

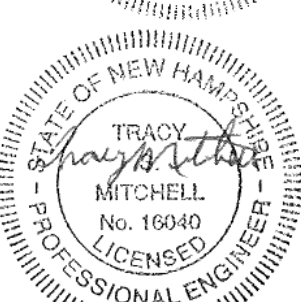
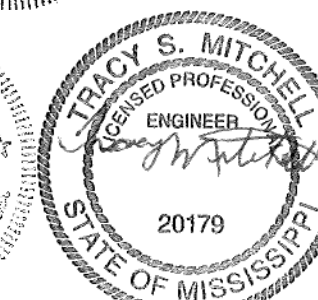
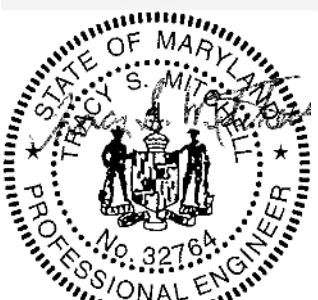
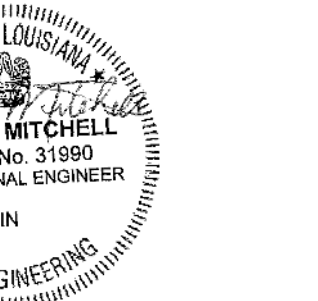
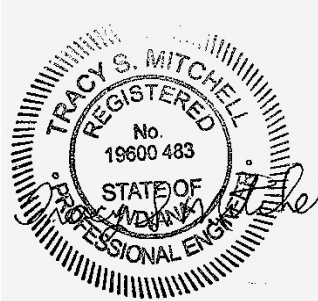
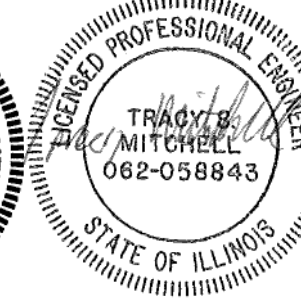
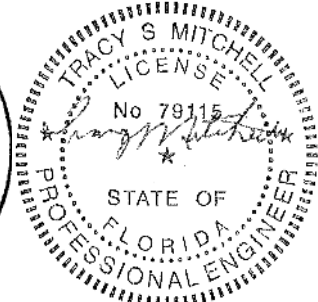
Design Document

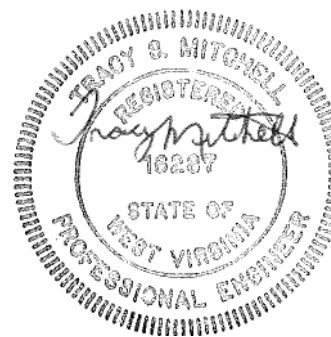
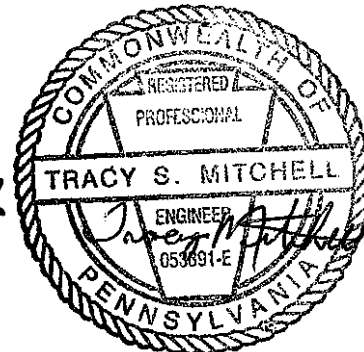
For:

Ground Mount Shade Structure
4 Modules

Exposure Category – C (6.16 ft x 3.42 ft)
ASCE 7-10 & ASCE 7-16

This Document Approved for the below:





