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STRUCTURAL CALCULATIONS, NOTES, & SPECIFICATIONS

PREPARED FOR:

PROJECT TYPE:

Everest Crossrail Solar Ground Mount – New Mexico

DESIGNER:

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

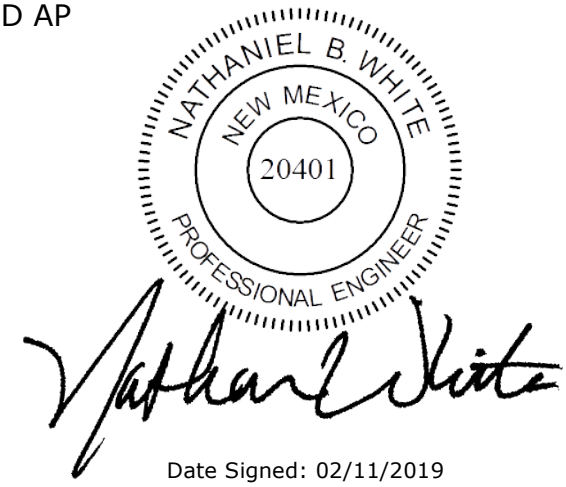
PROJECT ENGINEER:

Garrett Parkinson

PROJECT MANAGER:

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

T&S Job No. 19058



Date Signed: 02/11/2019

Valid Through December 31, 2019
Subject to Annual Review & Reissuance

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

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Job No.: *19058*
Job Name: *NM Solar Ground Mount - Everest*

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Summary Letter

Date: February 11, 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 – New Mexico

T&S Job No.: 19058

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 11, 2019. Taylor & Syfan has been contracted by SnapNrack, in the State of California, to provide structural engineering design and analysis of the SnapNrack 200 mounting support system for solar PV panels for a variety of conditions. Taylor & Syfan does not transact business in the State of New Mexico. The PE stamp and signature on the cover page of this document indicates that the structural design and analysis conforms to the minimum standards of the 2015 IBC, which is the adopted and governing code for the State of New Mexico. The 2015 IBC references the 2010 *Minimum Design Loads for Buildings and Other Structures*, including Supplement No. 1 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.

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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 30 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 60 psf.

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- 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 is 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)

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- 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 New Mexico as outlined in the IBC Figure 1613.5.

The ground snow load in these calculations assumes a value of 60 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.

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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

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Project: **19058 – Everest Ground Mount - ESS**

INSTALLATION DIMENSIONS

G	Wind Speed	Snow	Tie-Brace	Pipe Data		A	*Concrete Depth (A)*	
TILT ANGLE	ASCE 7-10 (mph)	Ground Snow Load	Required?	Pipe Size	Pipe Specification	Post Spacing	*Front*	*Back*
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	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”
30°	105	40 psf	Yes	1.5”	Sch. 40	5'-3”	2'-0”	4'-3”
			Yes		Sch. 80	6'-3”	2'-0”	4'-6”
			Yes	2”	Sch. 40	7'-6”	2'-3”	5'-0”
			Yes		Sch. 80	8'-9”	2'-6”	5'-6”
30°	105	60 psf	Yes	1.5”	Sch. 40	5'-3”	2'-0”	4'-3”
			Yes		Sch. 80	5'-9”	2'-3”	4'-6”
			Yes	2”	Sch. 40	7'-0”	2'-6”	5'-0”
			Yes		Sch. 80	8'-0”	3'-0”	5'-0”

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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.

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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 of 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.

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 02/11/2019.

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.

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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.

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Project: **19058 - Everest Ground Mount - ESS**

WIND & SNOW LOADS

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2015 IBC Solar Panel Wind Analysis - Version 1.1

Project: **19058 – 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, 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 per ACSC 27.4-3)
p_L = Leeward Design Pressure (psf) (p = q*G*C_N per ACSC 27.4-3)
G = Guest 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)

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2015 IBC Solar Panel Wind Analysis - Version 1.1

Project: **19058 – Everest GM Solar – ESS**

SNOW LOAD CALCULATIONS PER ASCE 7-10 CH. 7

Ground Snow Load, Pg

LC1 = *0* *psf*
LC2 = *20* *psf*
LC3 = *40* *psf*
LC4 = *60* *psf*

Flat Roof Snow Load, Pf

Pf = 0.7 Ce Ct I Pg *Eq. 7-1*

	20 deg.	*30 deg.*	*35 deg.*	
Ce	0.90	0.90	0.90	*Table 7-2*
Ct	1.20	1.20	1.20	*Table 7-3*
I	0.80	0.80	0.80	*Table 7-4*

Sloped Roof Snow Load, Ps

Ps = Cs Pf *Eq. 7-2*

	20 deg.	*30 deg.*	*35 deg.*	
Cs	0.92	0.73	0.60	*Figure 7-2c*

Panel Data	
Rail Trib. Width	
2.75	**ft**

PV Snow Load (psf)			
pg (psf)	Tilt		
	20 deg.	*30 deg.*	*35 deg.*
0	0.00	0.00	0.00
20	15.90	12.61	10.37
40	31.80	25.23	20.74
60	47.69	37.84	31.10

PV Snow Load (plf)			
pg (psf)	Tilt		
	20 deg.	*30 deg.*	*35 deg.*
0	0.00	0.00	0.00
20	43.72	34.69	28.51
40	87.44	69.38	57.02
60	131.16	104.07	85.54

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Project: **19058 - Everest Ground Mount - ESS**

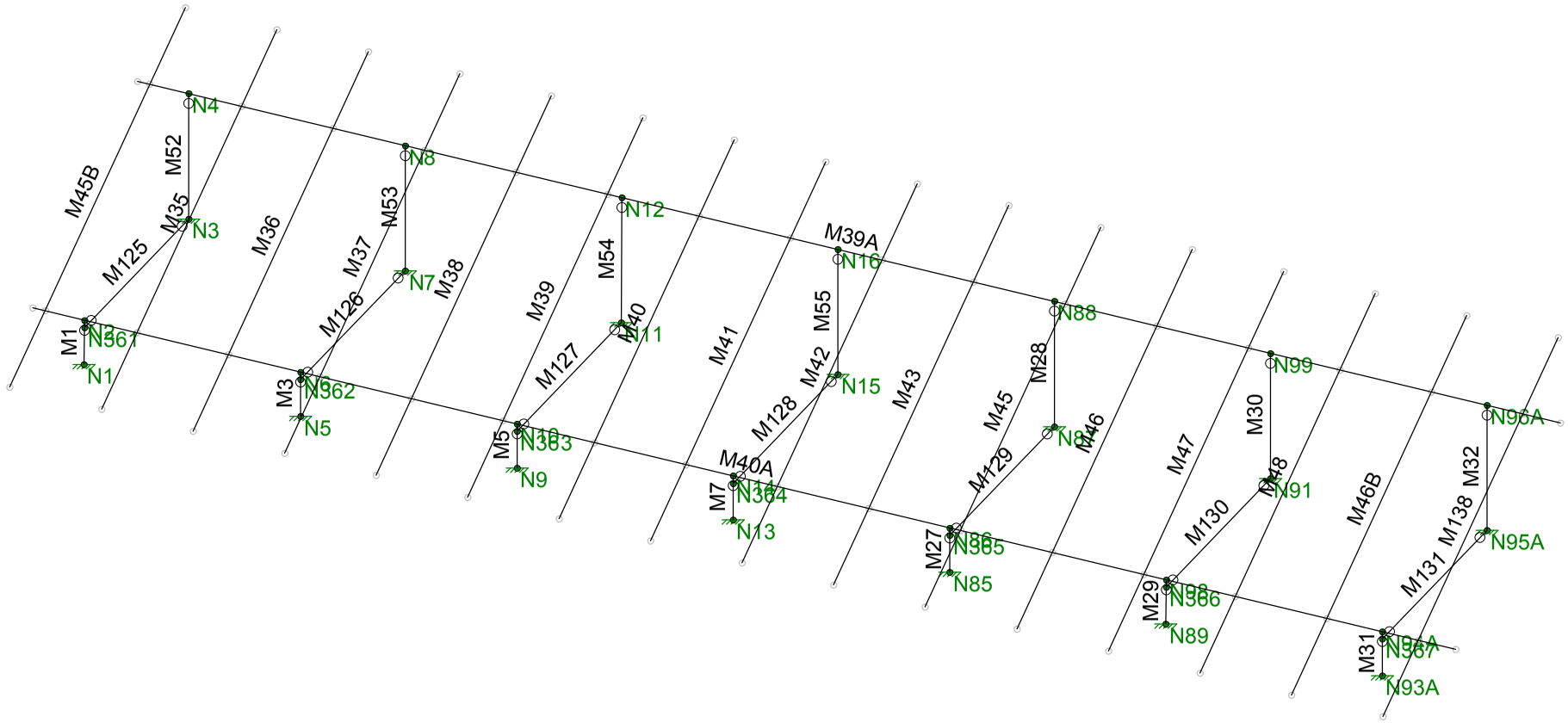
EXAMPLE RISA AND FOUNDATION ANALYSIS

Parameters for Example

Tilt: 20 Degrees
Wind Speed: 105 MPH (3-sec. Gust)
Exposure Category "C"

