site conditions and recommend a custom engineered configuration for each specific site. A registered professional engineer must address site-specific features and factors, for wind speeds greater than 105 mph (3 sec. gust), for sites in a wind borne debris region (as defined by ASCE 7-10 Section 26.10.3) or Special Wind Region (per ASCE 7-10 Figure 26.5-1B). These charts are for estimation purposes only. Sites with topographic factors shall have a licensed engineer calculate the exact design factors prior to construction. (Taylor & Syfan may be retained for this evaluation; however, they or another registered structural engineer should evaluate the site.)

The Risk Category was assigned as Category I based on the following assumed conditions:

- The open nature of the ground mount construction and confined (fenced-in) nature of the site qualify the installation as 'uninhabitable' and therefore, the installation "represents a low risk to human life in event of failure." (IBC Table 1.5-1)
-



CENTRAL COAST
684 Clarion Court
San Luis Obispo, CA 93401
805.547.2000

SOUTHERN CA
553 S. Oak Knoll Ave.
Pasadena, CA 91101
626.793.7438

NORTHERN CA
416 B St., Suite C
Santa Rosa, CA 95401
707.636.4900

800.579.3881
www.taylorsyfan.com

Summary Letter

- Failure of the ground mount would not represent a loss of functionality to any receiving facilities or disrupt daily civilian life, in addition to the lower chance of complete structural failure due to the redundant nature of the array.
- The Client is willing to accept the risk accompanying a lower wind speed, which represents a lower Mean Reoccurrence Interval (MRI) than a higher Risk Category assignment (700 yr. MRI, etc.).

The seismic forces used in these calculation charts are based on values for Seismic Design Category "E" and assume Site Class D. These values incorporate the full range of short period spectral accelerations present in Texas as outlined in the IBC Figure 1613.5.

The ground snow load in these calculations assumes a value of 20 psf or less. Where ground snow loads exceed this value, a registered professional engineer shall evaluate the site specific ground snow loads and design prior to construction.



CENTRAL COAST
684 Clarion Court
San Luis Obispo, CA 93401
805.547.2000

SOUTHERN CA
553 S. Oak Knoll Ave.
Pasadena, CA 91101
626.793.7438

NORTHERN CA
416 B St., Suite C
Santa Rosa, CA 95401
707.636.4900

800.579.3881
www.taylorsyfan.com

Summary Letter

REFERENCES AND LIMITATIONS

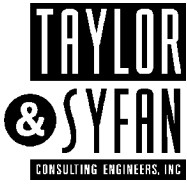
Please note that all sizes, material specifications, and weights of the racking components have been provided by Everest and are assumed to be accurate and correct. Installation must be in accordance with Everest's drawings and specifications. Everest shall notify Taylor & Syfan regarding any inaccuracies or changes in the materials, specifications, or details.

All waterproofing, ice effects, corrosion protection, module connections, modules, flood effects, egress and access pathways, fire protection, setbacks, drainage issues, and all non-structural issues are the responsibility of Everest's customer, known as the contractor, professional solar installer, or owner. This summary letter discusses the structural adequacy of the solar racking system itself only and does not investigate or validate the adequacy of the panels or panel attachments. It is also the responsibility of Everest's customer to verify the site specific design forces (wind speed, ground snow load, etc.) before using the charts contained in this document. Construction of any and all structures is under the jurisdiction of the local building official and building enforcement agency, which shall review and approve all projects prior to commencement of construction.

Please feel free to contact us with any questions or concerns. Thank you.

Sincerely,
Taylor & Syfan Consulting Engineers, Inc.

Garrett Parkinson
Project Engineer



Project: **19075 – Everest Ground Mount - ESS**

INSTALLATION DIMENSIONS

G	Wind Speed	Snow	Tie-Brace	Pipe Data		A	Concrete Depth (A)	
				Required?	Pipe Size		Pipe Specification	Post Spacing
20°	105	0 psf	Yes	1.5"	Sch. 40	6'-9"	2'-0"	4'-0"
			Yes		Sch. 80	8'-0"	2'-0"	4'-0"
			Yes	2"	Sch. 40	9'-3"	2'-0"	4'-3"
			Yes		Sch. 80	10'-9"	2'-0"	4'-6"
20°	105	5 psf	Yes	1.5"	Sch. 40	6'-9"	2'-0"	4'-0"
			Yes		Sch. 80	8'-0"	2'-0"	4'-0"
			Yes	2"	Sch. 40	9'-3"	2'-0"	4'-3"
			Yes		Sch. 80	10'-6"	2'-0"	4'-6"
20°	105	20 psf	Yes	1.5"	Sch. 40	6'-6"	2'-0"	3'-6"
			Yes		Sch. 80	7'-3"	2'-0"	4'-0"
			Yes	2"	Sch. 40	8'-0"	2'-0"	4'-0"
			Yes		Sch. 80	9'-3"	2'-6"	4'-3"



CENTRAL COAST
 684 Clarion Court
 San Luis Obispo, CA 93401
 805.547.2000

SOUTHERN CA
 553 S. Oak Knoll Ave.
 Pasadena, CA 91101
 626.793.7438

NORTHERN CA
 416 B St., Suite C
 Santa Rosa, CA 95401
 707.636.4900

800.579.3881
www.taylorsyfan.com

STRUCTURAL SPECIFICATIONS

GENERAL

1. Do not scale drawings. Contractor shall use dimensions on plans to lay out array, foundations and other elements. If dimensional questions occur, Everest Solar Systems (Everest) must be consulted.
 2. All construction and materials shall comply and be installed in accordance with all the requirements of all legally constituted public authorities having jurisdiction, including all county, government, and local ordinances, and the Safety Orders of the State Industrial Accident Commission, OSHA.
 3. The Contractor shall be responsible for shoring and providing bracing during construction and/or erection to support all loads to which the structure may be subjected.
 4. The Engineer will not be responsible for and will not have control or charge of construction means, methods, techniques, sequences, or procedures, or for safety precautions and programs in connection with the construction delineated by these plans. It should be understood that the contractor or his/her agent(s) shall supervise and direct all work and shall be solely and completely responsible for all construction means, methods, techniques, sequences, procedures, and conditions on the job site, including safety of all persons and property during the entire period of construction. Periodic observations by Taylor & Syfan Consulting Engineers Incorporated (or "Taylor & Syfan" typ.) personnel or representatives are not intended to include verification of dimensions or review the adequacy of the contractors safety measures on or near the construction site.
 5. No deviations are allowed from the structural details, specifications, or notes without the written approval of the Engineer. Approval by Building Enforcement Agency, Inspector, Special Inspector, or any other party does not constitute authority to deviate from plans or specifications. All plan changes or addenda are subject to approval of the Building Enforcement Agency. Prior to construction, the Building Official shall review and approve the structural specifications, calculations, details, notes and design methodology contained herein. The processing of changes, assembly of permit documents, and acquisition of permits is the responsibility of the Contractor.
 6. Special Inspectors shall obtain Building Enforcement Agency clearance prior to any work commencement. Copies of the inspection report(s) to be filed by the special inspector(s) shall be given to the Engineer. The Contractor is responsible for scheduling, coordination, and expenses involved in any and all inspections.
 7. Taylor & Syfan's drawings are prepared to convey only the specific structural aspects of each detail. Additionally, impact loads or other effects from flying debris are not included. Non-structural information, including but not limited to fenestrations, fire-resistance, corrosion protection, foundations, insulation, finishes, panels, panel attachments, waterproofing, ice effects, drainage and flashing may not be included on the structural plans. Taylor & Syfan is not responsible for non-structural information. The Contractor shall obtain all non-structural information from Everest and Others.
-



CENTRAL COAST
 684 Clarion Court
 San Luis Obispo, CA 93401
 805.547.2000

SOUTHERN CA
 553 S. Oak Knoll Ave.
 Pasadena, CA 91101
 626.793.7438

NORTHERN CA
 416 B St., Suite C
 Santa Rosa, CA 95401
 707.636.4900

800.579.3881
www.taylorsyfan.com

STRUCTURAL SPECIFICATIONS

8. The Building Inspector shall inspect and approve all construction for conformance to the construction documents and building code. Additionally, structural observation by Taylor & Syfan or another structural engineer is recommended to verify general conformance.
9. All construction projects require inspection and maintenance following completion. Operation, inspection, and maintenance are the sole responsibility of the Owner. The Engineer shall have no responsibility for any failures due to deviance from or neglect of the proper installation procedures, or for any failures by the Owner or Others to properly operate, inspect, or maintain the project. Ensure, and notify the Owner, that workers, equipment, storage, and other loading are not to be applied on the PV modules or racking throughout the life of the structure. Also, vegetation and debris shall be kept down to prevent snow build-up from affecting the system. In the event that the array or a portion thereof is displaced, due to seismic shaking, wind loads, or other reasons, the Owner shall re-position the array into its original design location.
10. Crossrail 80 PV Mounting Rail, Universal Pipe L-Brackets, Hollaender brace fittings, tie-braces, V-braces, pipe couplers, T-fittings, T-bolts, hex flange nuts, U-bolts, H-nuts, set screws, mid-clamps, end-clamps, modules, splice connectors, and module clamps are per Everest.
11. The drawings, calculations, notes and specifications contained herein and provided herewith are the exclusive property of Taylor & Syfan, Copyright © 2019. The use of these calculations and specifications shall be restricted to the solar array design and layout, provided by Everest, for which they were prepared and publication thereof is expressly limited to such use. Reproduction or publication by any method, in whole or in part, is prohibited without written permission of Taylor & Syfan. Title to these drawings, calculations, notes and specifications shall remain with Taylor & Syfan without prejudice.

MATERIAL REQUIREMENTS

1. Taylor & Syfan must be notified if the equipment or existing conditions are found to differ from what has been referenced or assumed in Everest's plans or the "Structural Calculations, Notes, & Specifications" in drawings dated 02/22/2019.
 2. Cold-formed metal, other steel, and hardware exposed to weather, soil, or moisture shall be hot-dip galvanized, stainless steel, or have other corrosion protection appropriate for the installed environment specified by Everest. Finishing requirements for exposed steel and hardware are by others. Combining the aluminum connection hardware with the stainless steel hardware in a moist environment may promote corrosion between the two materials. Protection/isolation of differing metals is by others.
 3. Pipe sections shall conform to ASTM A53 Grades B, Type E or S. "Sch. 40" indicates Standard Weight and "Sch. 80" indicates Extra Strong.
 4. Embedment into soil is contingent upon the following: soil shall be firm, well graded, free of deleterious materials, non-expansive, not subject to erosion, free from foreign bodies and anything that hinders interaction between the pile and the soil surface. Where existing conditions do not match preceding qualifications, pile must be deepened such that embedment starts at competent soil.
-



CENTRAL COAST
684 Clarion Court
San Luis Obispo, CA 93401
805.547.2000

SOUTHERN CA
553 S. Oak Knoll Ave.
Pasadena, CA 91101
626.793.7438

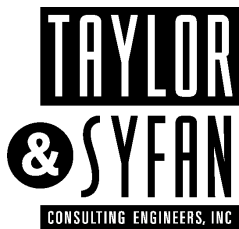
NORTHERN CA
416 B St., Suite C
Santa Rosa, CA 95401
707.636.4900