EXP. 03/31/2024

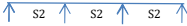


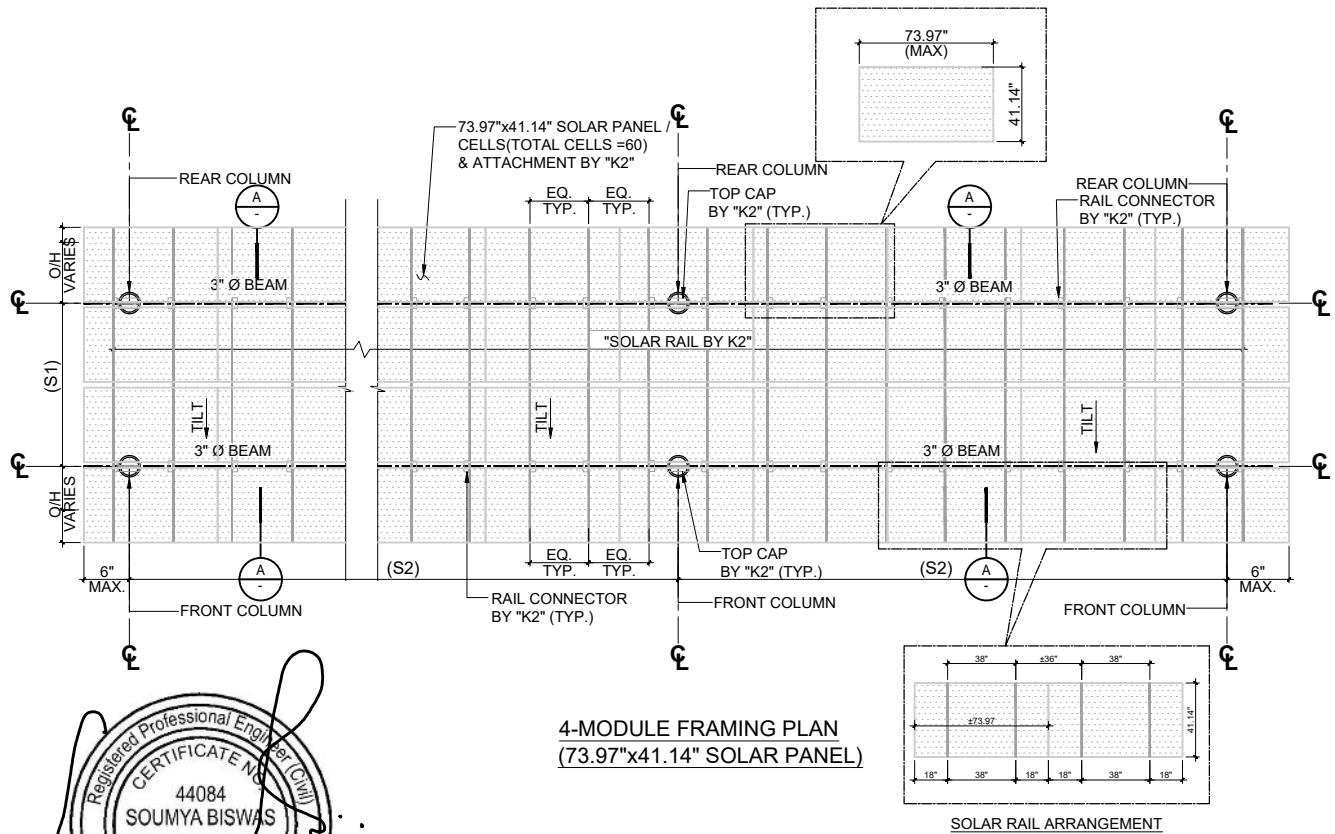
02/08/2022

 STRUCTURAL ENGINEERS	GM SOLAR SHADE - [ARIZONA]					
	JOB NAME	→	Tyler Wiggins Everest	DATE	→	May 5, 2022
	JOB NO.	→	AZ20170	CHECKER	→	SAM

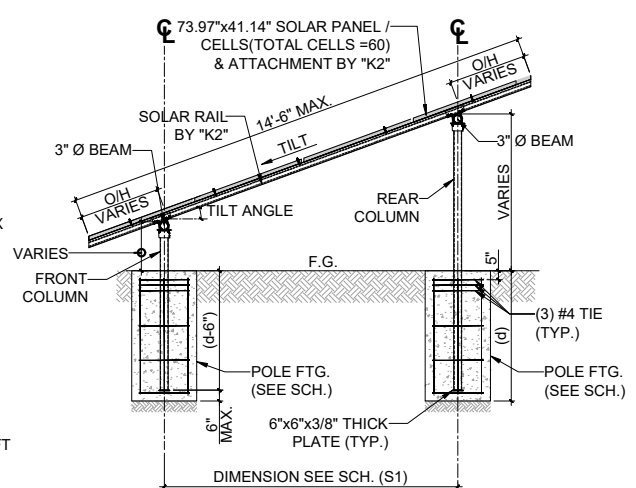
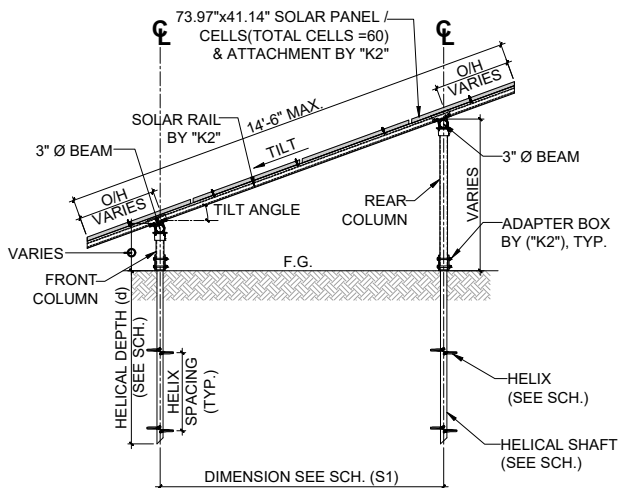
CRITERIA