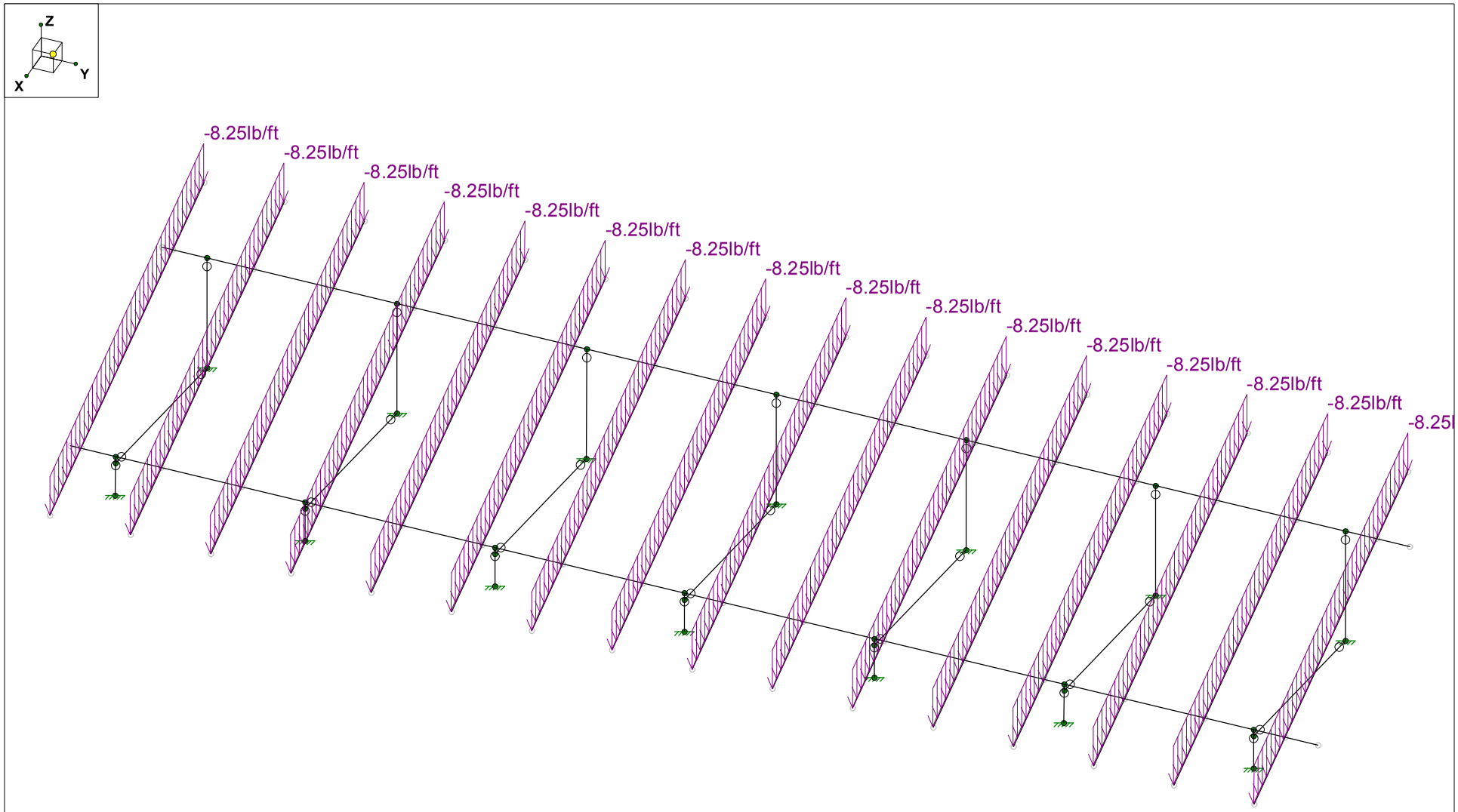
Snow Load: 20 psf

1.5"Ø Sch. 40 Pipe



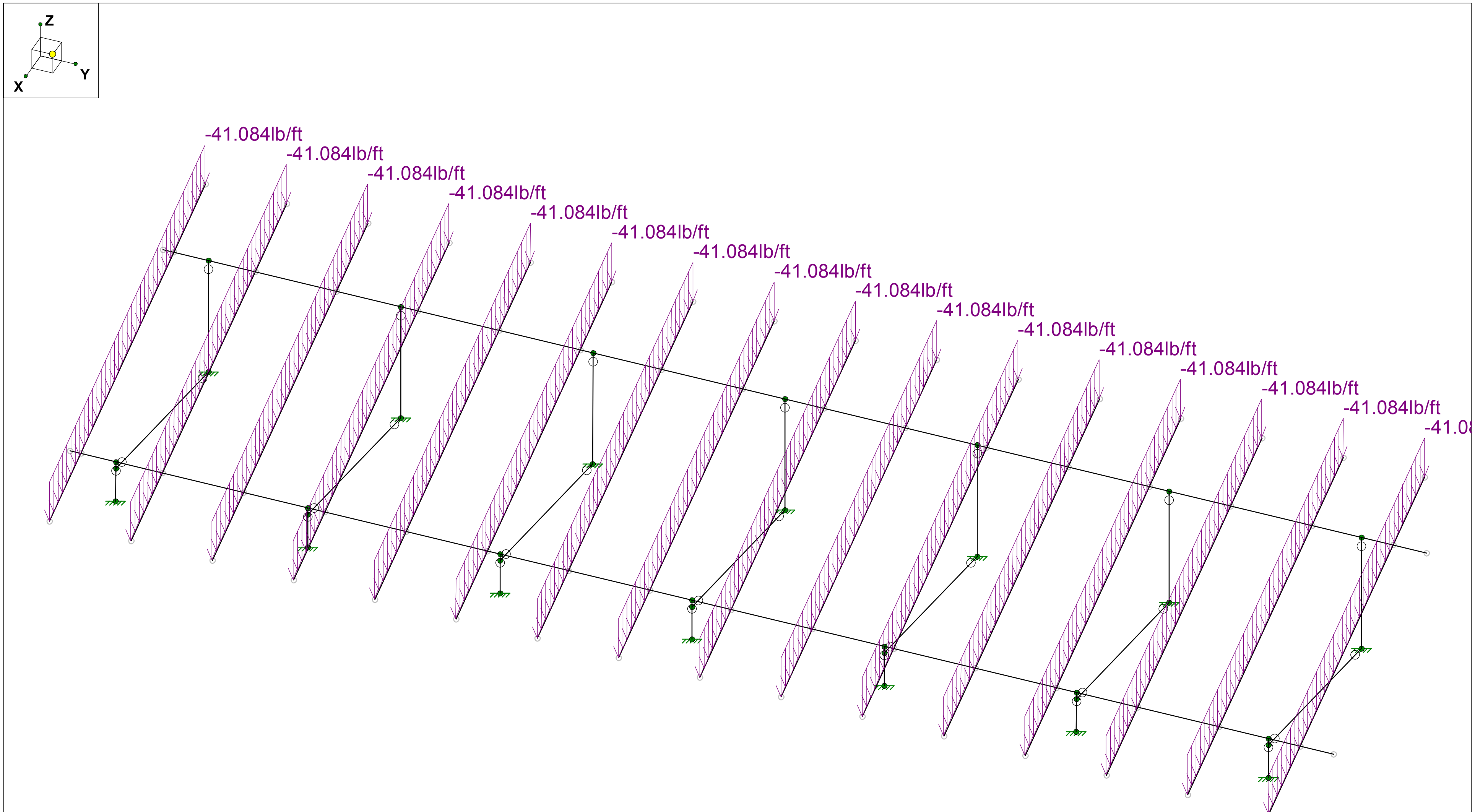
Everest Solar		SK - 1
GMP	Everest Ground Mount	
19058	Member & Node Labels	20deg_105MPH_20SL - PIPE_1.5.r3d

S16



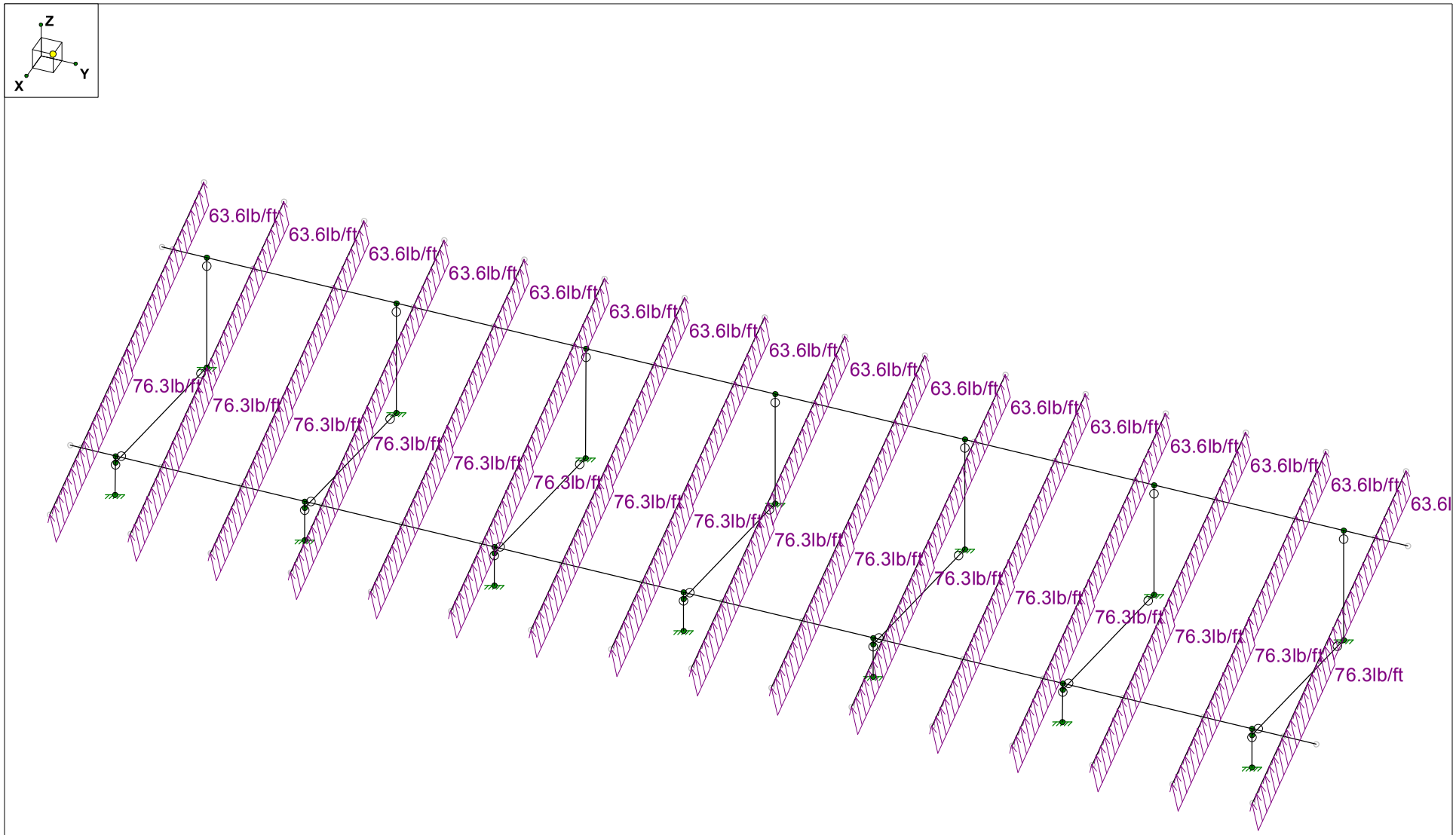
Loads: BLC 1, Dead Load

Everest Solar		SK - 2
GMP	Everest Ground Mount	
19058	Applied Dead Load	20deg_105MPH_20SL - PIPE_1.5.r3d