800.579.3881
www.taylorsyfan.com

STRUCTURAL SPECIFICATIONS

CONCRETE & ANCHORAGE REQUIREMENTS

1. Soils values are per Table 1806.2 of the 2015 International Building Code (IBC) for Soil Type 4 (SW, SP, SM, SC, GM, & GC) minimum.
 2. Concrete shall have a strength of 2500 psi at 28 days, a maximum slump of 5", a maximum W/C ratio of 0.45, and 6% +/- 1.5% air entrainment except where required by code, or specified by the local authority having jurisdiction. In an area requiring special freeze/thaw protection, concrete shall have a strength of 4500 psi at 28 days, a maximum slump of 5", a maximum W/C ratio of 0.45, and 6% +/- 1.5% air entrainment. Special Inspection is not required, except where specified herein, on the plans, or by the Building Department.
 3. Reinforcing steel shall be to ASTM A615, deformed, clean, and free of rust. Bars shall be 60 grade minimum (unless specified otherwise).
 4. Aggregates shall be per ASTM C33. Maximum size 1½" for footings and 1" for all other work. Reduce maximum aggregate size as required to conform to ACI 318 Section 3.3.2. Coarse aggregate shall be crushed rock.
 5. Reinforcing clearances for foundations shall be 3" min. when against earth and 2" min. when against a formed surface UNO. Other reinforcing clearances shall be 1 1/2" minimum UNO.
 6. Removal of forms (formwork) supporting vertical surfaces shall be after 2 days min. and supporting beams or girders shall be after 15 days minimum.
 7. Prevent surface and ground water from entering excavated shafts. Dewater excavated shafts before concreting. Conduct water to site drainage facilities. "Tremie Method" may be used, per Geotechnical recommendations. Place concrete in a dry shaft, unless placement underwater or by slurry displacement is approved by Engineer.
 8. Excavate shafts for drilled foundation elements to indicated elevations. Excavate bottom of drilled shaft to level plane and remove loose material from bottom of excavation. Do not excavate shafts deeper than elevations indicated, unless approved by Engineer.
 9. Excavate shafts for closely spaced drilled foundations and those occurring in fragile or sand strata, only after adjacent drilled foundations are filled with concrete and allowed to set. Contact Engineer if temporary casings are required.
 10. Back-filling soil around piles is not allowed without prior approval & direction of soils engineer.
 11. Screed concrete at cutoff elevation level. Where cutoff elevation is above the ground elevation, form top section above grade and extend shaft to required elevation.
 12. Protect structures, utilities, sidewalks, pavements, and other facilities from damage caused by settlement, lateral movement, vibration, and other hazards created by excavations.
-



San Luis Obispo | Pasadena | www.taylorsofan.com

Project: **19075 - Everest Ground Mount - ESS**

WIND & SNOW LOADS

San Luis Obispo | Pasadena | www.taylorsyfan.com

2015 IBC Solar Panel Wind Analysis - Version 1.1

Project: **19075 – Everest GM Solar – ESS****Basic Wind Speed (V): 105 mph****Design Assumptions:**

Surface Roughness Category: C (See ASCE 26.7.2)

No Topographic Effect (See ASCE 26.8.2)

Wind Forces Calculated by Main Wind Force-Resisting System for Open Structures (See ASCE 27.4.3)

Net Pressure Coefficient, C_{N_i} from ASCE Figure 27.4-4 for Monoslope Free Roofs with a 45 Degree Max. Slope.

Height of Solar Panel Structure Limited by Geometry Specified on Sheet A3

Analysis for Ground Mount Panels Only

Velocity Pressure (q)

V (mph)	Kd	--	Kz	Kzt	q (psf)
105	0.85	1.00	0.85	1.00	20.39

Panel Data

Joist Wind Trib
2.75 ft

Design Pressure (p)

Panel Angle	Load Case	Wind Direction	G	C_{NW}	C_{NL}	p_w (psf)	p_L (psf)	w_w (plf)	w_L (plf)
15°	A	0°	0.85	-1.1	-1.5	-19.1	-26.0	-52.4	-71.5
15°	B	0°	0.85	-1.9	0.0	-32.9	0.0	-90.6	0.0
15°	A	180°	0.85	1.3	1.6	22.5	27.7	62.0	76.3
15°	B	180°	0.85	1.2	-0.3	20.8	-5.2	57.2	-14.3
20°	A	0°	0.85	-1.3	-1.6	-23.1	-27.7	-63.6	-76.3
20°	B	0°	0.85	-2.1	-0.2	-36.4	-2.9	-100.1	-7.9
20°	A	180°	0.85	1.6	1.8	27.2	30.6	74.7	84.2
20°	B	180°	0.85	1.7	0.1	28.9	2.3	79.4	6.4
30°	A	0°	0.85	-1.8	-1.8	-31.2	-31.2	-85.8	-85.8
30°	B	0°	0.85	-2.5	-0.5	-43.3	-8.7	-119.2	-23.8
30°	A	180°	0.85	2.1	2.1	36.4	36.4	100.1	100.1
30°	B	180°	0.85	2.6	1.0	45.1	17.3	123.9	47.7

Note: C_{NW} and C_{NL} are Worst Case for Either **Clear OR Obstructed** Wind Flow

Note: Values in grey were used for interpolation of the 20-degree wind pressure values.

Symbols and Notation

V = Basic Wind Speed (mph) per ASCE (See per Figure 26.5-1A)

Kd = Wind Directionality Factor (per table 26.6-1)

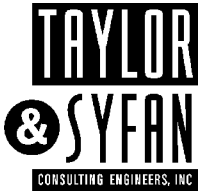
Kz = Velocity pressure exposure coefficient evaluated at height z (IBC Table 1609.6.2.1)

Kzt = Topographic factor as defined in Section 26.8.2

q = velocity pressure in (psf) ($q = 0.00256 * Kz * Kzt * Kd * V^2$ per ASCE 27.3.2) p_w = Windward Design Pressure (psf) ($p = q * G * C_{N_i}$ per ACSC 27.4-3) p_L = Leeward Design Pressure (psf) ($p = q * G * C_{N_i}$ per ACSC 27.4-3)

G = Gust effect factor

 C_{NW} = Windward Net Pressure Coefficient for open buildings (See Figure 27.4-4) C_{NL} = Leeward Net Pressure Coefficient for open buildings (See Figure 27.4-4)



SNOW LOAD CALCULATIONS PER ASCE 7-10 CH. 7

Ground Snow Load, P_g

LC1 = 0 psf
 LC2 = 5 psf
 LC3 = 20 psf

Flat Roof Snow Load, P_f

$P_f = 0.7 C_e C_t I P_g$ Eq. 7-1

	20 deg.	
Ce	0.90	Table 7-2
Ct	1.20	Table 7-3
I	0.80	Table 7-4

Sloped Roof Snow Load, P_s

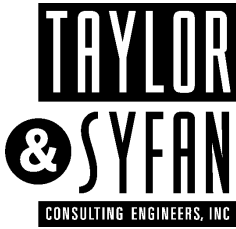
$P_s = C_s P_f$ Eq. 7-2

	20 deg.	
Cs	0.92	Figure 7-2c

Panel Data	
Rail Trib. Width	
2.75	ft

PV Snow Load (psf)	
pg (psf)	Tilt
	20 deg.
0	0.00
5	3.97
20	15.90

PV Snow Load (plf)	
pg (psf)	Tilt
	20 deg.
0	0.00
5	10.93
20	43.72

Project: **19075 - Everest Ground Mount - ESS**

EXAMPLE RISA AND FOUNDATION ANALYSIS

Parameters for Example

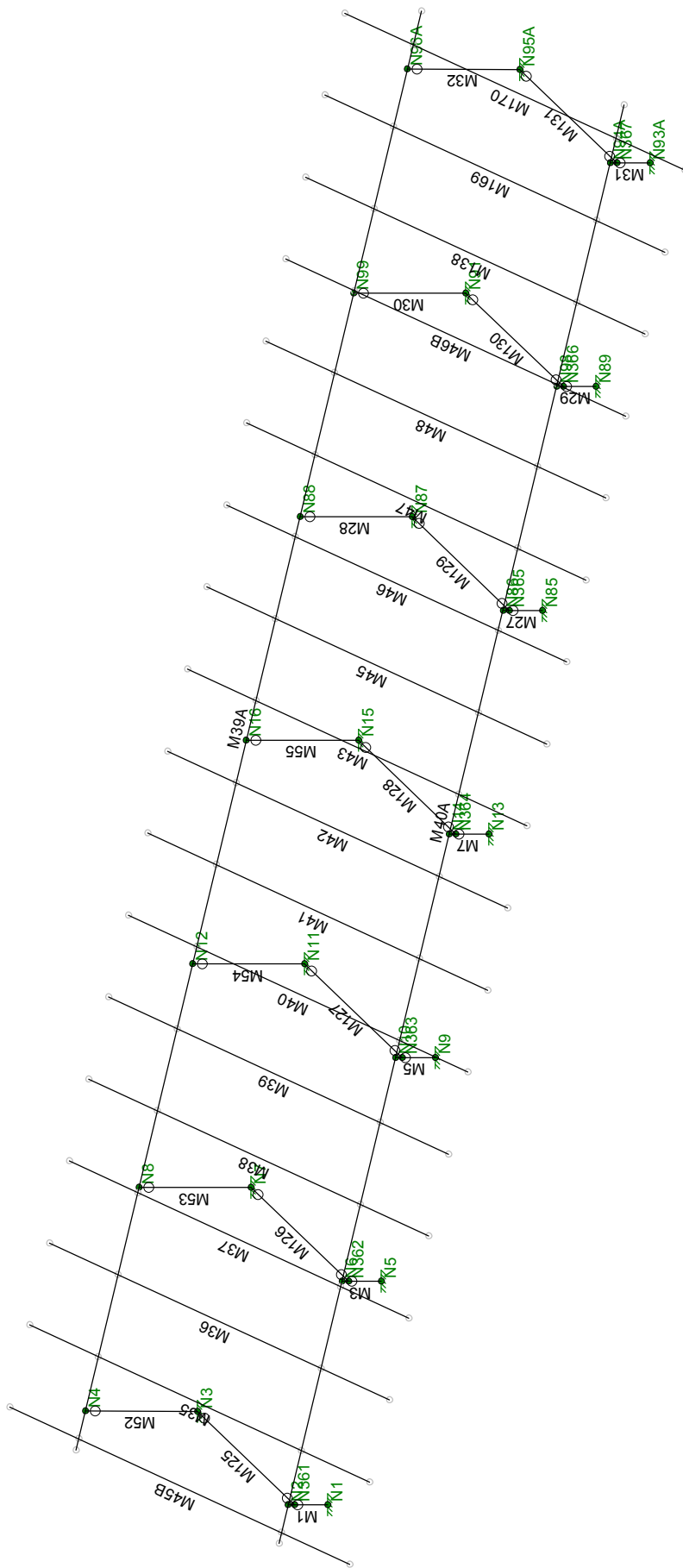
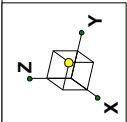
Tilt: 20 Degrees

Wind Speed: 105 MPH (3-sec. Gust)

Exposure Category "C"