The system must allow for 4 modules & 5 modules installed in a landscape orientation.

- [A] - **GOVERNING CODE** → IBC 2015, ACI 318-14 & ASCE 7-10 & IBC 2018, ACI 318-14 & ASCE 7-16
- [B] - **WIND SPEED (MPH)** → 90 MPH TO 120 MPH (in increments of 5 mph)
- [C] - **SNOW LOAD (PSF)** → 0 PSF TO 70 PSF (in increments of 10 psf)
- [D] - **TILT ANGLE** → 5 DEGREE TO 25 DEGREE (in increments of 5 Degree)
- [E] - **FOUNDATION** → POLE FOOTING
→ HELICAL PILES (GOLIATH TECH Pile Cataloge)
- [F] - **SOIL ASSUMPTION** → **SOIL BEARING**
Bottoms of bearing footings shall bear on Undisturbed Native Soil
4'-6" Below Existing Grade
Design Soil Pressure 2000 Psf. per Table 1806.2 of IBC
→ **CLASS OF MATERIALS**
Sand, silty sand, clayey sand, silty gravel and clayey gravel
(SW, SP, SM, SC, GM and GC)
→ **LATERAL BEARING (psf/f below natural grade)**
150 psf
→ **Coefficient of friction** 0.25
- [G] - **ASSUMPTION**
- 3" Dia pipe beam → Three span condition 
 - 3" Dia pipe column → Base fix & Top Free
 - Beam Deflection → L/120
 - Column Deflection → H/120
 - Loads are calculated for the Framing members provided & they are checked in bending, shear and deflection. The posts/column are designed as compression members and checked for compressive stresses.
 - Structural concrete shall be designed in accordance with the 'Building Code requirements for reinforced concrete (ACI 318-14).
 - The reinforcement of ASTM A615 Grade 60 shall be used in all the concrete structures.
 - Structural steel shall be designed in accordance with the specification given in steel construction manual - AISC 14th edition - ASD Method.
 - **Ground mount shade structure design for 4 - modules (6.16ft x 3.42ft) w/ 60cells/panels.**
 - **The Tables below assume the ultimate strength of Steel Top Bracket connectors meet the values and the minimum requirements for loading taken in teh calcs and criteria required to resist the member forces. All spacings between helicals are designed under this assumption. Manufacturer shall verify and certify compliance with these tabulated ultimate strength values to match or exceed the design assumptions in calculations thru adequate testing and lab data.**
- [H] - **Pole foundation Assumptions and Limitations:**
- The references used in the different analysis methods in this program are as follows:-
International Building Code (IBC) 2015,/2018 Section 1807.3.2.1, pages 403-404
 - This program will handle both horizontally as well as vertically applied loads. The vertical load may have an associated eccentricity which results in an additional overturning moment which is always assumed to add directly to the overturning moment produced by the horizontal load.
 - This program assumes that the top of the pier is at or above the top of the ground surface level.
 - This program assumes that the actual resisting surface is at or below the ground surface level.
 - This accounts for any weak soil or any soil which may be removed at the top
 - Yield strength of 2-7/8" dia piles - $F_y = 60$ ksi
 - Compression values are based on fully laterally supported piles (full embeded in soil), if not, contact engineer department for calculations.
 - All Design performed using ASD Method.