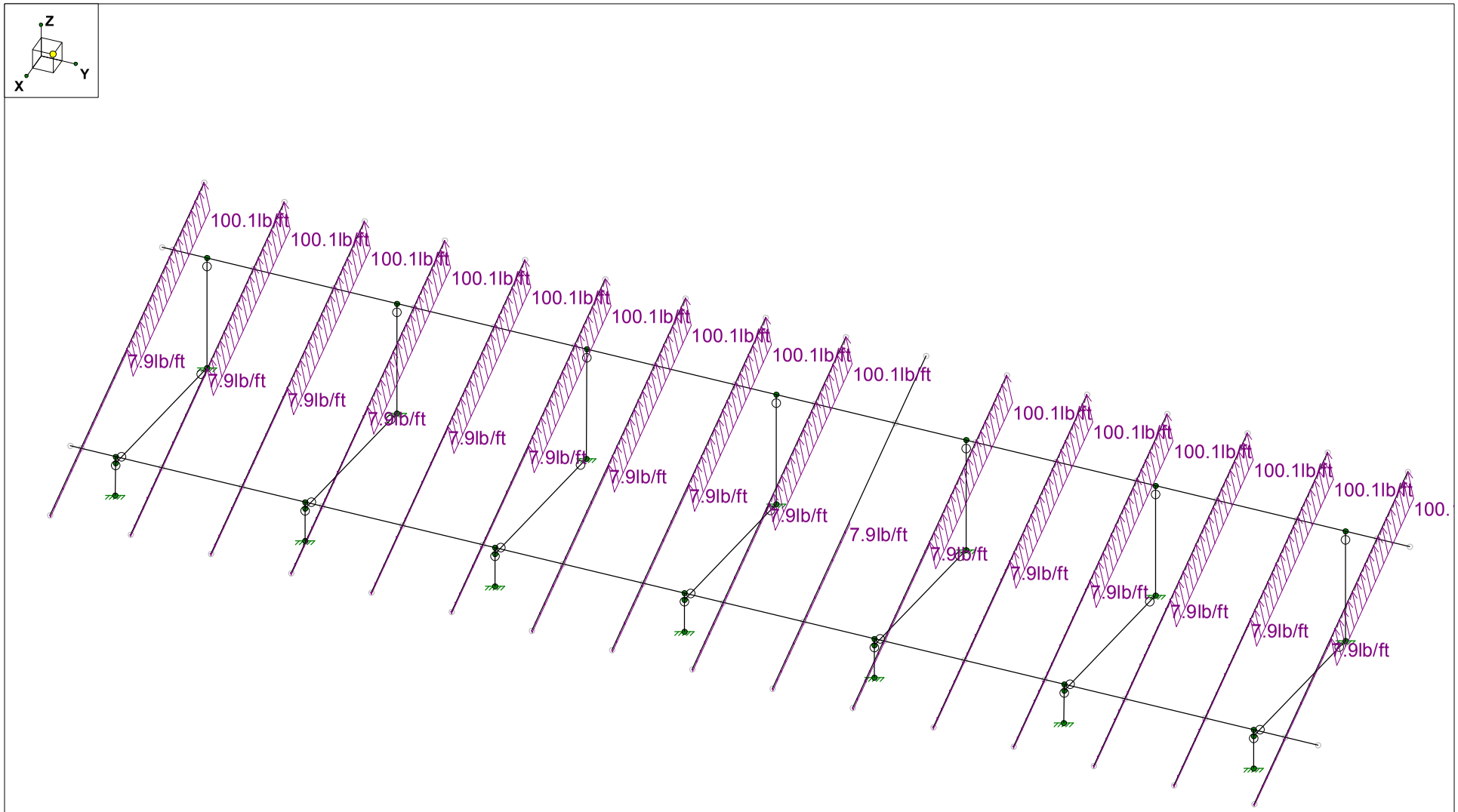
Loads: BLC 2, Snow Load

Everest Solar	Everest Ground Mount Applied Snow Load	SK - 3
GMP		
19058		20deg_105MPH_20SL - PIPE_1.5.r3d



Loads: BLC 3, North Upward

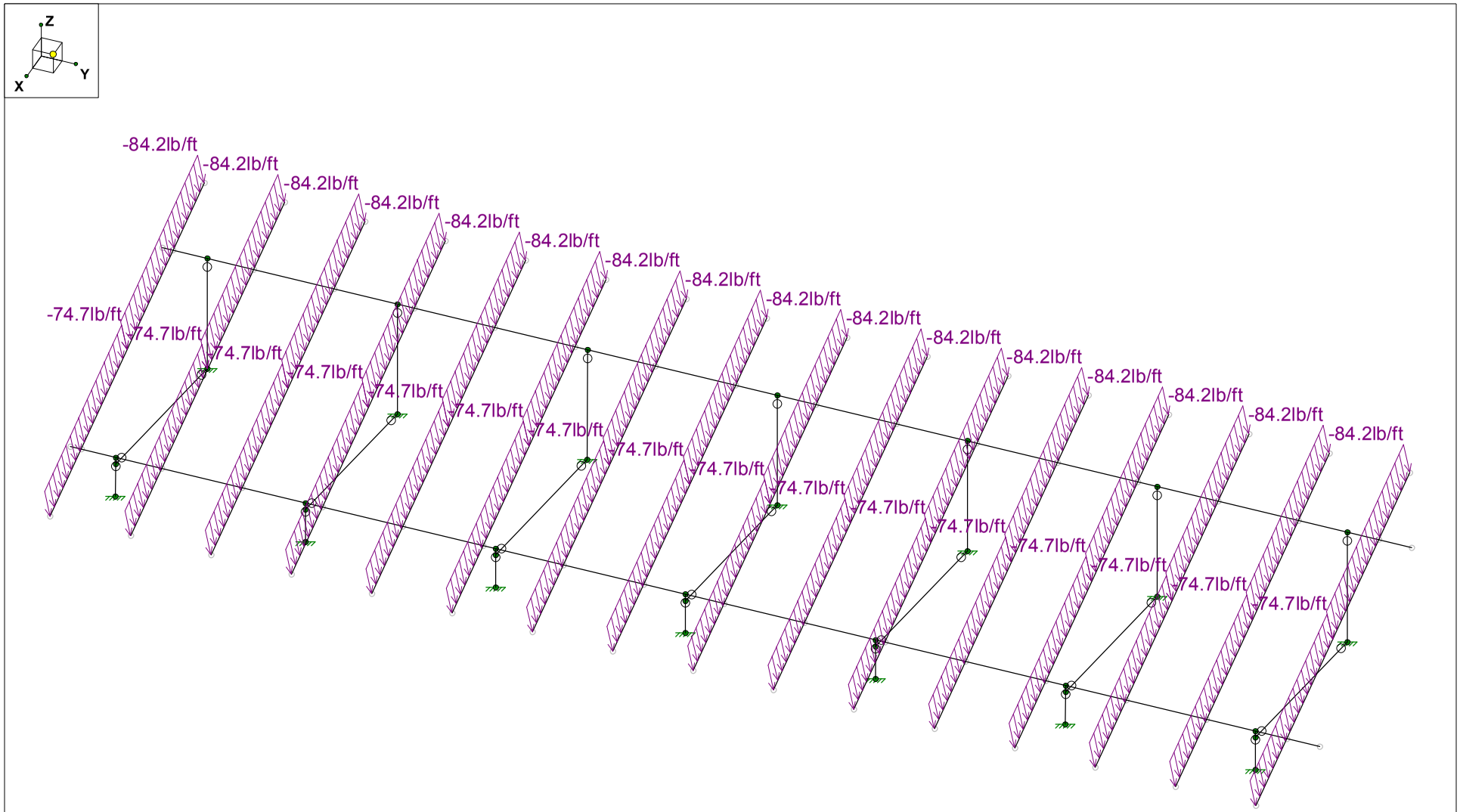
Everest Solar	Everest Ground Mount	SK - 4
GMP		
19058	Wind Load - North Upward Case	20deg_105MPH_20SL - PIPE_1.5.r3d