Snow Load: 5 psf

1.5"Ø Sch. 40 Pipe



Everest Solar

GMP

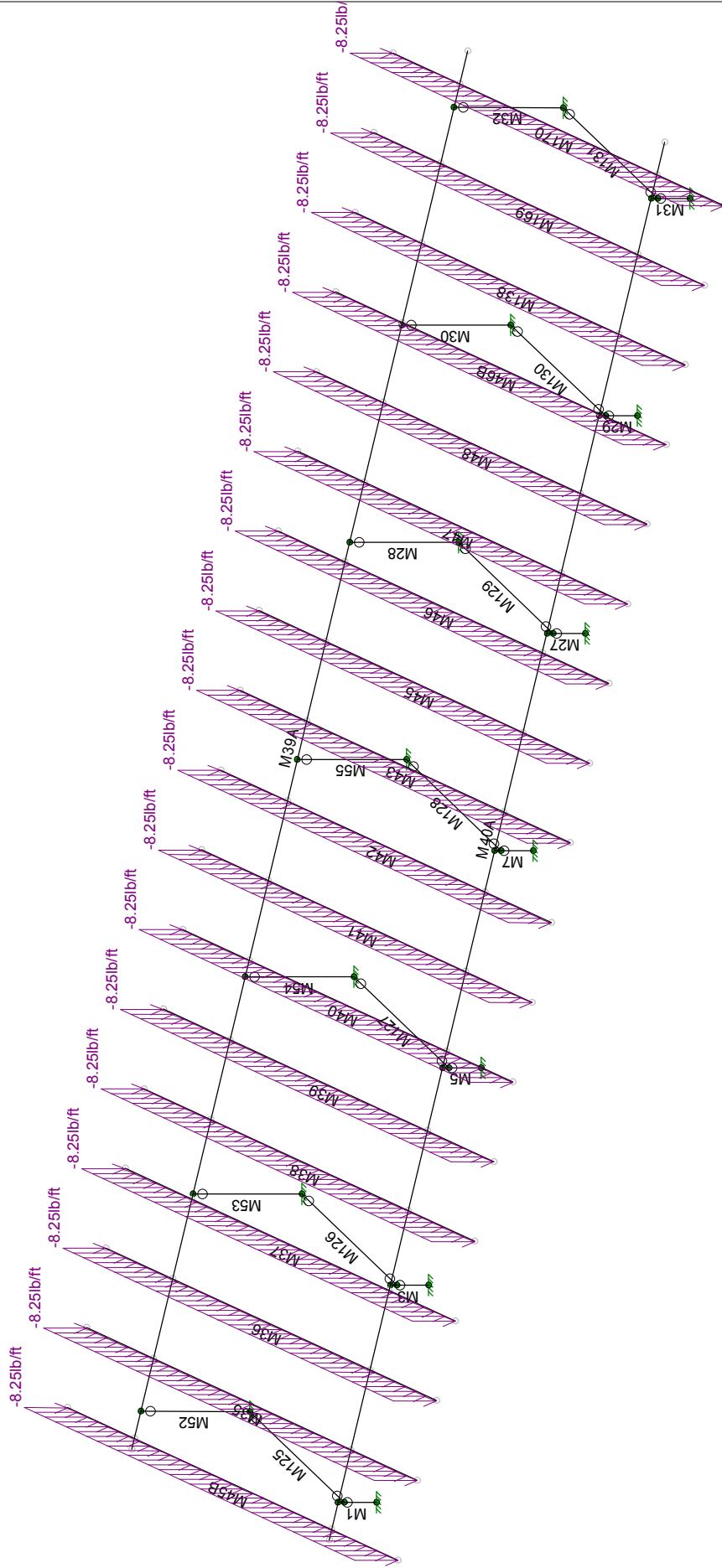
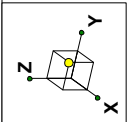
19075

Everest Ground Mount

SK - 1

Feb 21, 2019 at 10:45 AM

20deg_105MPH_5SL_1.5 C.r3d



Loads: BLC 1, Dead Load
Envelope Only Solution

Everest Solar

GMP

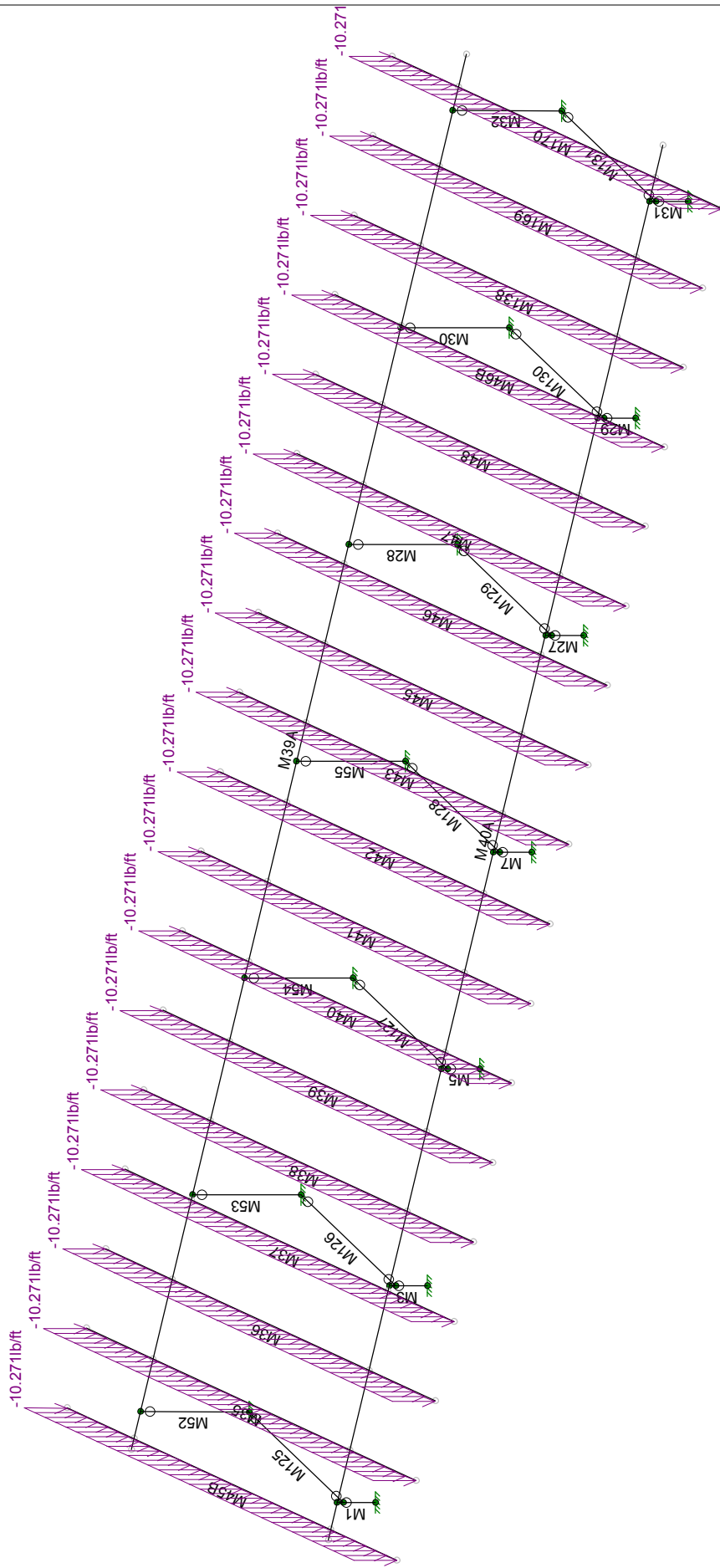
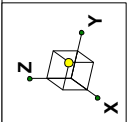
19075

Everest Ground Mount

SK - 2

Feb 21, 2019 at 10:47 AM

20deg_105MPH_5SL_1.5 C.r3d



Loads: BLC.2, Snow Load
Envelope Only Solution

Everest Solar

GMP

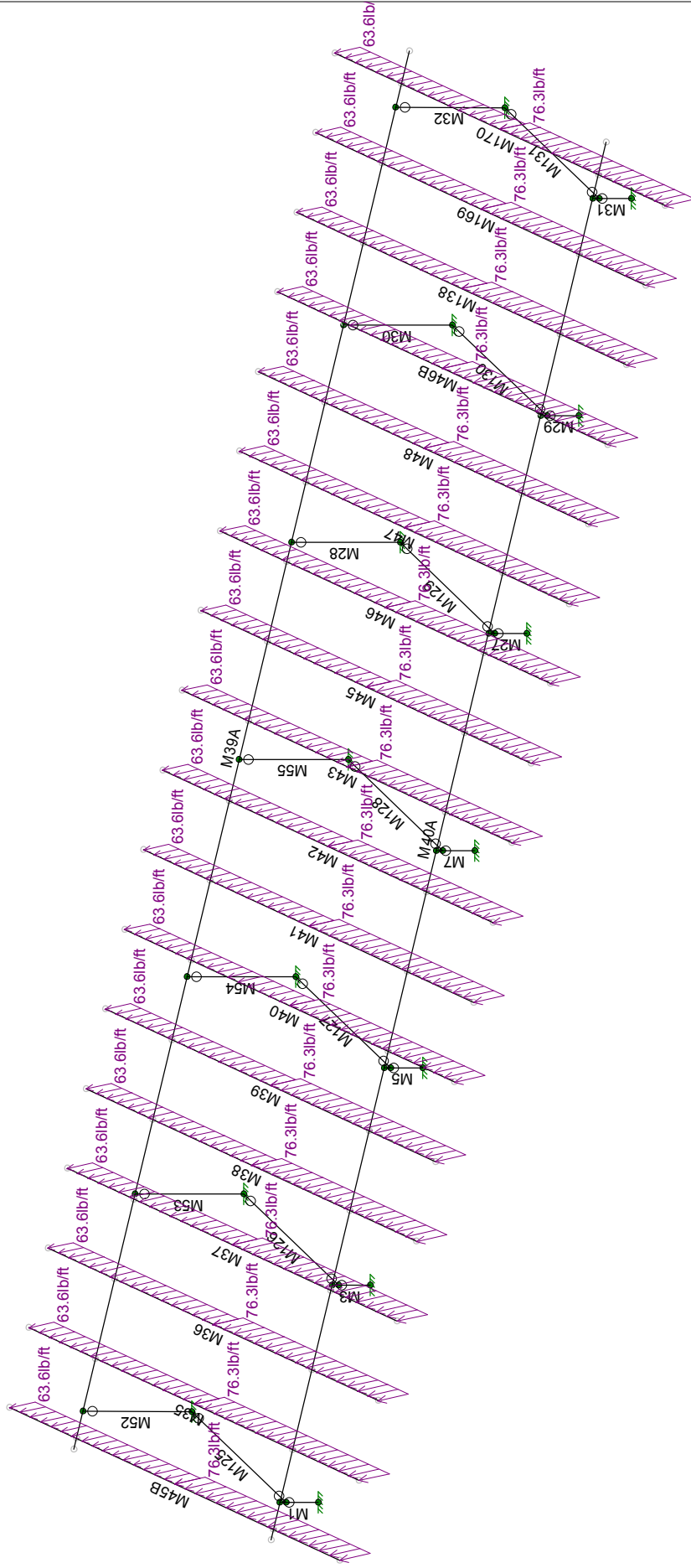
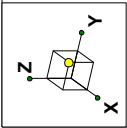
19075

SK - 3

Everest Ground Mount

Feb 21, 2019 at 10:47 AM

20deg_105MPH_5SL_1.5 C.r3d



Loads: BLC 3, North Upward
Envelope Only Solution

Everest Solar

GMP

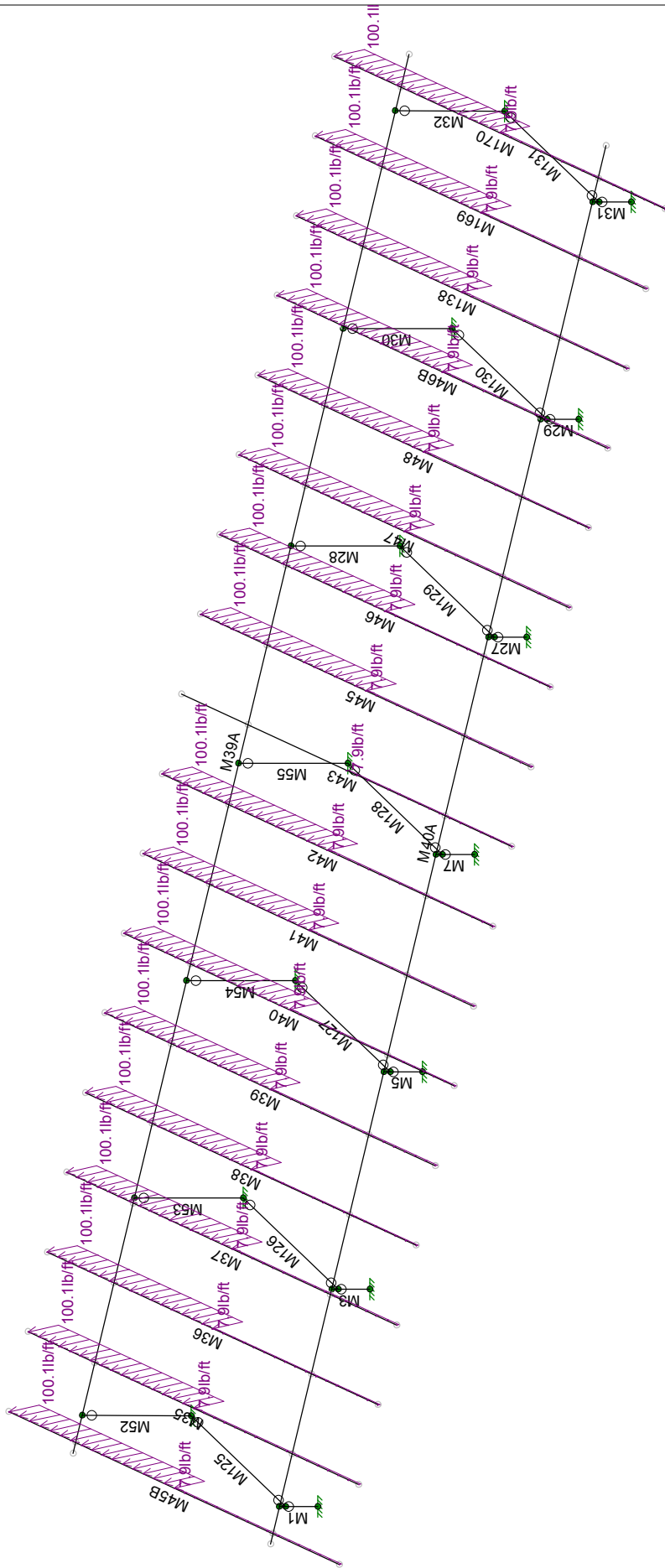
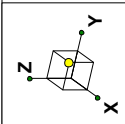
19075