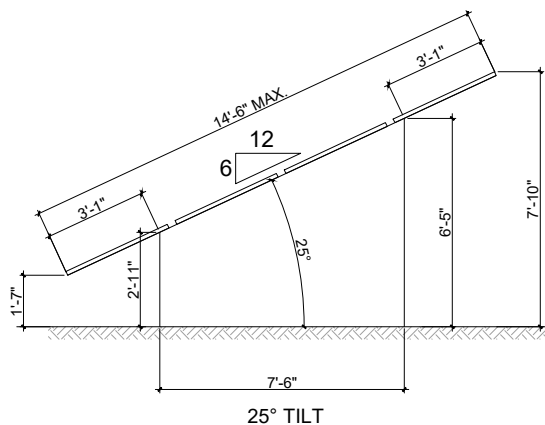
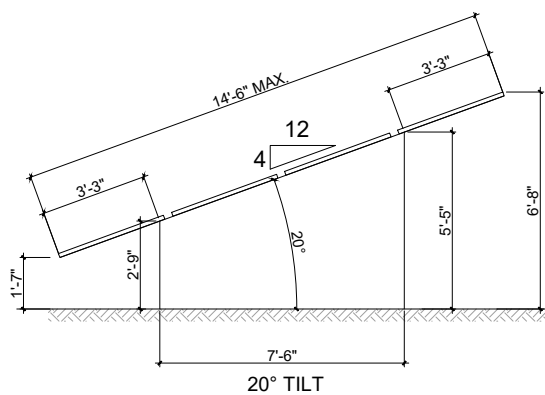
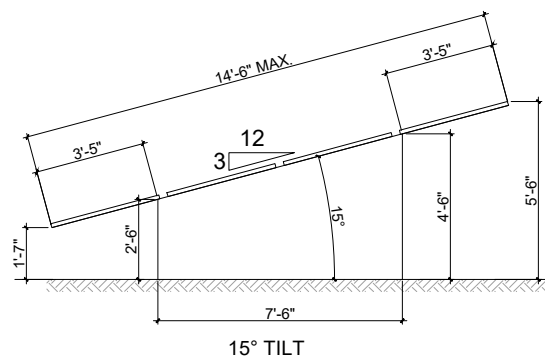
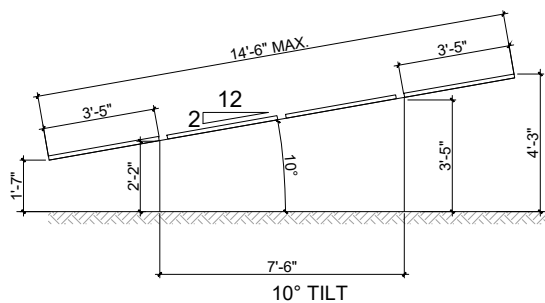


EXP. 03/31/2024





EXP. 03/31/2024



4-MODULE SOLAR FRAME LINE DIAGRAM
(73.97"x41.14" SOLAR PANEL)