Loads: BLC 4, North Downward

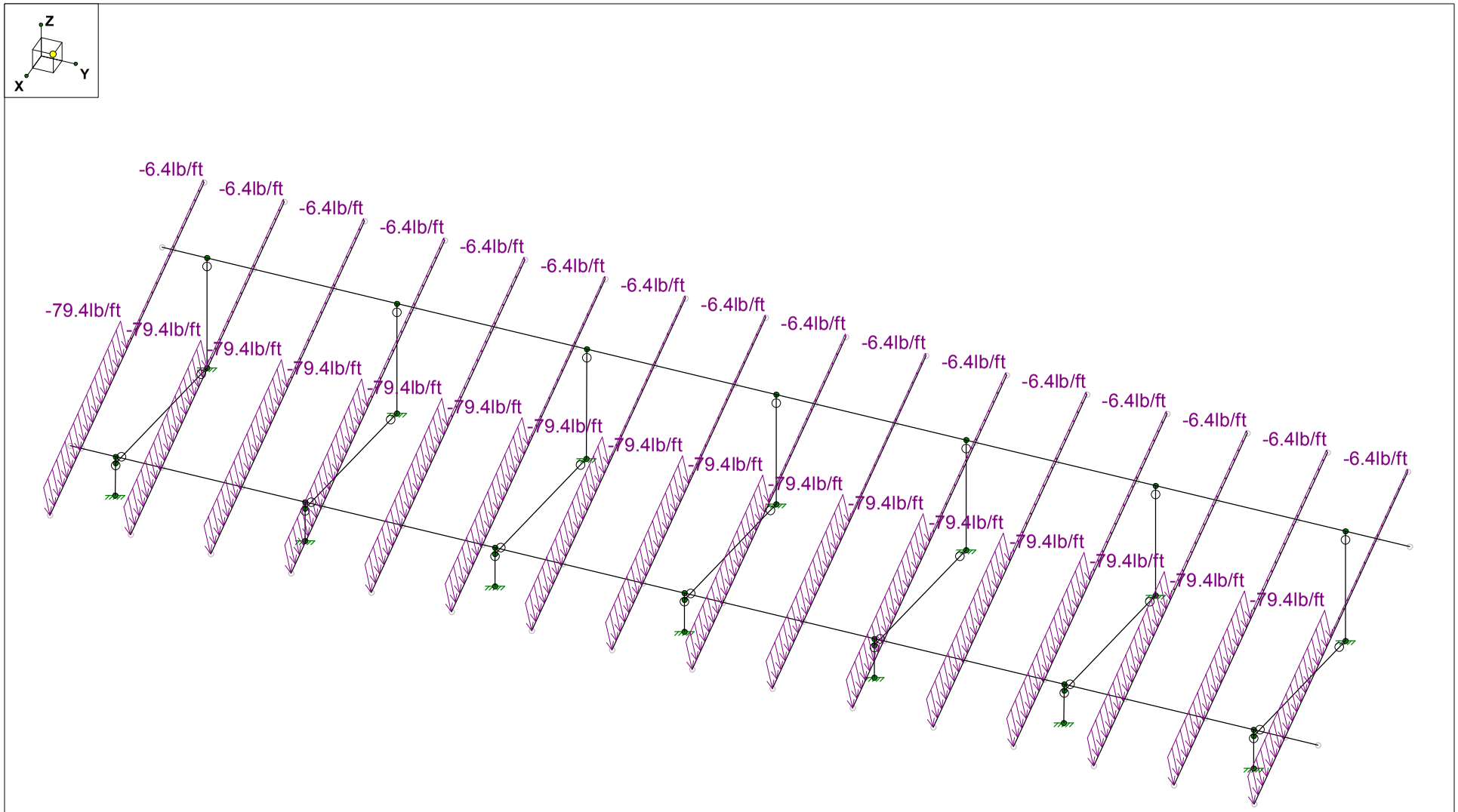
Everest Solar	Everest Ground Mount	SK - 5
GMP		
19058	Wind Load - North Downward Case	20deg_105MPH_20SL - PIPE_1.5.r3d

S20



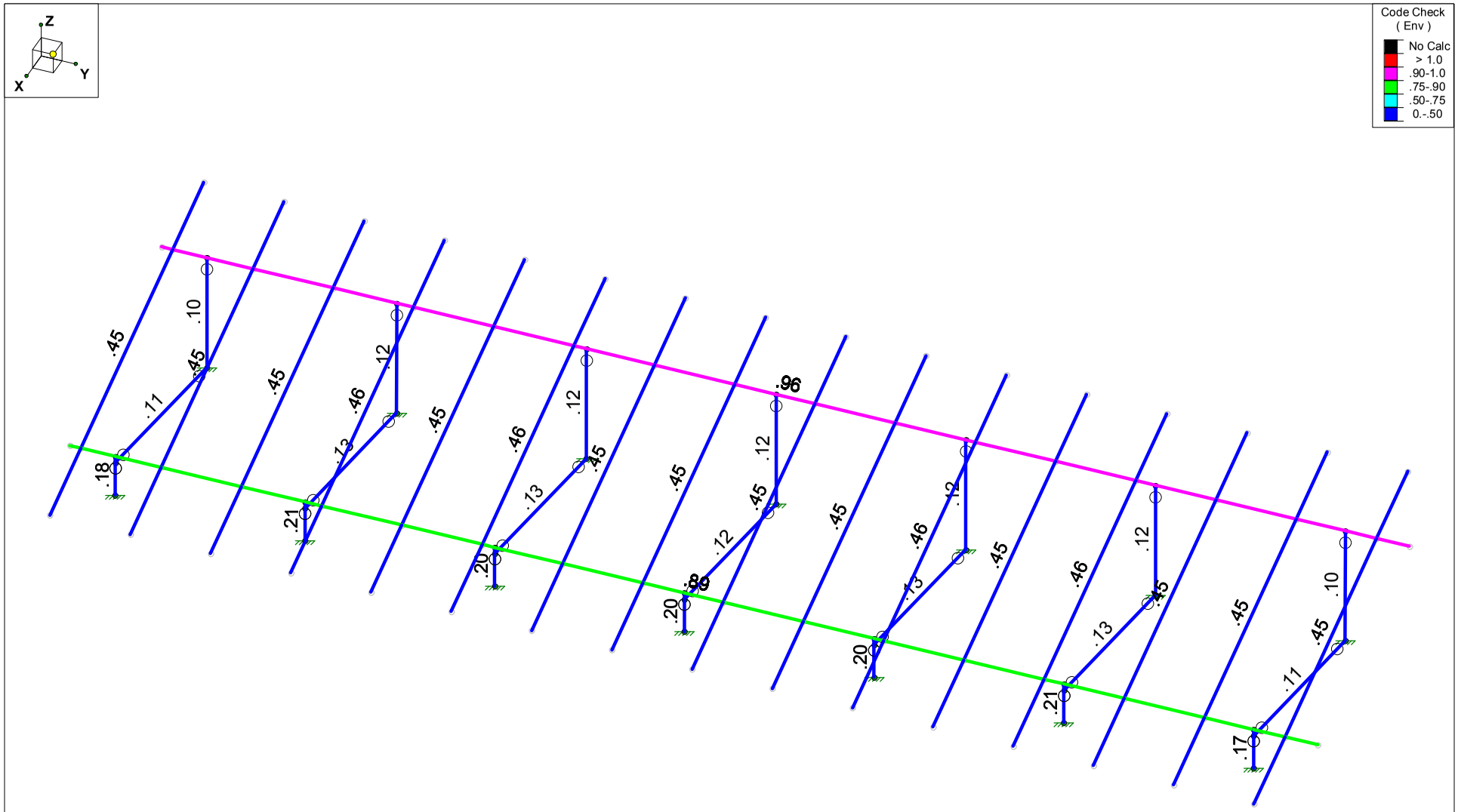
Loads: BLC 5, South Upward

Everest Solar	Everest Ground Mount	SK - 6
GMP		
19058	Wind Load - South Upward Case	20deg_105MPH_20SL - PIPE_1.5.r3d



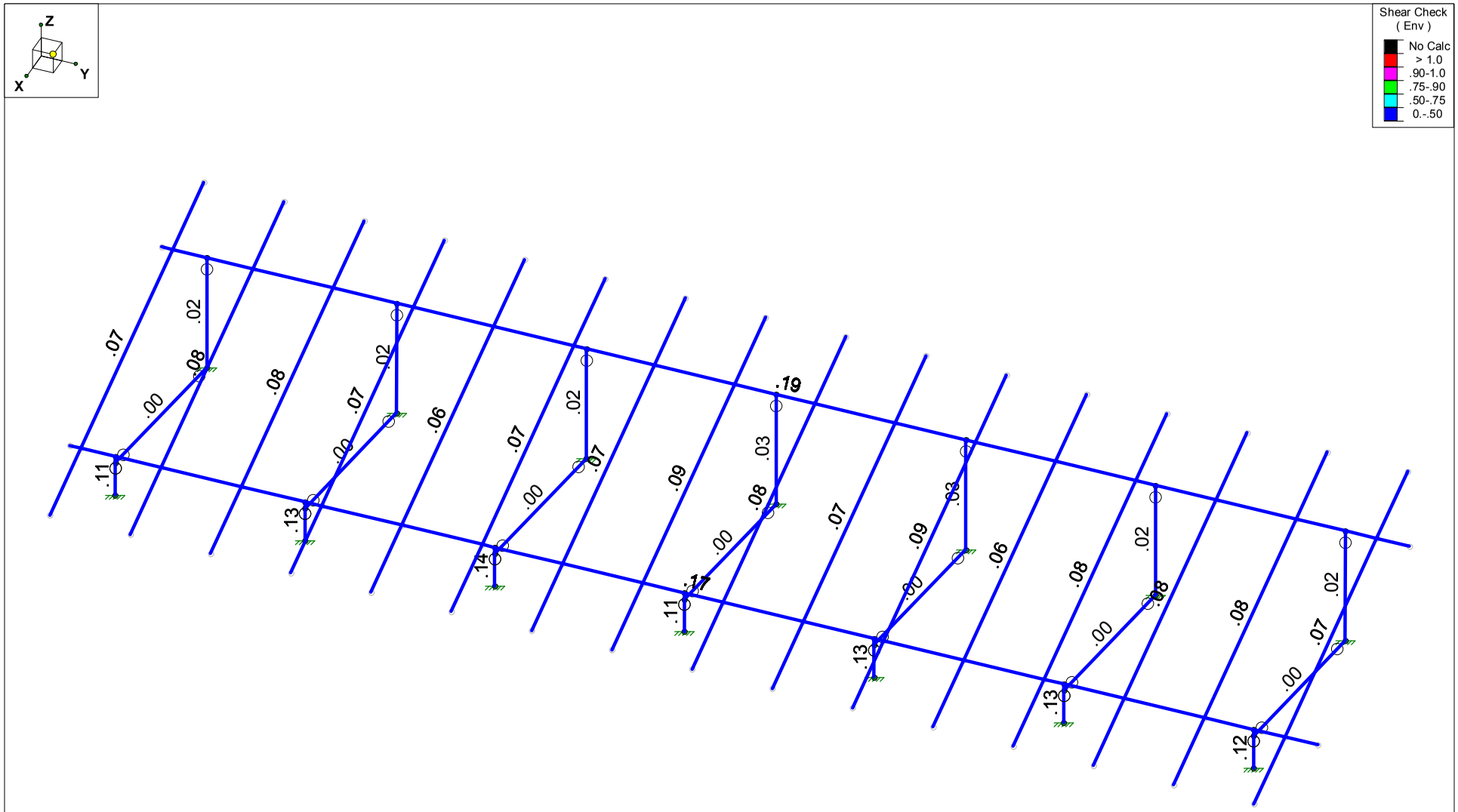
Loads: BLC 6, South Downward

Everest Solar		SK - 7
GMP	Everest Ground Mount	
19058	Wind Load - South Downward Case	20deg_105MPH_20SL - PIPE_1.5.r3d