SK - 4

Everest Ground Mount

Feb 21, 2019 at 10:47 AM

20deg_105MPH_5SL_1.5 C.r3d



Loads: BLC 4, North Downward
Envelope Only Solution

Everest Solar

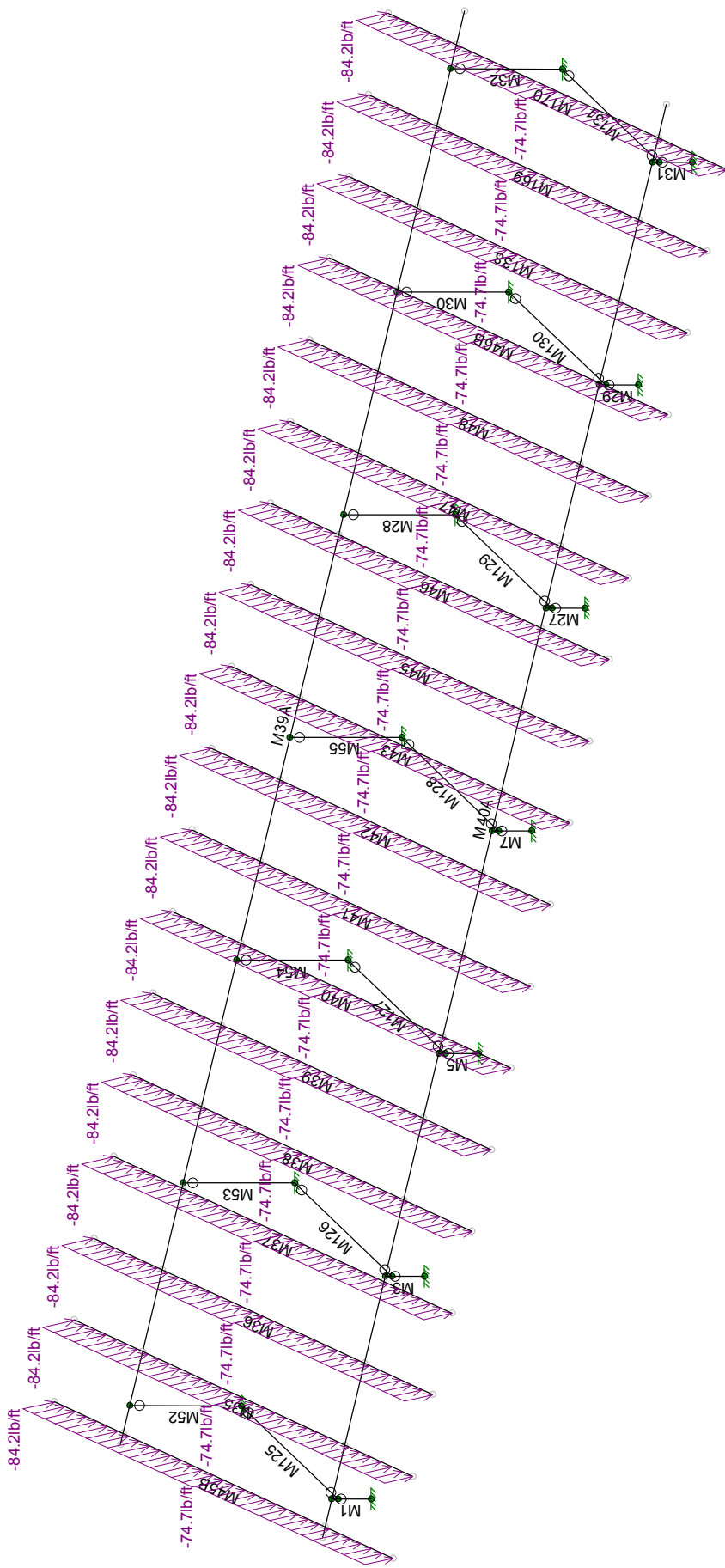
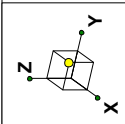
GMP

19075

SK - 5
Everest Ground Mount

Feb 21, 2019 at 10:47 AM

20deg_105MPH_5SL_1.5 C.r3d



Loads: BLC 5, South Upward
Envelope Only Solution

Everest Solar

GMP

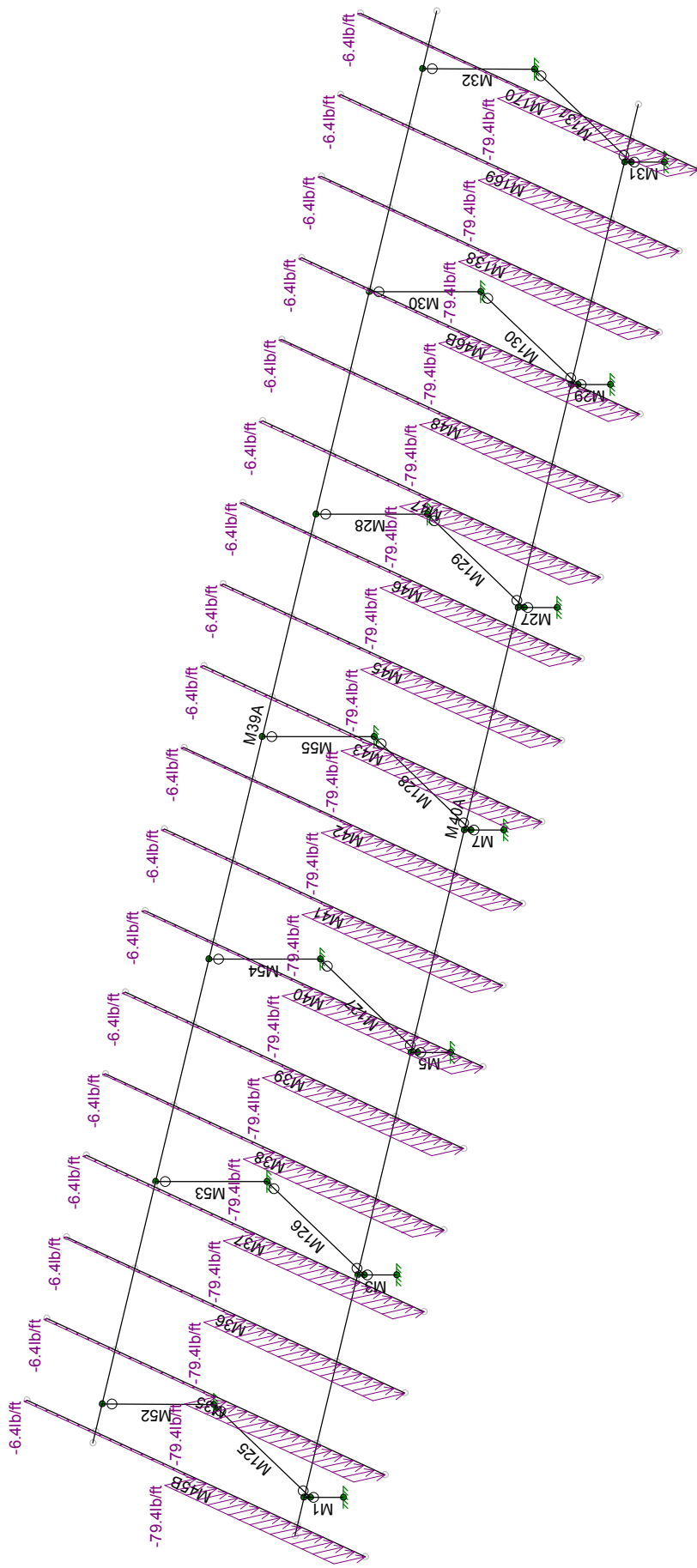
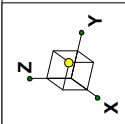
19075

Everest Ground Mount

SK - 6

Feb 21, 2019 at 10:47 AM

20deg_105MPH_5SL_1.5 C.r3d



Loads: BLC 6, South Downward
Envelope Only Solution

Everest Solar

GMP

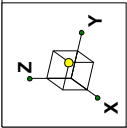
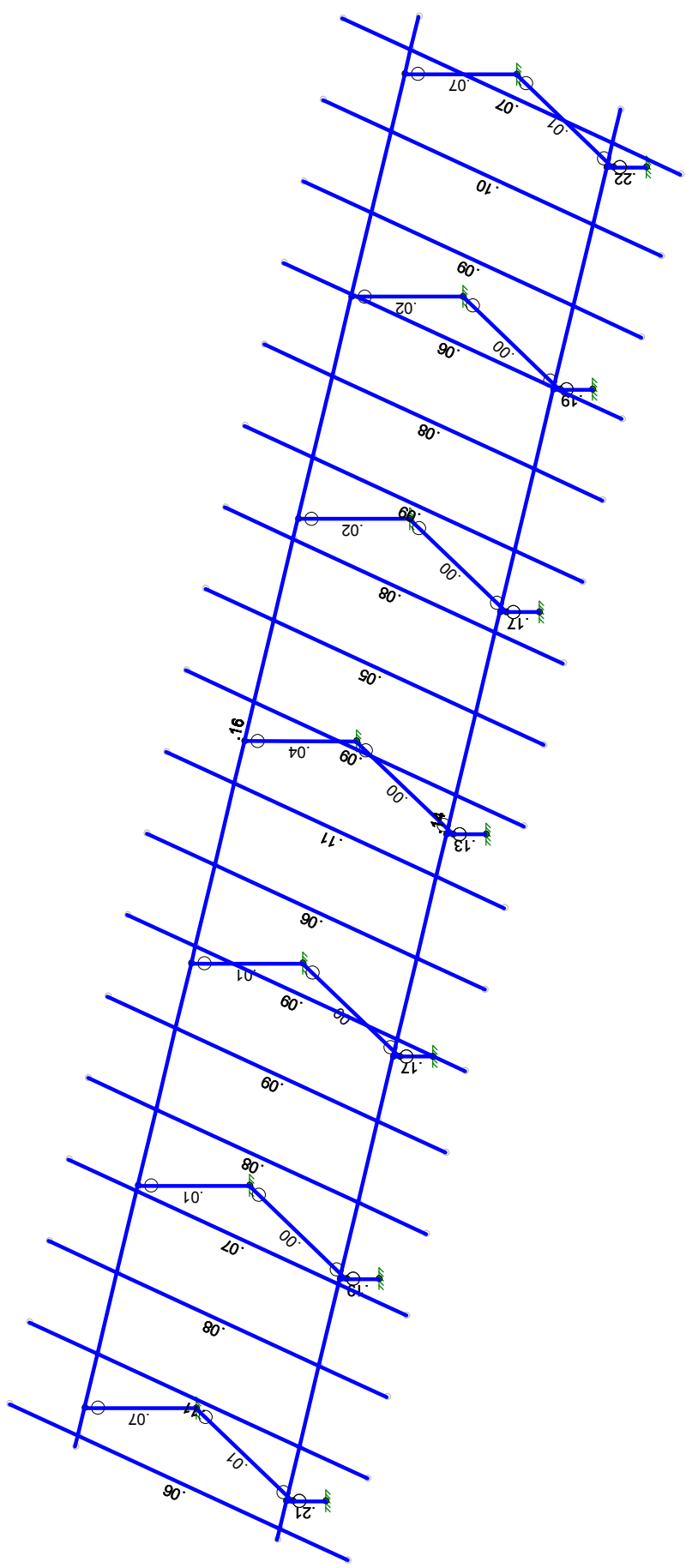
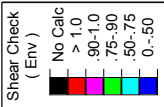
19075