eiffe STRUCTURAL ENGINEERS										GM SOLAR SHADE-CHART (ASCE 7-10)- [ARIZONA] 4 - Modules (6.16ft x 3.42ft) w/60cells/panels & 3" dia. SCH 40 Pipe.																							
JOB NAME JOB NO.		→	Tyler Wiggins Everest AZ20170		DATE CHECKER		→	May 5, 2022 SAM																									
SR- No's	Wind Speed (mph)	Seismic Category	Exposure Category	Tilt Angle (Deg.)	Roof Snow Load (psf)	Mean Roof Height (ft)	3" Pipe Tie Brace		3" Pipe SCH 40 Column Spacing		Pipe over- hang (OH) (ft- in)	Pole Footing Size						Foundation						Top Bracket Connection by K2 (See note 1,2,3,4,5)									
							Support @ Base Pole footing	Support @ Base Helical Pile	[S1] (ft- in)	[S2] (ft- in)		Front Column			Rear Column			Front Column			Helical Size			Rear Column			Welded Ground Screw (Model No.-5)		Front Column		Rear Column		Average Uplift force- 1950 kg (1625 kg w/ FOS)
												Dia. (D) (ft)	Depth (d) (ft)	#5 Reinf. Spacing	Dia. (D) (ft)	Depth (d) (ft)	#5 Reinf. Spacing	Shaft Dia. (D) (in)	No's Helix	Helix Dia. (in)	Depth (d) (ft- in)	Shaft Dia. (D) (in)	No's Helix	Helix Dia. (in)	Depth (d) (ft- in)	Dia (in)	Length (in)	Dia (in)	Length (in)				
1					0						19'-6"	0'-6"	2'-0"	3'-0"	8"	2'-0"	3'-0"	8"	2-7/8"	1	10	9'-0"	2-7/8"	1	10	9'-0"	4.5	80	4.5	80	YES		
2					1-10						18'-6"	0'-6"	2'-0"	3'-0"	8"	2'-0"	3'-0"	8"	2-7/8"	1	10	9'-0"	2-7/8"	1	10	9'-0"	4.5	80	4.5	80	YES		
3					11-20						14'-0"	0'-6"	2'-0"	3'-0"	8"	2'-0"	3'-6"	8"	2-7/8"	2	8	7'-6"	2-7/8"	2	8	7'-6"	4.5	80	4.5	80	YES		
4					21-30		NO	NO			12'-0"	0'-6"	2'-0"	3'-0"	8"	2'-0"	3'-6"	8"	2-7/8"	2	8	7'-6"	2-7/8"	2	8	7'-6"	4.5	80	4.5	80	YES		
5					31-40						10'-6"	0'-6"	2'-0"	3'-0"	8"	2'-0"	3'-6"	8"	2-7/8"	2	10	9'-0"	2-7/8"	2	10	9'-0"	4.5	80	4.5	80	YES		
6					41-50						9'-6"	0'-6"	2'-6"	3'-0"	8"	2'-6"	3'-6"	8"	2-7/8"	2	10	9'-0"	2-7/8"	2	10	9'-0"	4.5	80	4.5	80	YES		
7					51-60						8'-6"	0'-6"	2'-6"	3'-0"	8"	2'-6"	3'-6"	8"	2-7/8"	2	10	9'-0"	2-7/8"	2	10	9'-0"	4.5	80	4.5	80	YES		
8					61-70						8'-0"	0'-6"	2'-6"	3'-0"	8"	2'-6"	3'-6"	8"	2-7/8"	2	10	9'-0"	2-7/8"	2	10	9'-0"	4.5	80	4.5	80	YES		
9					0	≤ 5				7'-6"		18'-0"	0'-6"	2'-0"	3'-0"	8"	2'-0"	3'-6"	8"	2-7/8"	1	10	9'-0"	2-7/8"	1	10	9'-0"	4.5	80	4.5	80	YES	
10					1-10						18'-6"	0'-6"	2'-0"	3'-0"	8"	2'-0"	3'-6"	8"	2-7/8"	1	10	9'-0"	2-7/8"	1	10	9'-0"	4.5	80	4.5	80	YES		
11					11-20						14'-0"	0'-6"	2'-0"	3'-0"	8"	2'-0"	3'-6"	8"	2-7/8"	2	8	7'-6"	2-7/8"	2	8	7'-6"	4.5	80	4.5	80	YES		
12					21-30		NO	NO			12'-0"	0'-6"	2'-0"	3'-0"	8"	2'-0"	3'-6"	8"	2-7/8"	2	8	7'-6"	2-7/8"	2	8	7'-6"	4.5	80	4.5	80	YES		