Member Code Checks Displayed (Enveloped)
Envelope Only Solution

Everest Solar	Everest Ground Mount	SK - 8
GMP		
19058	Axial & Bending Unity Code Check	20deg_105MPH_20SL - PIPE_1.5.r3d



Member Shear Checks Displayed (Enveloped)
Envelope Only Solution

Everest Solar	Everest Ground Mount	SK - 9
GMP		
19058	Shear Unity Code Check	20deg_105MPH_20SL - PIPE_1.5.r3d

Company : Everest Solar
Designer : GMP
Job Number : 19058
Model Name : Everest Ground Mount

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 Rul...	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			16		
2	Snow Load	SL						16		
3	North Upward	WL						32		
4	North Downward	WL						32		
5	South Upward	WL						32		
6	South Downward	WL						32		
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...
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																

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...
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	100.355	6	.45	18	994.897	20	.229	9	26.766	9	10.631	9
2		min	-114.742	14	-.341	9	-341.412	9	-.367	16	-30.786	14	-15.878	18
3	N3	max	568.982	17	.116	12	1237.729	16	.253	9	30.139	14	9.791	13
4		min	-502.3	6	-.004	17	-777.662	13	-.677	20	-31.253	10	-9.104	14
5	N5	max	116.995	9	.452	14	1158.351	20	.379	13	31.235	9	15.003	13
6		min	-135.174	14	-.519	13	-393.661	9	-.318	14	-36.259	14	-13.655	14
7	N7	max	665.69	14	.116	12	1449.434	16	.228	9	16.464	14	9.358	17
8		min	-582.231	9	-.003	17	-897.1	13	-.584	16	-15.789	13	-11.686	10
9	N9	max	116.204	9	.23	9	1125.961	20	.131	16	31.014	9	15.269	14
10		min	-134.219	14	-.326	16	-379.266	9	-.074	9	-35.987	14	-12.964	13
11	N11	max	660.504	14	.118	12	1413.545	16	.374	17	12.663	14	11.827	10
12		min	-577.534	9	0	17	-923.176	13	-.659	12	-11.962	13	-6.884	17
13	N13	max	112.97	6	.073	13	1144.832	20	.088	12	30.117	9	1.292	9
14		min	-128.722	17	-.071	8	-394.755	9	-.037	17	-34.55	14	-6.392	10
15	N15	max	636.957	17	.114	12	1415.052	16	.022	9	28.738	17	.775	17
16		min	-564.644	6	.002	17	-706.512	13	-.615	12	-24.673	10	-17.492	10
17	N85	max	116.587	9	.278	14	1123.152	20	.304	10	31.113	9	20.189	13
18		min	-134.831	14	-.547	13	-376.759	9	-.102	17	-36.146	14	-12.635	14
19	N87	max	663.17	14	.112	12	1412.145	16	.23	13	10.655	14	17.715	13
20		min	-579.026	9	.002	9	-625.353	9	-.591	16	-8.633	9	-5.003	6
21	N89	max	117.027	9	.467	13	1167.403	20	.366	16	31.249	9	11.676	14
22		min	-135.076	14	-.415	16	-399.934	9	-.207	13	-36.24	14	-19.376	13
23	N91	max	665.616	14	.119	12	1459.436	16	.277	17	19.046	14	8.004	6
24		min	-582.918	9	0	9	-956.842	13	-.838	12	-19.45	13	-10.307	17
25	N93A	max	98.296	6	.416	9	972.581	20	.553	16	26.214	9	21.655	18
26		min	-112.399	14	-.729	20	-329.846	9	-.234	9	-30.156	14	-15.048	9
27	N95A	max	557.285	17	.12	12	1209.554	16	.455	18	28.744	14	14.352	14
28		min	-491.808	6	0	9	-749.078	13	-.408	8	-29.447	10	-12.62	13
29	Totals:	max	3521.643	17	0	9	16702.826	16						
30		min	-3100.553	9	0	12	-6844.922	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	.175	1.25	14	.114	1.25		14	15046.072	15697.605	735.279	735.279	2...	H1-1b
2	M3	PIPE_1.5	.206	1.25	14	.134	1.25		14	15046.072	15697.605	735.279	735.279	2...	H1-1b
3	M5	PIPE_1.5	.204	1.25	14	.135	1.25		14	15046.072	15697.605	735.279	735.279	1...	H1-1b
4	M7	PIPE_1.5	.197	1.25	14	.110	1.25		17	15046.072	15697.605	735.279	735.279	1...	H1-1b
5	M52	PIPE_1.5	.104	0	16	.017	0		13	11156.947	15697.605	735.279	735.279	1...	H1-1b*

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	.122	0	16	.019	0		10	11156.947	15697.605	735.279	735.279	1....	H1-1b*
7	M54	PIPE_1.5	.118	0	16	.019	0		10	11156.947	15697.605	735.279	735.279	1....	H1-1b*
8	M55	PIPE_1.5	.119	0	16	.028	0		10	11156.947	15697.605	735.279	735.279	1....	H1-1b*
9	M35	PIPE_1.5	.454	6.75	16	.084	10.688		20	4778.659	15697.605	735.279	735.279	1	H1-1b
10	M36	PIPE_1.5	.451	6.75	16	.079	10.688		20	4778.659	15697.605	735.279	735.279	1	H1-1b
11	M37	PIPE_1.5	.457	6.75	16	.074	10.688		20	4778.659	15697.605	735.279	735.279	1	H1-1b
12	M38	PIPE_1.5	.454	6.75	16	.064	2.813		16	4778.659	15697.605	735.279	735.279	1	H1-1b
13	M39	PIPE_1.5	.457	6.75	16	.071	10.688		20	4778.659	15697.605	735.279	735.279	1	H1-1b
14	M40	PIPE_1.5	.451	6.75	16	.074	2.813		13	4778.659	15697.605	735.279	735.279	1	H1-1b
15	M41	PIPE_1.5	.454	6.75	16	.086	2.813		13	4778.659	15697.605	735.279	735.279	1	H1-1b
16	M42	PIPE_1.5	.455	6.75	16	.083	10.688		20	4778.659	15697.605	735.279	735.279	1	H1-1b
17	M43	PIPE_1.5	.451	6.75	16	.072	10.688		20	4778.659	15697.605	735.279	735.279	1	H1-1b
18	M45	PIPE_1.5	.458	6.75	16	.090	2.813		13	4778.659	15697.605	735.279	735.279	1	H1-1b
19	M46	PIPE_1.5	.454	6.75	16	.065	2.813		16	4778.659	15697.605	735.279	735.279	1	H1-1b
20	M47	PIPE_1.5	.457	6.75	16	.078	2.813		13	4778.659	15697.605	735.279	735.279	1	H1-1b
21	M48	PIPE_1.5	.451	6.75	16	.081	10.688		20	4778.659	15697.605	735.279	735.279	1	H1-1b
22	M39A	PIPE_1.5	.956	8.016	16	.189	27.609		16	7966.511	15697.605	735.279	735.279	1	H1-1b
23	M40A	PIPE_1.5	.888	8.016	16	.171	27.609		20	7966.511	15697.605	735.279	735.279	1	H1-1b
24	M45B	PIPE_1.5	.454	6.75	16	.070	10.688		20	4778.659	15697.605	735.279	735.279	1	H1-1b
25	M46B	PIPE_1.5	.453	6.75	16	.083	10.688		20	4778.659	15697.605	735.279	735.279	1	H1-1b
26	M27	PIPE_1.5	.205	1.25	14	.132	1.25		14	15046.072	15697.605	735.279	735.279	1.8	H1-1b
27	M28	PIPE_1.5	.118	0	16	.028	0		13	11156.947	15697.605	735.279	735.279	1....	H1-1b*
28	M29	PIPE_1.5	.206	1.25	14	.130	1.25		14	15046.072	15697.605	735.279	735.279	2....	H1-1b
29	M30	PIPE_1.5	.123	0	16	.017	0		17	11156.947	15697.605	735.279	735.279	1....	H1-1b*
30	M31	PIPE_1.5	.172	1.25	14	.119	1.25		14	15046.072	15697.605	735.279	735.279	2....	H1-1b
31	M32	PIPE_1.5	.101	0	16	.024	0		14	11156.947	15697.605	735.279	735.279	1....	H1-1b*
32	M125	PIPE_1.5	.110	7.677	14	.003	7.677		18	5188.632	15697.605	735.279	735.279	1....	H1-1b*
33	M126	PIPE_1.5	.130	7.677	14	.003	7.677		10	5188.632	15697.605	735.279	735.279	1....	H1-1b*
34	M127	PIPE_1.5	.129	7.677	14	.003	7.677		14	5188.632	15697.605	735.279	735.279	1....	H1-1b*
35	M128	PIPE_1.5	.124	7.677	17	.002	7.677		10	5188.632	15697.605	735.279	735.279	1....	H1-1b*
36	M129	PIPE_1.5	.129	7.677	14	.003	7.677		10	5188.632	15697.605	735.279	735.279	1....	H1-1b*
37	M130	PIPE_1.5	.130	7.677	14	.003	7.677		10	5188.632	15697.605	735.279	735.279	1....	H1-1b*
38	M131	PIPE_1.5	.108	7.677	14	.003	7.677		20	5188.632	15697.605	735.279	735.279	1....	H1-1b*
39	M138	PIPE_1.5	.454	6.75	16	.065	10.688		20	4778.659	15697.605	735.279	735.279	1	H1-1b

TAYLOR & SYFAN CONSULTING ENGINEERS, INC
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2009 IBC Solar Panel Wind Analysis - Version 1.1

Project: **19058 - Everest Ground Mount - ESS**

Maximum Envelope Solutions from RISA

	Axial	Uplift	Moment (y)	Shear (x)
Front	**1,167 lb**	**-400 lb**	**-36 ft-lb**	**-135 lb**
Back	**1,459 lb**	**-957 lb**	**-29 ft-lb**	**666 lb**