Everest Ground Mount

SK - 7

Feb 21, 2019 at 10:47 AM

20deg_105MPH_5SL_1.5 C.r3d



Member Shear Checks Displayed (Enveloped)
Envelope Only Solution

SK - 9	Everest Ground Mount
Feb 21, 2019 at 10:48 AM	
20deg_105MPH_5SL_1.5 C.r3d	
Everest Solar	19075
GMP	
19075	



Company : Everest Solar
 Designer : GMP
 Job Number : 19075
 Model Name : Everest Ground Mount

Feb 21, 2019
 10:53 AM
 Checked By: JJN

Hot Rolled Steel Properties

	Label	E [ksi]	G [ksi]	Nu	Therm (1E...Density[lb/f...	Yield[psi]	Ry	Fu[psi]	Rt	
1	A36 Gr.36	29000	11154	.3	.65	490	36000	1.5	58000	1.2
2	A992	29000	11154	.3	.65	490	50000	1.1	58000	1.2
3	Pipe - 35ksi	29000	11154	.3	.65	490	35000	1.5	58000	1.2
4	T6061 Alum.	10600	4077	.3	1.29	173	36000	1.5	58000	1.2

Hot Rolled Steel Section Sets

	Label	Shape	Type	Design List	Material	Design R...	A [in2]	Iyy [in4]	Izz [in4]	J [in4]
1	Pipe 1.5	PIPE_1.5	VBrace	Pipe	Pipe - 35ksi	Typical	.749	.293	.293	.586
2	Pipe 2.0	PIPE_2.0	VBrace	Pipe	Pipe - 35ksi	Typical	1.02	.627	.627	1.25
3	Pipe 1.5X	PIPE_1.5X	VBrace	Pipe	Pipe - 35ksi	Typical	1	.372	.372	.744
4	Pipe 2.0X	PIPE_2.0X	VBrace	Pipe	Pipe - 35ksi	Typical	1.4	.827	.827	1.65

Basic Load Cases

	BLC Description	Category	X Gravity	Y Gravity	Z Gravity	Joint	Point	Distribu...	Area(M...	Surface...
1	Dead Load	DL			-1			18		
2	Snow Load	SL						18		
3	North Upward	WL						36		
4	North Downward	WL						36		
5	South Upward	WL						36		
6	South Downward	WL						36		
7	Earthquake X-dire...	ELX	.8							
8	Earthquake Y-dire...	ELY		.8						

Load Combinations

	Description	Sol...	PD...	SR...	BLC Fact...	BLC Fact...	BLC Fact...	BLC Fact...	BLC Fact...	BLC Fact...	BLC Fact...	BLC Fact...	BLC Fact...	BLC Fact...	BLC Fact...	BLC Fact...	BLC Fact...	BLC Fact...	BLC Fact...	BLC Fact...
1	IBC 16-8	Yes	Y		DL	1	NL	1												
2	IBC 16-9	Yes	Y		DL	1	LL	1	LLS	1	NL	1								
3	IBC 16-10...	Yes	Y		DL	1	NL	1												
4	IBC 16-10...	Yes	Y		DL	1	SL	1	SLN	1	NL	1								
5	IBC 16-11...	Yes	Y		DL	1	LL	.75	LLS	.75	SL	.75	SLN	.75	NL	1				
6	IBC 16-12...	Yes	Y		DL	1	3	.6	NL	1										
7	IBC 16-13...	Yes	Y		DL	1	3	.45	LL	.75	LLS	.75	NL	1						
8	IBC 16-13...	Yes	Y		DL	1	3	.45	LL	.75	LLS	.75	SL	.75	SLN	.75	NL	1		
9	IBC 16-15	Yes	Y		DL	.6	3	.6	NL	1										
10	IBC 16-12...	Yes	Y		DL	1	4	.6	NL	1										
11	IBC 16-13...	Yes	Y		DL	1	4	.45	LL	.75	LLS	.75	NL	1						
12	IBC 16-13...	Yes	Y		DL	1	4	.45	LL	.75	LLS	.75	SL	.75	SLN	.75	NL	1		
13	IBC 16-15	Yes	Y		DL	.6	4	.6	NL	1										
14	IBC 16-12...	Yes	Y		DL	1	5	.6	NL	1										
15	IBC 16-13...	Yes	Y		DL	1	5	.45	LL	.75	LLS	.75	NL	1						
16	IBC 16-13...	Yes	Y		DL	1	5	.45	LL	.75	LLS	.75	SL	.75	SLN	.75	NL	1		
17	IBC 16-15	Yes	Y		DL	.6	5	.6	NL	1										
18	IBC 16-12...	Yes	Y		DL	1	6	.6	NL	1										
19	IBC 16-13...	Yes	Y		DL	1	6	.45	LL	.75	LLS	.75	NL	1						
20	IBC 16-13...	Yes	Y		DL	1	6	.45	LL	.75	LLS	.75	SL	.75	SLN	.75	NL	1		
21	IBC 16-15	Yes	Y		DL	.6	6	.6	NL	1										



Company : Everest Solar
 Designer : GMP
 Job Number : 19075
 Model Name : Everest Ground Mount

Feb 21, 2019
 10:53 AM
 Checked By: JJN

Load Combinations (Continued)

	Description	Sol.	PD	SR	BLC Fact	BLC Fact	BLC Fact	BLC Fact	BLC Fact	BLC Fact	BLC Fact	BLC Fact	BLC Fact	BLC Fact	BLC Fact
22	IBC 16-12...	Yes	Y		DL 1	EL .7									
23	IBC 16-12...	Yes	Y		DL 1	EL -.7									
24	IBC 16-14...	Yes	Y		DL 1	EL .525	LL .75	LLS .75							
25	IBC 16-14...	Yes	Y		DL 1	EL -.525	LL .75	LLS .75							
26	IBC 16-14...	Yes	Y		DL 1	EL .525	LL .75	LLS .75	SL .75	SLN .75					
27	IBC 16-14...	Yes	Y		DL 1	EL -.525	LL .75	LLS .75	SL .75	SLN .75					
28	IBC 16-16...	Yes	Y		DL .6	EL .7									
29	IBC 16-16...	Yes	Y		DL .6	EL -.7									

Envelope Joint Reactions

	Joint		X [lb]	LC	Y [lb]	LC	Z [lb]	LC	MX [lb-ft]	LC	MY [lb-ft]	LC	MZ [lb-ft]	LC
1	N1	max	101.573	6	2.233	14	694.649	18	.789	9	27.056	6	55.579	9
2		min	-115.27	17	-1.482	9	-337.76	9	-1.429	14	-30.891	14	-73.57	14
3	N3	max	571.182	17	.07	10	1014.665	14	1.346	9	26.776	14	36.876	13
4		min	-507.722	6	-.02	17	-782.06	13	-1.9	18	-26.651	13	-42.726	14
5	N5	max	140.063	9	.506	9	959.954	18	.093	17	37.398	9	35.691	14
6		min	-163.317	14	-.636	14	-474.957	9	-.199	8	-43.8	14	-23.504	9
7	N7	max	801.576	14	.072	10	1428.227	14	.931	14	9.844	14	8.131	14
8		min	-695.496	9	-.012	17	-1076.872	13	-.718	13	-8.241	13	-4.259	13
9	N9	max	132.359	6	.862	14	898.057	18	.439	13	35.289	9	27.831	13
10		min	-151.873	14	-.773	13	-436.324	9	-.51	14	-40.726	14	-30.198	14
11	N11	max	747.716	17	.071	10	1319.877	14	.482	13	17.627	14	2.576	17
12		min	-658.67	6	-.008	17	-1050.248	13	-.763	14	-17.615	10	-3.781	8
13	N13	max	130.804	6	.118	13	916.699	18	.073	6	34.932	9	1.926	9
14		min	-150.841	14	-.083	6	-455.929	9	-.071	17	-40.476	14	-7.867	10
15	N15	max	744.57	14	.067	12	1348.336	14	-.006	9	32.215	14	.439	17
16		min	-653.984	9	-.004	17	-726.347	9	-.449	10	-25.204	9	-22.679	10
17	N85	max	131.675	6	.467	9	897.248	18	.444	16	35.105	9	30.796	14
18		min	-150.967	14	-.819	14	-436.558	9	-.178	9	-40.487	14	-20.684	9
19	N87	max	743.799	17	.073	12	1317.085	14	.768	14	20.207	14	14.918	10
20		min	-655.796	6	0	17	-938.924	13	-.656	13	-18.768	10	-2.351	17
21	N89	max	140.808	9	.594	14	963.975	18	.319	8	37.597	9	20.888	9
22		min	-164.319	14	-.524	9	-478.038	9	-.144	17	-44.067	14	-31.444	14
23	N91	max	806.302	14	.076	12	1435.806	14	.488	9	8.952	14	5.716	9
24		min	-699.014	9	.003	17	-1105.666	13	-.832	14	-7.356	9	-10.436	14
25	N93A	max	99.572	6	1.534	9	681.252	18	1.43	16	26.519	6	79.627	14
26		min	-112.885	17	-2.329	14	-327.402	9	-.743	9	-30.247	14	-60.801	9
27	N95A	max	559.078	17	.077	12	993.609	14	1.984	14	24.391	14	47.498	14
28		min	-497.329	6	.008	9	-759.475	13	-1.59	9	-23.633	13	-40.026	13
29	Totals:	max	3961.848	17	0	17	13995.258	14						
30		min	-3488.122	6	0	12	-7718.035	9						

Envelope AISC 14th(360-10): ASD Steel Code Checks

Member	Shape	Code C...	Loc[ft]	LC	Shear ...	Loc[ft]	Dir	LC Pnc/om [lb]	Pnt/om [lb]	Mnyy/om ...	Mnzz/om ...	Cb	Eqn
1	M1	PIPE 1.5	.176	1.25	14	.210	1.25	14	15046.072	15697.605	735.279	735.279	1... H1-1b
2	M3	PIPE 1.5	.249	1.25	14	.191	1.25	14	15046.072	15697.605	735.279	735.279	1... H1-1b
3	M5	PIPE 1.5	.231	1.25	14	.173	1.25	14	15046.072	15697.605	735.279	735.279	1... H1-1b
4	M7	PIPE 1.5	.231	1.25	14	.130	1.25	14	15046.072	15697.605	735.279	735.279	2... H1-1b
5	M52	PIPE 1.5	.082	0	14	.067	0	14	11156.947	15697.605	735.279	735.279	1... H1-1b*

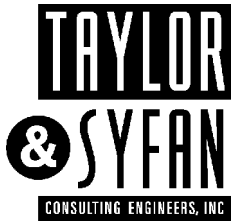


Company : Everest Solar
 Designer : GMP
 Job Number : 19075
 Model Name : Everest Ground Mount

Feb 21, 2019
 10:53 AM
 Checked By: JJN

Envelope AISC 14th(360-10): ASD Steel Code Checks (Continued)