	Joint		X		Y		Z		Mx		My		Mz
	N1	max	100.36	6	0.45	18	994.9	20	0.23	9	26.77	9	10.63
		min	-114.74	14	-0.34	9	-341.41	9	-0.37	16	-30.79	14	-15.88
B	N3	max	568.98	17	0.12	12	1237.73	16	0.25	9	30.14	14	9.79
		min	-502.3	6	0	17	-777.66	13	-0.68	20	-31.25	10	-9.1
	N5	max	117	9	0.45	14	1158.35	20	0.38	13	31.24	9	15
		min	-135.17	14	-0.52	13	-393.66	9	-0.32	14	-36.26	14	-13.66
B	N7	max	665.69	14	0.12	12	1449.43	16	0.23	9	16.46	14	9.36
		min	-582.23	9	0	17	-897.1	13	-0.58	16	-15.79	13	-11.69
	N9	max	116.2	9	0.23	9	1125.96	20	0.13	16	31.01	9	15.27
		min	-134.22	14	-0.33	16	-379.27	9	-0.07	9	-35.99	14	-12.96
B	N11	max	660.5	14	0.12	12	1413.55	16	0.37	17	12.66	14	11.83
		min	-577.53	9	0	17	-923.18	13	-0.66	12	-11.96	13	-6.88
	N13	max	112.97	6	0.07	13	1144.83	20	0.09	12	30.12	9	1.29
		min	-128.72	17	-0.07	8	-394.76	9	-0.04	17	-34.55	14	-6.39
B	N15	max	636.96	17	0.11	12	1415.05	16	0.02	9	28.74	17	0.78
		min	-564.64	6	0	17	-706.51	13	-0.62	12	-24.67	10	-17.49
	N85	max	116.59	9	0.28	14	1123.15	20	0.3	10	31.11	9	20.19
		min	-134.83	14	-0.55	13	-376.76	9	-0.1	17	-36.15	14	-12.64
B	N87	max	663.17	14	0.11	12	1412.15	16	0.23	13	10.66	14	17.72
		min	-579.03	9	0	9	-625.35	9	-0.59	16	-8.63	9	-5
	N89	max	117.03	9	0.47	13	1167.4	20	0.37	16	31.25	9	11.68
		min	-135.08	14	-0.42	16	-399.93	9	-0.21	13	-36.24	14	-19.38
B	N91	max	665.62	14	0.12	12	1459.44	16	0.28	17	19.05	14	8
		min	-582.92	9	0	9	-956.84	13	-0.84	12	-19.45	13	-10.31
	N93A	max	98.3	6	0.42	9	972.58	20	0.55	16	26.21	9	21.66
		min	-112.4	14	-0.73	20	-329.85	9	-0.23	9	-30.16	14	-15.05
B	N95A	max	557.29	17	0.12	12	1209.55	16	0.46	18	28.74	14	14.35
		min	-491.81	6	0	9	-749.08	13	-0.41	8	-29.45	10	-12.62

NOTE:

1. The foundation results that follow do not combine friction and end bearing.

2. The top 12" of foundation depth was not discounted for lateral force resistance. A soils engineer or local building department may require this approach. Contact Taylor & Syfan for further analysis if this applies.

San Luis Obispo - Pasadena
www.TaylorSyfan.com

INNOVATIVE STRUCTURAL DESIGNS

800.579.3881
800.617.2235 fax

Page:_____

Job No:19058

Engr:

Friction Pile Design
Version 12.35 - 2012 IBC

INPUT DATA:

Name: Pipe1.5_F_Full - Nevada

V = 0.14 kips @ H = 0.00 ft above grade

M = 0.04 ft-kips @ H = 0.00 ft above grade

Axial = 1.17 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 = 2.00

Required = 2.00 ft total embedment

Soil Pressures:

S1 = 266.67 psf at D/3

S3 = 4000.00 psf at full depth

Moments:

M = 0.13 ft-kips unfactored

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

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Project: **19058 - Everest Ground Mount - 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 **400** **pounds**
(ASD Level)

UPLIFT CAPACITY

From Skin Friction

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

785 **pounds**

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

2'-0" Pile Depth Acceptable for Front Pile

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www.TaylorSyfan.com

INNOVATIVE STRUCTURAL DESIGNS

800.579.3881
800.617.2235 fax

Page:_____

Job No:19058

Engr:

Friction Pile Design
Version 12.35 - 2012 IBC

INPUT DATA:

Name: Pipe1.5_B_Full - Nevada

V = 0.67 kips @ H = 0.00 ft above grade

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

Axial = 1.46 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 = 3.40

Required = 3.40 ft total embedment

Soil Pressures:

S1 = 453.33 psf at D/3

S3 = 4000.00 psf at full depth

Moments:

M = 0.78 ft-kips unfactored

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

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Project: **19058 - Everest Ground Mount - ESS**

PILE UPLIFT CALCULATION *(BACK PILE)*

SYSTEM INFORMATION

Pile Diameter	**12**	**inches**
Depth of Pile	**3.5**	**feet**
Distance Discounted	**1**	**feet**
Skin Friction	**250**	**psf/ft**
Concrete Density	**150**	**pcf**

LOADING INFORMATION

Uplift Demand **957** **pounds**
(ASD Level)

UPLIFT CAPACITY

From Skin Friction

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

1963 **pounds**

From Concrete Weight

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

TOTAL UPLIFT RESISTANCE

2211 **pounds**

Pile Design is Acceptable for Uplift Demand

3'-6" Pile Depth Acceptable for Back Pile

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

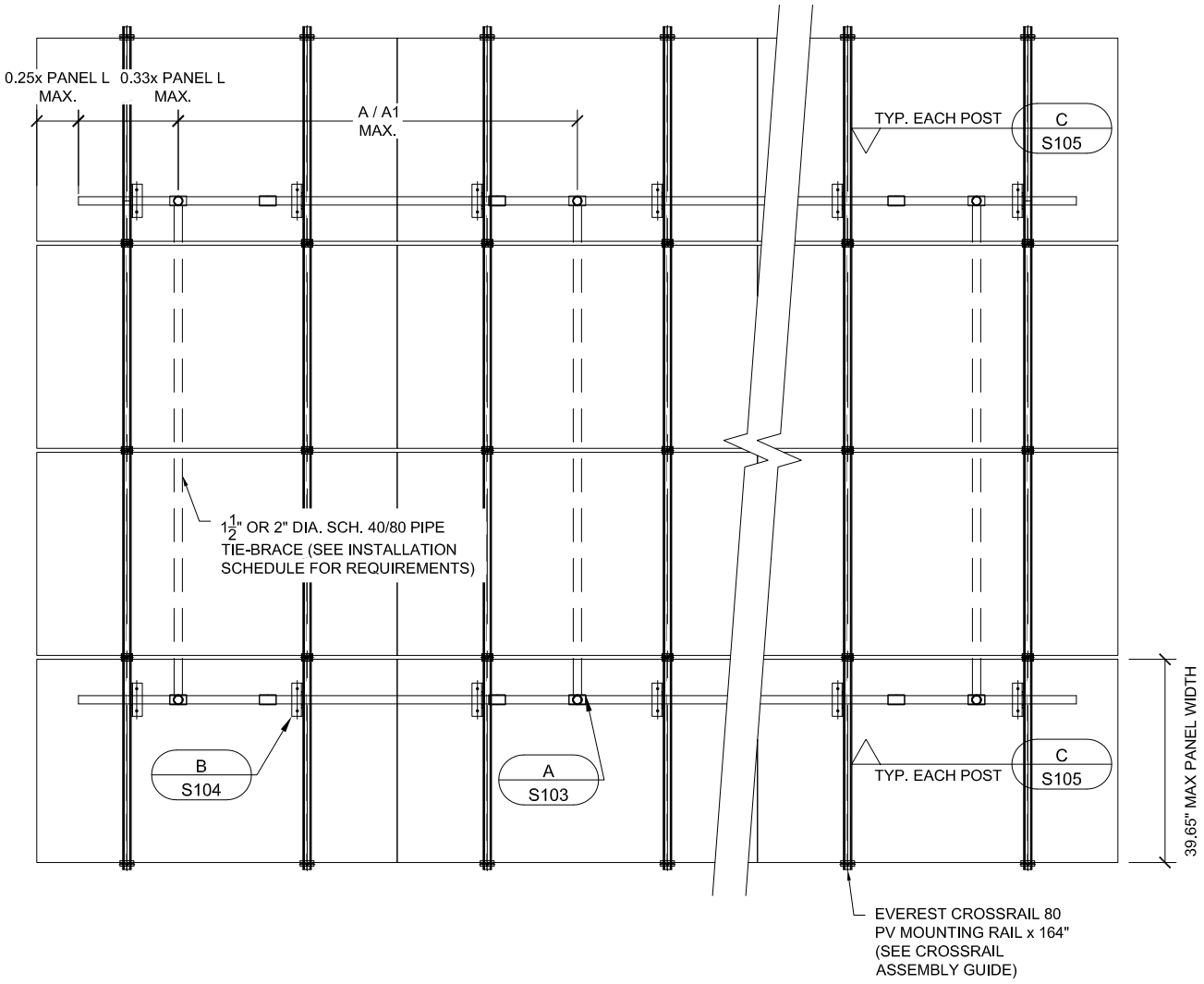
APPENDIX A

(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 SPECIFICACTIONS & REQUIREMENTS.