Member	Shape	Code C...	Loc[ft]	LC	Shear ...	Loc[ft]	Dir	LC	Pnc/om [lb]	Pnt/om [lb]	Mnyy/om ...	Mnzz/om ...	Cb	Eqn
6	M53	PIPE 1.5	.115	0	14	.013	0	14	11156.947	15697.605	735.279	735.279	1...	H1-1b*
7	M54	PIPE 1.5	.106	0	14	.006	0	8	11156.947	15697.605	735.279	735.279	1...	H1-1b*
8	M55	PIPE 1.5	.109	0	14	.036	0	10	11156.947	15697.605	735.279	735.279	1...	H1-1b*
9	M35	PIPE 1.5	.352	6.75	14	.106	2.813	13	4778.659	15697.605	735.279	735.279	1	H1-1b
10	M36	PIPE 1.5	.352	6.75	14	.084	2.813	13	4778.659	15697.605	735.279	735.279	1	H1-1b
11	M37	PIPE 1.5	.359	6.75	14	.067	2.813	13	4778.659	15697.605	735.279	735.279	1	H1-1b
12	M38	PIPE 1.5	.348	6.75	14	.079	2.813	13	4778.659	15697.605	735.279	735.279	1	H1-1b
13	M39	PIPE 1.5	.350	6.75	14	.087	2.813	13	4778.659	15697.605	735.279	735.279	1	H1-1b
14	M40	PIPE 1.5	.358	6.75	14	.089	2.813	13	4778.659	15697.605	735.279	735.279	1	H1-1b
15	M41	PIPE 1.5	.355	6.75	14	.064	2.813	13	4778.659	15697.605	735.279	735.279	1	H1-1b
16	M42	PIPE 1.5	.354	6.75	14	.110	2.813	13	4778.659	15697.605	735.279	735.279	1	H1-1b
17	M43	PIPE 1.5	.355	6.75	14	.089	10.688	18	4778.659	15697.605	735.279	735.279	1	H1-1b
18	M45	PIPE 1.5	.355	6.75	14	.052	10.688	18	4778.659	15697.605	735.279	735.279	1	H1-1b
19	M46	PIPE 1.5	.358	6.75	14	.076	10.688	18	4778.659	15697.605	735.279	735.279	1	H1-1b
20	M47	PIPE 1.5	.350	6.75	14	.091	2.813	13	4778.659	15697.605	735.279	735.279	1	H1-1b
21	M48	PIPE 1.5	.349	6.75	14	.083	2.813	13	4778.659	15697.605	735.279	735.279	1	H1-1b
22	M39A	PIPE 1.5	.931	38.701	14	.159	16.586	14	7966.511	15697.605	735.279	735.279	1	H1-1b
23	M40A	PIPE 1.5	.859	38.701	14	.142	16.586	14	7966.511	15697.605	735.279	735.279	1	H1-1b
24	M45B	PIPE 1.5	.353	6.75	14	.065	2.813	13	4778.659	15697.605	735.279	735.279	1	H1-1b
25	M46B	PIPE 1.5	.360	6.75	14	.057	10.688	18	4778.659	15697.605	735.279	735.279	1	H1-1b
26	M27	PIPE 1.5	.230	1.25	14	.173	1.25	14	15046.072	15697.605	735.279	735.279	1...	H1-1b
27	M28	PIPE 1.5	.106	0	14	.024	0	10	11156.947	15697.605	735.279	735.279	1...	H1-1b*
28	M29	PIPE 1.5	.250	1.25	14	.185	1.25	14	15046.072	15697.605	735.279	735.279	1...	H1-1b
29	M30	PIPE 1.5	.116	0	14	.016	0	14	11156.947	15697.605	735.279	735.279	1...	H1-1b*
30	M31	PIPE 1.5	.172	1.25	14	.217	1.25	14	15046.072	15697.605	735.279	735.279	1...	H1-1b
31	M32	PIPE 1.5	.080	0	14	.074	0	14	11156.947	15697.605	735.279	735.279	1...	H1-1b*
32	M125	PIPE 1.5	.111	7.677	17	.005	7.677	14	5188.632	15697.605	735.279	735.279	1...	H1-1b*
33	M126	PIPE 1.5	.157	7.677	14	.003	0	14	5188.632	15697.605	735.279	735.279	1...	H1-1b*
34	M127	PIPE 1.5	.146	7.677	14	.003	7.677	14	5188.632	15697.605	735.279	735.279	1...	H1-1b*
35	M128	PIPE 1.5	.145	7.677	14	.002	7.677	10	5188.632	15697.605	735.279	735.279	1...	H1-1b*
36	M129	PIPE 1.5	.145	7.677	14	.003	7.677	14	5188.632	15697.605	735.279	735.279	1...	H1-1b*
37	M130	PIPE 1.5	.158	7.677	14	.003	7.677	14	5188.632	15697.605	735.279	735.279	1...	H1-1b*
38	M131	PIPE 1.5	.108	7.677	17	.005	7.677	14	5188.632	15697.605	735.279	735.279	1...	H1-1b*
39	M138	PIPE 1.5	.351	6.75	14	.089	2.813	13	4778.659	15697.605	735.279	735.279	1	H1-1b
40	M169	PIPE 1.5	.352	6.75	14	.103	2.813	13	4778.659	15697.605	735.279	735.279	1	H1-1b
41	M170	PIPE 1.5	.354	6.75	14	.073	2.813	13	4778.659	15697.605	735.279	735.279	1	H1-1b



Project: **19075 – Everest GM Solar – ESS**

Maximum Envelope Solution from RISA

	Axial	Uplift	Moment (y)	Shear (x)
Front	964 lb	-478 lb	-44 ft-lb	-164 lb
Back	1,436 lb	-1,106 lb	32 ft-lb	806 lb

	Joint		X		Y		Z		Mx		My		Mz	
	N1	max	101.57	6	2.23	14	694.65	18	0.79	9	27.06	6	55.58	9
		min	-115.27	17	-1.48	9	-337.76	9	-1.43	14	-30.89	14	-73.57	14
B	N3	max	571.18	17	0.07	10	1014.67	14	1.35	9	26.78	14	36.88	13
		min	-507.72	6	-0.02	17	-782.06	13	-1.9	18	-26.65	13	-42.73	14
	N5	max	140.06	9	0.51	9	959.95	18	0.09	17	37.4	9	35.69	14
		min	-163.32	14	-0.64	14	-474.96	9	-0.2	8	-43.8	14	-23.5	9
B	N7	max	801.58	14	0.07	10	1428.23	14	0.93	14	9.84	14	8.13	14
		min	-695.5	9	-0.01	17	-1076.87	13	-0.72	13	-8.24	13	-4.26	13
	N9	max	132.36	6	0.86	14	898.06	18	0.44	13	35.29	9	27.83	13
		min	-151.87	14	-0.77	13	-436.32	9	-0.51	14	-40.73	14	-30.2	14
B	N11	max	747.72	17	0.07	10	1319.88	14	0.48	13	17.63	14	2.58	17
		min	-658.67	6	-0.01	17	-1050.25	13	-0.76	14	-17.62	10	-3.78	8
	N13	max	130.8	6	0.12	13	916.7	18	0.07	6	34.93	9	1.93	9
		min	-150.84	14	-0.08	6	-455.93	9	-0.07	17	-40.48	14	-7.87	10
B	N15	max	744.57	14	0.07	12	1348.34	14	-0.01	9	32.22	14	0.44	17
		min	-653.98	9	0	17	-726.35	9	-0.45	10	-25.2	9	-22.68	10
	N85	max	131.68	6	0.47	9	897.25	18	0.44	16	35.11	9	30.8	14
		min	-150.97	14	-0.82	14	-436.56	9	-0.18	9	-40.49	14	-20.68	9
B	N87	max	743.8	17	0.07	12	1317.09	14	0.77	14	20.21	14	14.92	10
		min	-655.8	6	0	17	-938.92	13	-0.66	13	-18.77	10	-2.35	17
	N89	max	140.81	9	0.59	14	963.98	18	0.32	8	37.6	9	20.89	9
		min	-164.32	14	-0.52	9	-478.04	9	-0.14	17	-44.07	14	-31.44	14
B	N91	max	806.3	14	0.08	12	1435.81	14	0.49	9	8.95	14	5.72	9
		min	-699.01	9	0	17	-1105.67	13	-0.83	14	-7.36	9	-10.44	14
	N93A	max	99.57	6	1.53	9	681.25	18	1.43	16	26.52	6	79.63	14
		min	-112.89	17	-2.33	14	-327.4	9	-0.74	9	-30.25	14	-60.8	9
B	N95A	max	559.08	17	0.08	12	993.61	14	1.98	14	24.39	14	47.5	14



San Luis Obispo - Pasadena
 www.TaylorSyfan.com

INNOVATIVE STRUCTURAL DESIGNS

800.579.3881
 800.617.2235 fax

Page: _____

Job No: 19075

Engr: _____

Friction Pile Design
 Version 12.35 - 2012 IBC

INPUT DATA:

Name: Pipe1.5_F
 V = 0.16 kips @ H = 0.00 ft above grade
 M = 0.04 ft-kips @ H = 0.00 ft above grade
 Axial = 0.96 kips
 Creep = 0.00 plf/ft for D = 0.00 ft of soil
 Pile is unconstrained
 1.33x Short-term Stress Increase
 2x Isolated Pile Increase
 Pile Width = 12.00 inches
 Passive = 150.00 psf/ft to a Maximum = 1500.00 psf
 Friction = 250.00 psf/ft End Bearing = 2000.00 psf

SOLUTION:

Required Embedment Depths into Firm Soils:
 Axial = 1.00 ft

Required = 2.00 ft total embedment

Soil Pressures:

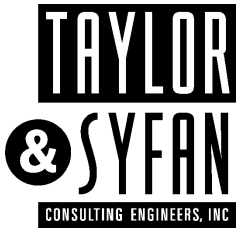
S1 = 266.67 psf at D/3
 S3 = 4000.00 psf at full depth

Moments:

M = 0.15 ft-kips unfactored

Lateral = 2.00

Minimum Embedment into Approved, Competent Soil per Material Requirements on Sheet S10.



San Luis Obispo | Pasadena | www.taylorsyfan.com

Project: 19075 – Everest GM Solar – ESS

PILE UPLIFT CALCULATION

(FRONT PILE)

SYSTEM INFORMATION

Pile Diameter	12	inches
Depth of Pile	2	feet
Distance Discounted	1	feet
Skin Friction	250	psf/ft
Concrete Density	150	pcf

LOADING INFORMATION

Uplift Demand (ASD Level)	478	pounds
------------------------------	-----	--------

UPLIFT CAPACITY

From Skin Friction

785 pounds

Skin friction = Allowed Skin Friction * Circumference * Allowed Pile Depth

From Concrete Weight

141 pounds

Concrete weight = 0.6 * Concrete Density * Pile Area * Full Pile Height

TOTAL UPLIFT RESISTANCE

927 pounds

Pile Design is Acceptable for Uplift Demand



San Luis Obispo - Pasadena
www.TaylorSyfan.com

INNOVATIVE STRUCTURAL DESIGNS

800.579.3881
800.617.2235 fax

Page: _____

Job No: 19075

Engr: _____

Friction Pile Design
Version 12.35 - 2012 IBC

INPUT DATA:

Name: Pipe1.5_B

V = 0.81 kips @ H = 0.00 ft above grade

M = 0.03 ft-kips @ H = 0.00 ft above grade

Axial = 1.44 kips

Creep = 0.00 plf/ft for D = 0.00 ft of soil

Pile is unconstrained

1.33x Short-term Stress Increase

2x Isolated Pile Increase

Pile Width = 12.00 inches

Passive = 150.00 psf/ft to a Maximum = 1500.00 psf

Friction = 250.00 psf/ft End Bearing = 2000.00 psf

SOLUTION:

Required Embedment Depths into Firm Soils:

Axial = 1.00 ft

Lateral = 4.00

Required = 4.00 ft total embedment

Soil Pressures:

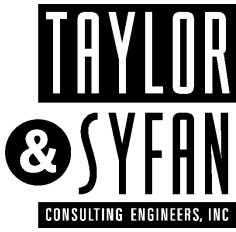
S1 = 533.33 psf at D/3

S3 = 4000.00 psf at full depth

Moments:

M = 1.11 ft-kips unfactored

Minimum Embedment into Approved, Competent Soil per Material Requirements on Sheet S10.