TITLE

EVEREST solar systems

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

DATA SHEET: CROSSRAIL GROUND MOUNT PLAN

S100

PART NUMBER: N/A

ALL DIMENSIONS FT. & INCHES

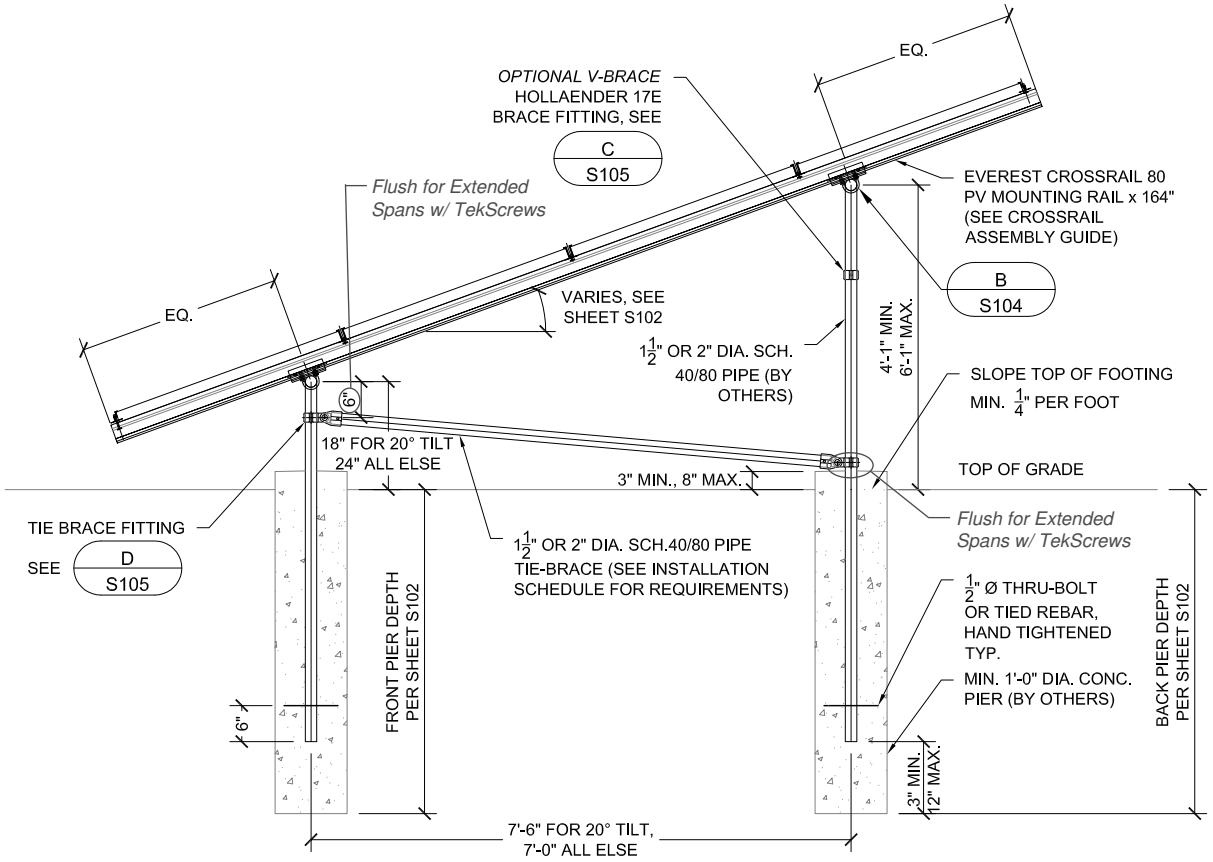
Created	PAC	20160320	MATERIAL:	VARIES	K2 REFERENCE NUMBER:	N/A
Revision	6		FINISH:	VARIES	SCALE: NTS	SERIES:

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 SPECIFICACTIONS & REQUIREMENTS.

TITLE

EVEREST solar systems

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

DATA SHEET: CROSSRAIL GROUND MOUNT ELEVATION

S101

PART NUMBER: N/A

ALL DIMENSIONS FT. & INCHES

Created	PAC	20160320	MATERIAL: VARIES	K2 REFERENCE NUMBER: N/A
Revision	6		FINISH: VARIES	SCALE: NTS SERIES:

SHEET 1 OF 1

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 Specifcation	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"*
			Ye						5'-4"	3'-3"	7'-0"
			Ye						*6'-0"*	*3'-9"*	*7'-0"*
30˚-35˚	90 / 105	50 psf	Ye						5'-0"	3'-3"	6'-0"
			Ye						*5'-0"*	*3'-3"*	*6'-0"*
			Ye						5'-0"	3'-4"	6'-4"
			Ye						*5'-3"*	*3'-9"*	*7'-0"*
30˚-35˚	105 / 130	30 psf	Yes	1.5"	Sch. 40	5'-6"	8'-3"	3'-0"	6'-0"	3'-6"	7'-3"
			Yes		*Sch. 80*	*5'-9"*	*8'-3"*	*3'-0"*	*6'-0"*	*3'-6"*	*7'-3"*
			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˚	105 / 130	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"*

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

For Reference Only,
Do Not Use

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

EVEREST solar systems

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

DATA SHEET:
CROSSRAIL GROUND MOUNT
INSTALLATION SCHEDULE

PART NUMBER: N/A

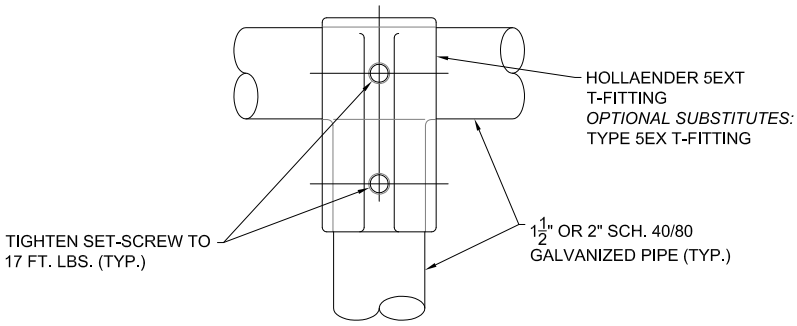
S102

ALL DIMENSIONS FT. & INCHES

Created	PAC	20160320	MATERIAL:	VARIES	K2 REFERENCE NUMBER:	N/A
Revision	6		FINISH:	VARIES	SCALE: NTS	SERIES:

SHEET 1 OF 1

For Reference Only



A GROUND MOUNT T-FITTING
NO SCALE

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

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

TITLE

EVEREST solar systems

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

DATA SHEET: CROSSRAIL GROUND MOUNT PARTS

PART NUMBER: N/A

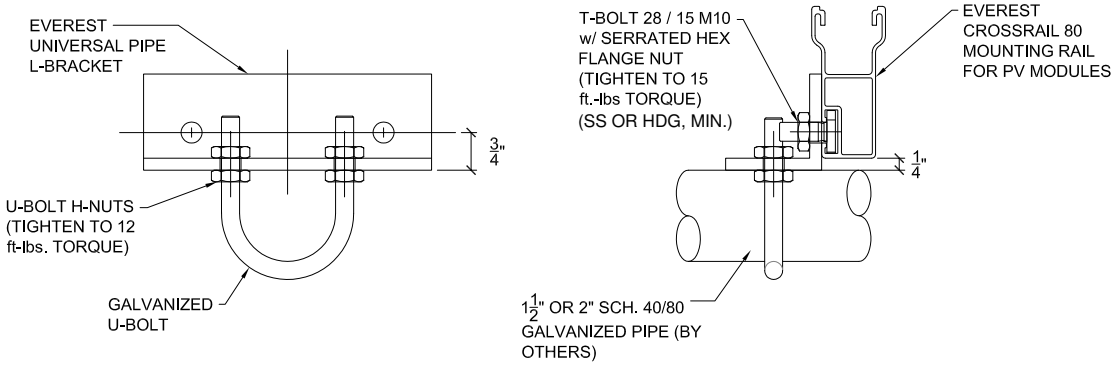
S103

ALL DIMENSIONS FT. & INCHES

Created	PAC	20160320	MATERIAL:	VARIES	K2 REFERENCE NUMBER: N/A	
Revision	6		FINISH:	VARIES	SCALE: NTS	SERIES: PARTS

SHEET 1 OF 1

For Reference Only



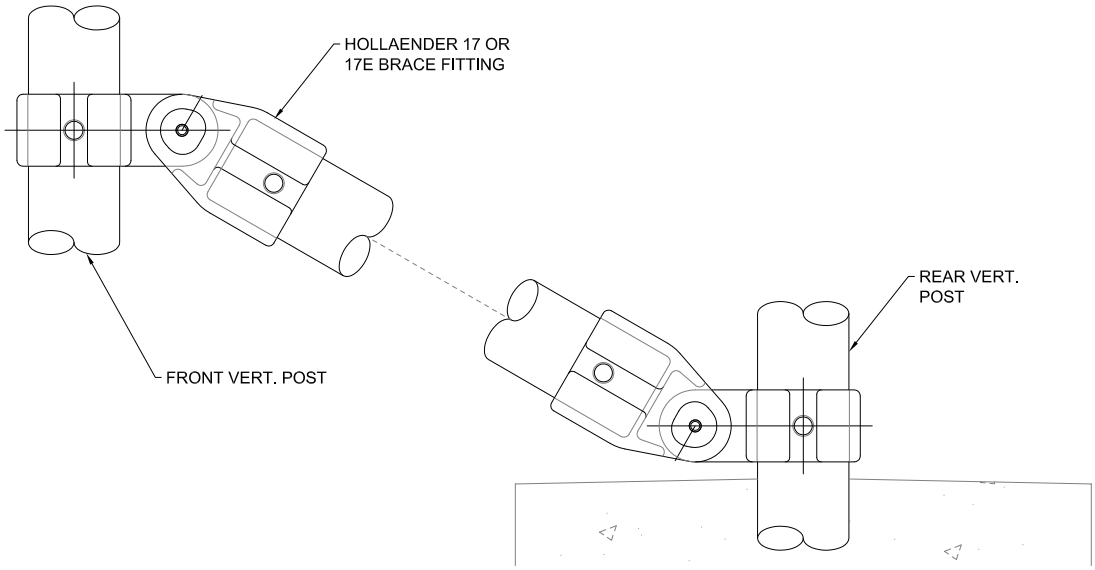
B EVEREST 1.5" PIPE L-BRACKET
NO SCALE

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

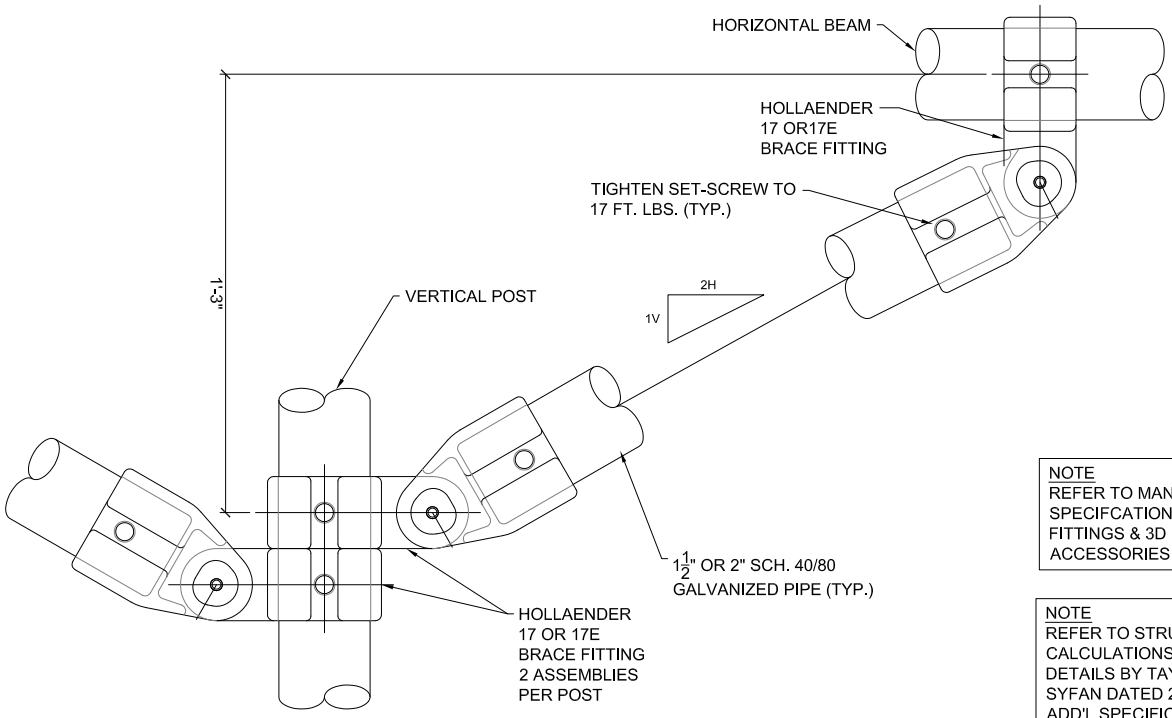
NOTE
REFER TO STRUCTURAL CALCULATIONS, NOTES, & DETAILS BY TAYLOR & SYFAN DATED 2019 FOR ADD'L SPECIFICACTIONS & REQUIREMENTS.

TITLE	EVEREST solar systems	Everest Solar Systems, LLC 3809 Ocean Ranch Blvd. Suite 111 Oceanside, CA 92056		DATA SHEET: CROSSRAIL GROUND MOUNT PARTS		S104
				PART NUMBER: N/A		ALL DIMENSIONS FT. & INCHES
	Created PAC	20160320	MATERIAL: VARIES	K2 REFERENCE NUMBER: N/A		
	Revision 6		FINISH: VARIES	SCALE: NTS	SERIES: PARTS	SHEET 1 OF 1

For Reference Only



D TIE BRACE CONNECTIONS
NO SCALE



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

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

C OPTIONAL V-BRACE (TYP. EACH POST)
NO SCALE

TITLE

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

DATA SHEET: CROSSRAIL GROUND MOUNT PARTS

PART NUMBER: N/A

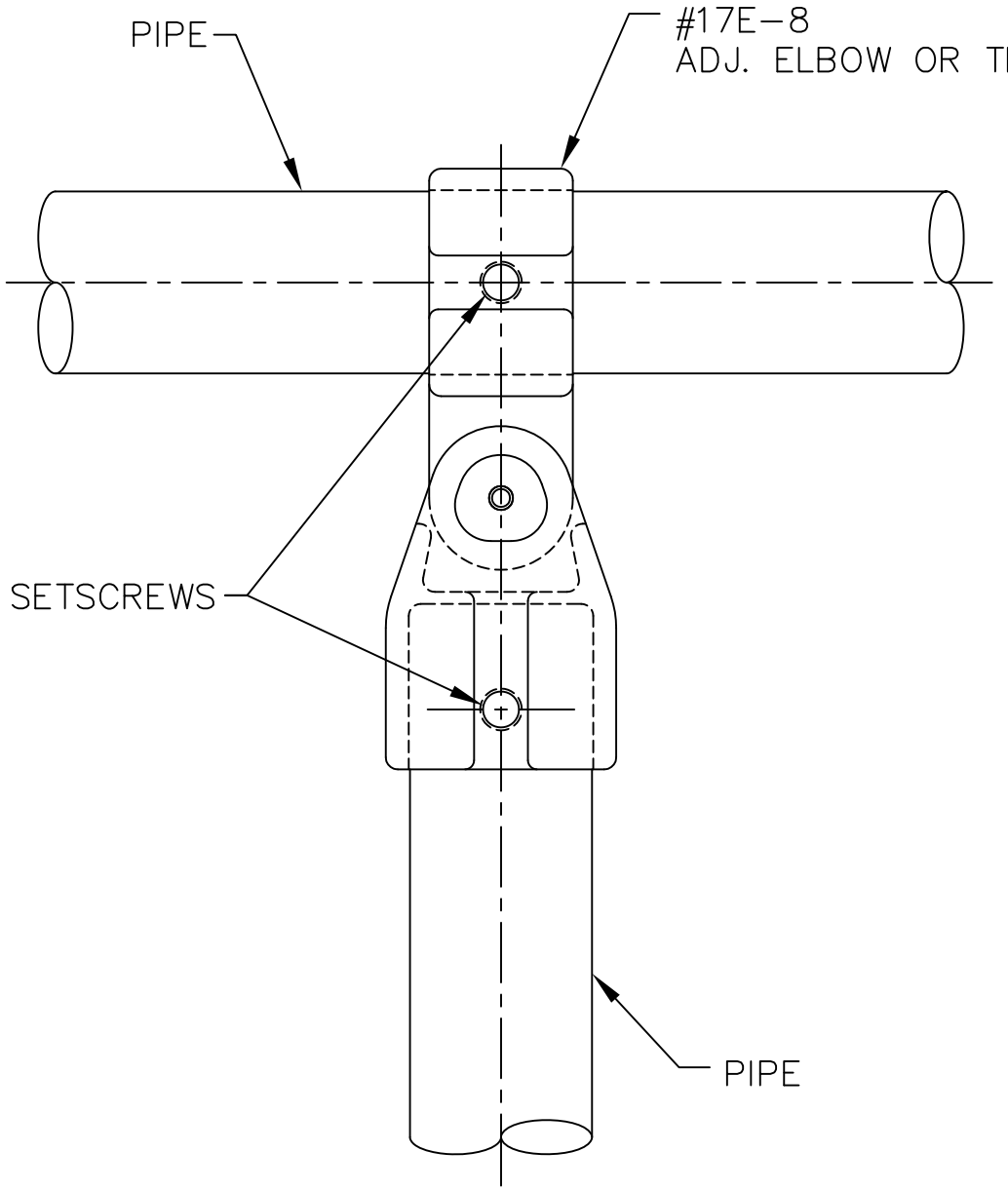
S105

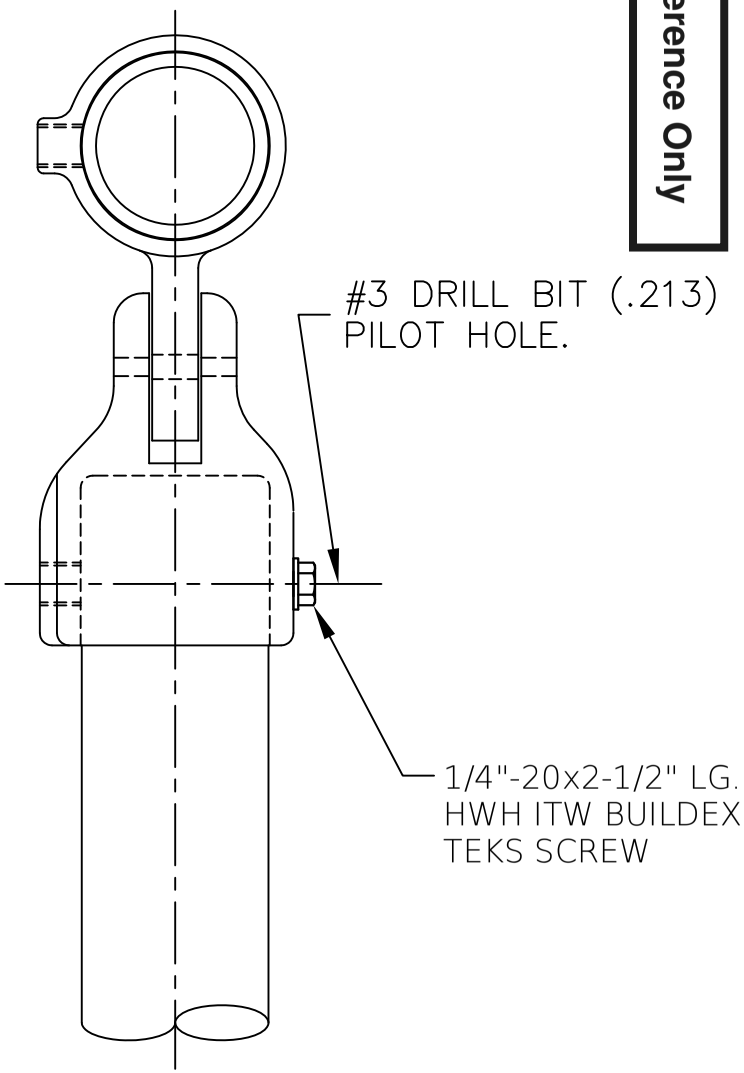
ALL DIMENSIONS FT. & INCHES

Created	PAC	20160320	MATERIAL:	VARIES	K2 REFERENCE NUMBER: N/A	
Revision	6		FINISH:	VARIES	SCALE: NTS	SERIES: PARTS

SHEET 1 OF 1

For Reference Only





NO.	REVISIONS	DATE	APPROVED
0	RELEASED FOR APPROVAL	05-01-17	BW

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CINCINNATI, OH 45215-6399
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DRAWN BY: GG	APPROVED BY: BW	DATE: 05-01-17	
PROJECT NO.: N/A		SCALE: NTS	
FINISH: NOTED		DRAWING NO.: 10502-S	
MATERIAL: ALUMINUM		SHEET 1 OF 1	