San Luis Obispo | Pasadena | www.taylorsyfan.com

Project: 19075 – Everest GM Solar – ESS

PILE UPLIFT CALCULATION

(BACK PILE)

SYSTEM INFORMATION

Pile Diameter	12	inches
Depth of Pile	4	feet
Distance Discounted	1	feet
Skin Friction	250	psf/ft
Concrete Density	150	pcf

LOADING INFORMATION

Uplift Demand (ASD Level)	1106	pounds
------------------------------	------	--------

UPLIFT CAPACITY

From Skin Friction

2356 pounds

Skin friction = Allowed Skin Friction * Circumference * Allowed Pile Depth

From Concrete Weight

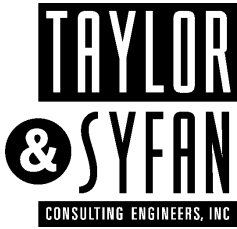
283 pounds

Concrete weight = 0.6 * Concrete Density * Pile Area * Full Pile Height

TOTAL UPLIFT RESISTANCE

2639 pounds

Pile Design is Acceptable for Uplift Demand

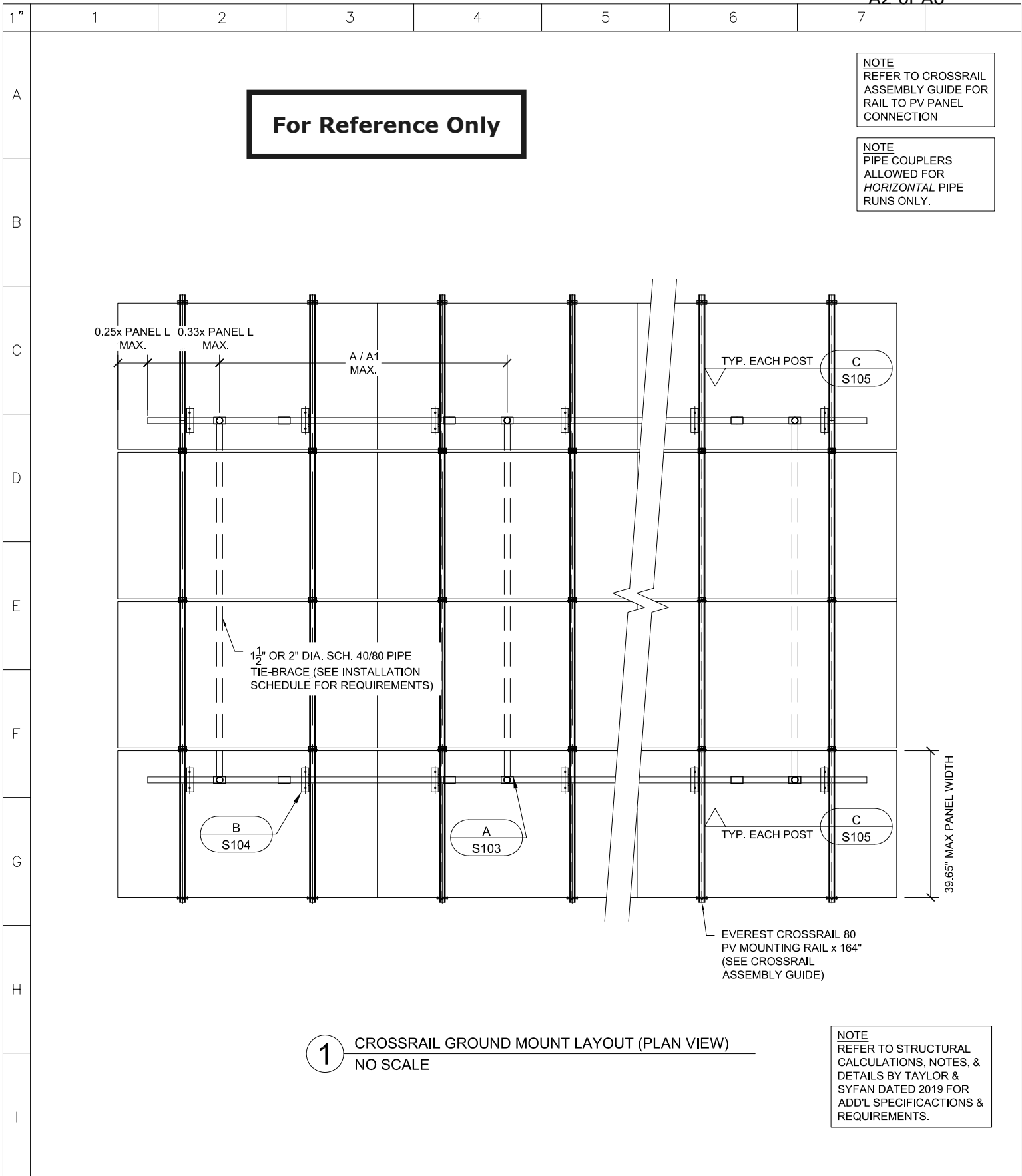


San Luis Obispo | Pasadena | www.taylorsyfan.com

Project: **19037 - Everest Ground Mount - ESS**

APPENDIX A

(Reference Documents from Everest Solar Systems)




For Reference Only

NOTE
REFER TO CROSSRAIL
ASSEMBLY GUIDE FOR
RAIL TO PV PANEL
CONNECTION

NOTE
PIPE COUPLERS
ALLOWED FOR
HORIZONTAL PIPE
RUNS ONLY.

1 CROSSRAIL GROUND MOUNT LAYOUT (PLAN VIEW)
NO SCALE

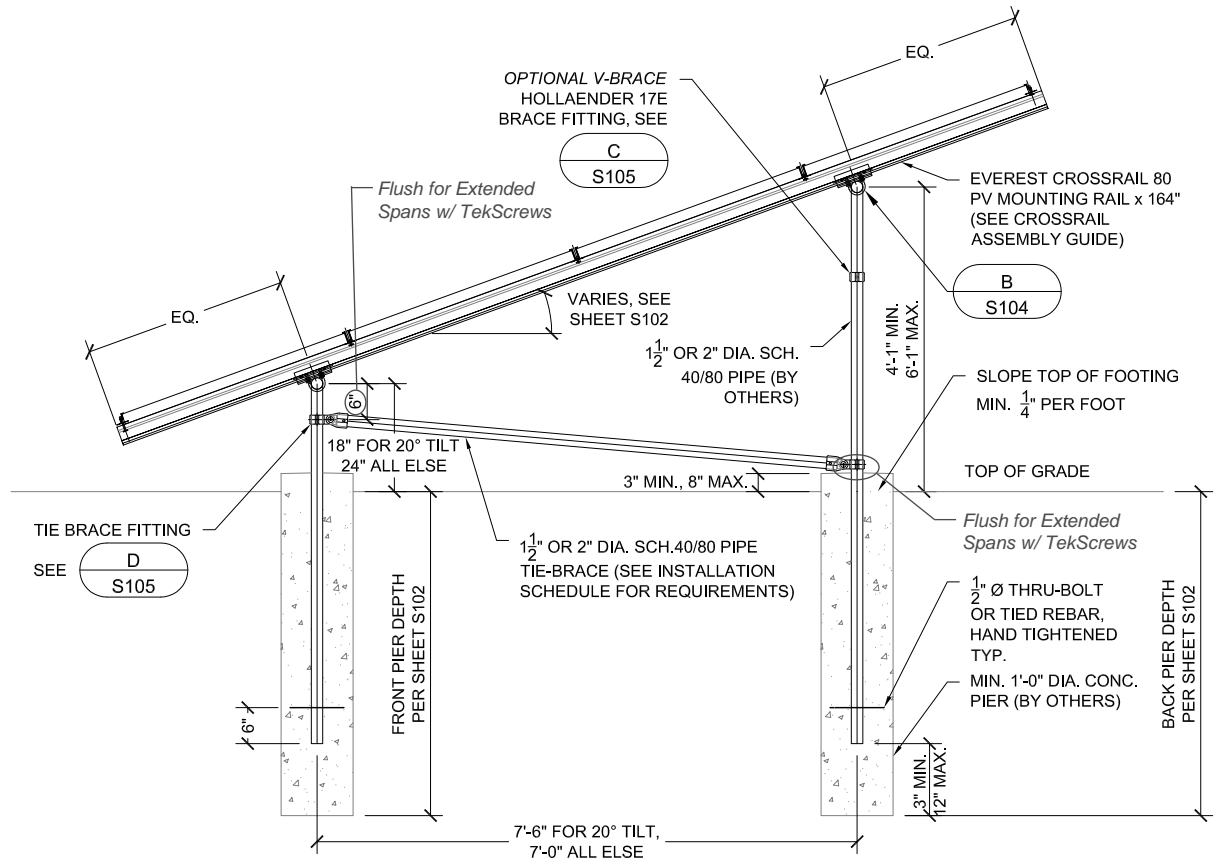
NOTE
REFER TO STRUCTURAL
CALCULATIONS, NOTES, &
DETAILS BY TAYLOR &
SYFAN DATED 2019 FOR
ADD'L SPECIFICATIONS &
REQUIREMENTS.

TITLE			Everest Solar Systems, LLC 3809 Ocean Ranch Blvd. Suite 111 Oceanside, CA 92056		DATA SHEET:		S100
					CROSSRAIL GROUND MOUNT PLAN		
Created	PAC	20160320	MATERIAL:	VARIES		K2 REFERENCE NUMBER:	N/A
Revision	6		FINISH:	VARIES		SCALE: NTS	SERIES:
This drawing is the sole property of Everest Solar Systems, LLC. It is protected by copyright and may only be copied, reproduced or distributed to a third party with explicit permission!							SHEET 1 OF 1

For Reference Only


NOTE
REFER TO CROSSRAIL
ASSEMBLY GUIDE FOR
RAIL TO PV PANEL
CONNECTION

NOTE
PIPE COUPLERS
ALLOWED FOR
HORIZONTAL PIPE
RUNS ONLY.



1 CROSSRAIL GROUND MOUNT LAYOUT (ELEVATION VIEW)
NO SCALE

NOTE
REFER TO STRUCTURAL
CALCULATIONS, NOTES, &
DETAILS BY TAYLOR &
SYFAN DATED 2019 FOR
ADD'L SPECIFICATIONS &
REQUIREMENTS.

TITLE	 Everest Solar Systems, LLC 3809 Ocean Ranch Blvd. Suite 111 Oceanside, CA 92056			DATA SHEET: CROSSRAIL GROUND MOUNT ELEVATION		S101 ALL DIMENSIONS FT. & INCHES	
	Created	PAC	20160320	MATERIAL:	VARIES		PART NUMBER:
Revision	6		FINISH:	VARIES	K2 REFERENCE NUMBER:	N/A	SHEET 1 OF 1
This drawing is the sole property of Everest Solar Systems, LLC. It is protected by copyright and may only be copied, reproduced or distributed to a third party with explicit permission!							

1"	1	2	3	4	5	6	7
----	---	---	---	---	---	---	---

For Reference Only

INSTALLATION DIMENSIONS											
G	Wind Speed*	Snow*	Tie-Brace	Pipe Data		A	A1	CONCRETE DEPTH (A)		CONCRETE DEPTH (A1)	
TILT ANGLE	ASCE 7-05 / 7-10 (mph)	Ground Snow Load	Required?	Pipe Size	Pipe Specification	Post Spacing	Post Spacing w/ V-Brace	Front	Back	Front	Back
20°	85 / 100	0 psf	Yes	1.5"	Sch. 40	7'-9"	11'-9"	2'-0"	4'-0"	2'-4"	5'-0"
			Yes		Sch. 80	8'-9"	13'-6"	2'-0"	4'-0"	2'-4"	5'-0"
			Yes	2"	Sch. 40	9'-9"	15'-0"	2'-0"	4'-0"	2'-3"	5'-0"
			Yes		Sch. 80	10'-9"	16'-0"	2'-0"	4'-3"	2'-9"	5'-3"
30°-35°	90 / 105	30 psf	Yes	1.5"	Sch. 40	5'-6"	9'-0"	2'-0"	4'-4"	3'-0"	6'-0"
			Yes		Sch. 80	6'-3"	10'-9"	3'-0"	5'-0"	3'-0"	6'-0"
			Yes	2"	Sch. 40	7'-0"	9'-0"	3'-0"	6'-6"	3'-4"	7'-6"
			Yes		Sch. 80	8'-0"	10'-6"	3'-0"	7'-0"	3'-6"	8'-0"
30°-35°	90 / 105	50 psf	Yes	1.5"	Sch. 40	4'-6"	6'-3"	3'-0"	6'-0"	3'-3"	6'-6"
			Yes		Sch. 80	5'-6"	7'-3"	3'-0"	6'-0"	3'-3"	7'-0"
			Yes	2"	Sch. 40	6'-0"	8'-9"	3'-0"	6'-0"	3'-4"	7'-4"
			Yes		Sch. 80	7'-0"	11'-0"	3'-0"	6'-6"	4'-8"	8'-3"

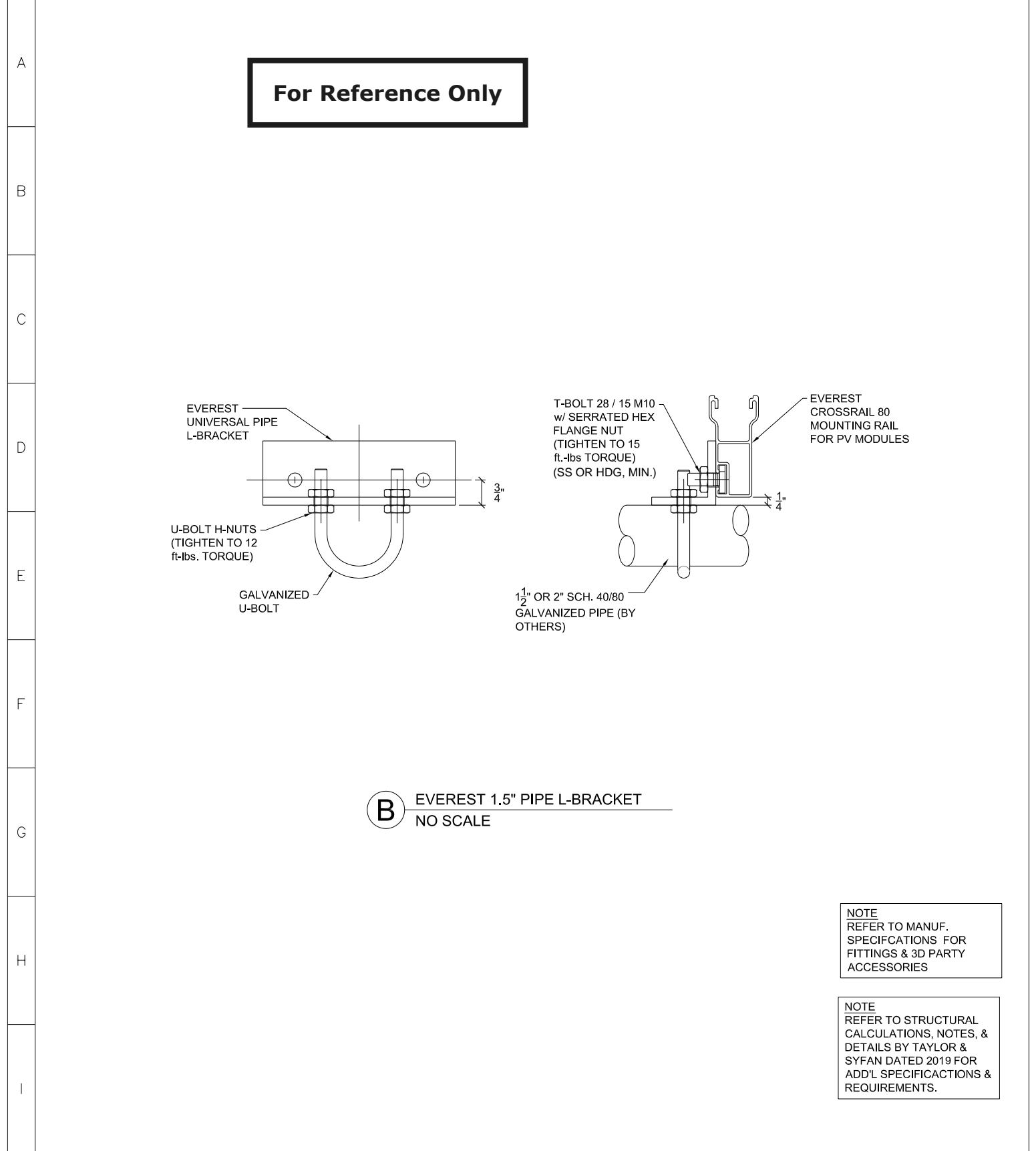
**For Reference Only,
Do Not Use**

* TO BE VERIFIED BY A REGISTERED PROFESSIONAL ENGINEER OR BUILDING OFFICIAL

NOTE
REFER TO STRUCTURAL CALCULATIONS, NOTES, & DETAILS BY TAYLOR & SYFAN DATED 2019 FOR ADD'L SPECIFICATIONS & REQUIREMENTS.

	Everest Solar Systems, LLC 3809 Ocean Ranch Blvd. Suite 111 Oceanside, CA 92056			DATA SHEET: CROSSRAIL GROUND MOUNT INSTALLATION SCHEDULE			S102	
	Created	PAC	20160320	MATERIAL:	VARIES			ALL DIMENSIONS FT. & INCHES
	Revision	6		FINISH:	VARIES			
	This drawing is the sole property of Everest Solar Systems, LLC. It is protected by copyright and may only be copied, reproduced or distributed to a third party with explicit permission!				SCALE:	NTS	SERIES:	


1"	1	2	3	4	5	6	7
----	---	---	---	---	---	---	---



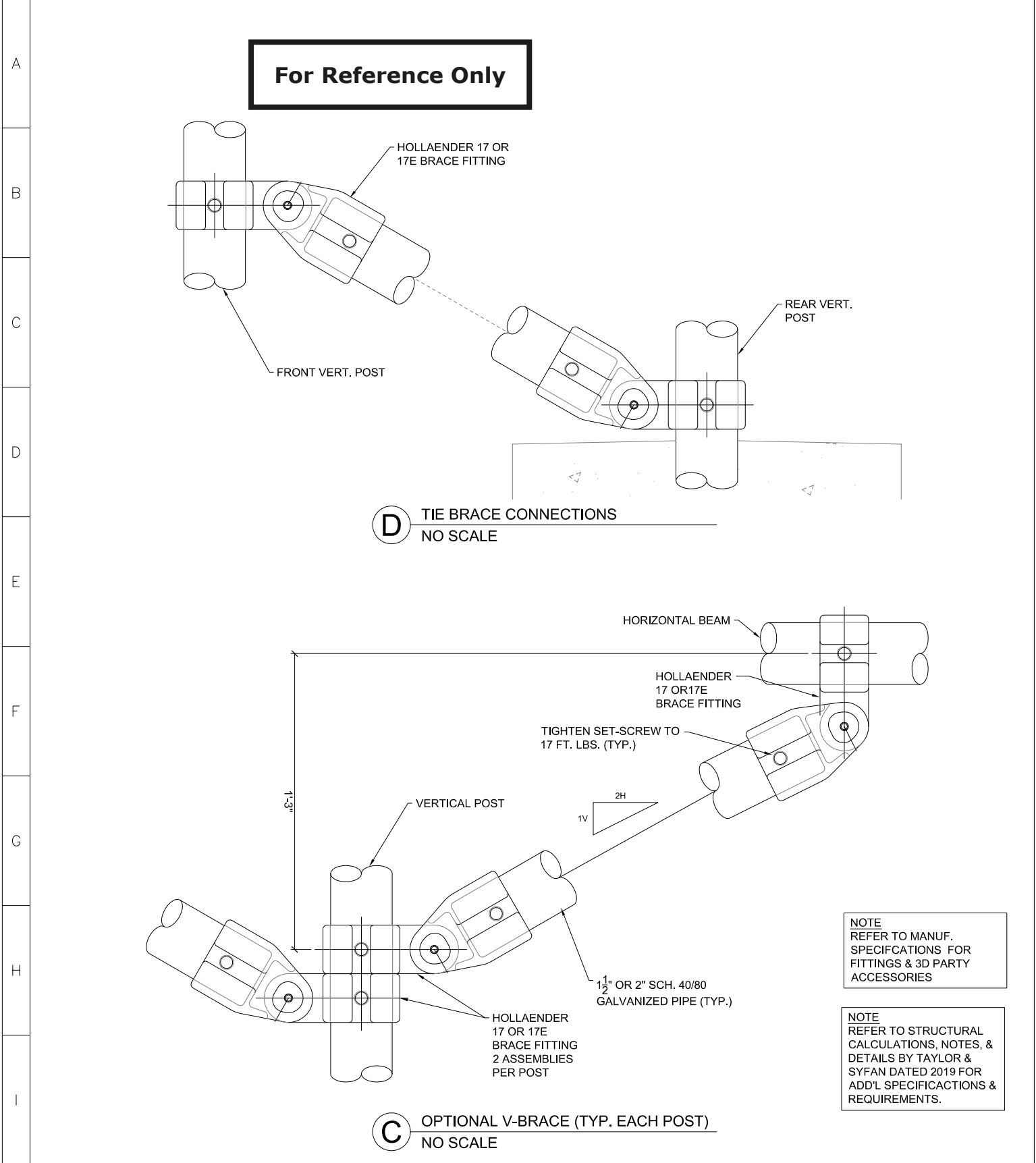
B EVEREST 1.5" PIPE L-BRACKET
NO SCALE


NOTE
REFER TO MANUF. SPECIFICATIONS FOR FITTINGS & 3D PARTY ACCESSORIES

NOTE
REFER TO STRUCTURAL CALCULATIONS, NOTES, & DETAILS BY TAYLOR & SYFAN DATED 2019 FOR ADD'L SPECIFICATIONS & REQUIREMENTS.

TITLE		Everest Solar Systems, LLC 3809 Ocean Ranch Blvd. Suite 111 Oceanside, CA 92056	DATA SHEET: CROSSRAIL GROUND MOUNT PARTS		S104	
	Created	PAC	20160320	MATERIAL: VARIES	PART NUMBER: N/A	ALL DIMENSIONS FT. & INCHES
	Revision	6		FINISH: VARIES	K2 REFERENCE NUMBER: N/A	
				SCALE: NTS	SERIES: PARTS	SHEET 1 OF 1
This drawing is the sole property of Everest Solar Systems, LLC. It is protected by copyright and may only be copied, reproduced or distributed to a third party with explicit permission!						

1"	1	2	3	4	5	6	7
----	---	---	---	---	---	---	---



TITLE		Everest Solar Systems, LLC 3809 Ocean Ranch Blvd. Suite 111 Oceanside, CA 92056	DATA SHEET: CROSSRAIL GROUND MOUNT PARTS		S105			
	Created	PAC	20160320	MATERIAL:	VARIES	PART NUMBER:	N/A	ALL DIMENSIONS FT. & INCHES
	Revision	6		FINISH:	VARIES	K2 REFERENCE NUMBER:	N/A	
This drawing is the sole property of Everest Solar Systems, LLC. It is protected by copyright and may only be copied, reproduced or distributed to a third party with explicit permission!			SCALE:	NTS	SERIES:	PARTS	SHEET 1 OF 1	