13					31-40						10'-6"	0'-6"	2'-0"	3'-0"	8"	2'-0"	3'-6"	8"	2-7/8"	2	10	9'-0"	2-7/8"	2	10	9'-0"	4.5	80	4.5	80	YES		
14					41-50						9'-6"	0'-6"	2'-6"	3'-0"	8"	2'-6"	3'-6"	8"	2-7/8"	2	10	9'-0"	2-7/8"	2	10	9'-0"	4.5	80	4.5	80	YES		
15					51-60						8'-6"	0'-6"	2'-6"	3'-0"	8"	2'-6"	3'-6"	8"	2-7/8"	2	10	9'-0"	2-7/8"	2	10	9'-0"	4.5	80	4.5	80	YES		
16					61-70						8'-0"	0'-6"	2'-6"	3'-0"	8"	2'-6"	3'-6"	8"	2-7/8"	2	10	9'-0"	2-7/8"	2	10	9'-0"	4.5	80	4.5	80	YES		
17					0	≥ 5				7'-6"		18'-0"	0'-6"	2'-0"	3'-0"	8"	2'-0"	3'-6"	8"	2-7/8"	1	10	9'-0"	2-7/8"	1	10	9'-0"	4.5	80	4.5	80	YES	
18					1-10						18'-0"	0'-6"	2'-0"	3'-0"	8"	2'-0"	3'-6"	8"	2-7/8"	1	10	9'-0"	2-7/8"	1	10	9'-0"	4.5	80	4.5	80	YES		
19					11-20						14'-0"	0'-6"	2'-0"	3'-0"	8"	2'-0"	4'-0"	8"	2-7/8"	2	8	7'-6"	2-7/8"	2	8	7'-6"	4.5	80	4.5	80	YES		
20					21-30		NO	NO			12'-0"	0'-6"	2'-0"	3'-0"	8"	2'-0"	4'-0"	8"	2-7/8"	2	8	7'-6"	2-7/8"	2	8	7'-6"	4.5	80	4.5	80	YES		
21					31-40						10'-6"	0'-6"	2'-0"	3'-0"	8"	2'-0"	4'-0"	8"	2-7/8"	2	10	9'-0"	2-7/8"	2	10	9'-0"	4.5	80	4.5	80	YES		
22					41-50						9'-6"	0'-6"	2'-6"	3'-0"	8"	2'-6"	4'-0"	8"	2-7/8"	2	10	9'-0"	2-7/8"	2	10	9'-0"	4.5	80	4.5	80	YES		
23					51-60						8'-6"	0'-6"	2'-6"	3'-0"	8"	2'-6"	4'-0"	8"	2-7/8"	2	10	9'-0"	2-7/8"	2	10	9'-0"	4.5	80	4.5	80	YES		
24					61-70						8'-0"	0'-6"	2'-6"	3'-0"	8"	2'-6"	4'-0"	8"	2-7/8"	2	10	9'-0"	2-7/8"	2	10	9'-0"	4.5	80	4.5	80	YES		
25					0	≥ 5				7'-6"		17'-6"	0'-6"	2'-0"	3'-0"	8"	2'-0"	3'-6"	8"	2-7/8"	1	10	9'-0"	2-7/8"	1	10	9'-0"	4.5	80	4.5	80	YES	
26					1-10						17'-6"	0'-6"	2'-0"	3'-0"	8"	2'-0"	4'-0"	8"	2-7/8"	1	10	9'-0"	2-7/8"	1	10	9'-0"	4.5	80	4.5	80	YES		
27					11-20						14'-0"	0'-6"	2'-0"	3'-0"	8"	2'-0"	4'-0"	8"	2-7/8"	2	8	7'-6"	2-7/8"	2	8	7'-6"	4.5	80	4.5	80	YES		
28					21-30		NO	NO			12'-0"	0'-6"	2'-0"	3'-0"	8"	2'-0"	4'-0"	8"	2-7/8"	2	8	7'-6"	2-7/8"	2	8	7'-6"	4.5	80	4.5	80	YES		
29					31-40						10'-6"	0'-6"	2'-0"	3'-6"	8"	2'-0"	4'-0"	8"	2-7/8"	2	8	7'-6"	2-7/8"	2	8	7'-6"	4.5	80	4.5	80	YES		
30					41-50						9'-6"	0'-6"	2'-6"	3'-0"	8"	2'-6"	3'-6"	8"	2-7/8"	2	10	9'-0"	2-7/8"	2	10	9'-0"	4.5	80	4.5	80	YES		
31					51-60						8'-6"	0'-6"	2'-6"	3'-6"	8"	2'-6"	4'-0"	8"	2-7/8"	2	10	9'-0"	2-7/8"	2	10	9'-0"	4.5	80	4.5	80	YES		
32					61-70						8'-0"	0'-6"	2'-6"	3'-6"	8"	2'-6"	4'-0"	8"	2-7/8"	2	10	9'-0"	2-7/8"	2	10	9'-0"	4.5	80	4.5	80	YES		
1					0						19'-0"	0'-6"	2'-0"	3'-0"	8"	2'-0"	3'-0"	8"	2-7/8"	1	10	9'-0"	2-7/8"	1	10	9'-0"	4.5	80	4.5	80	YES		
2					1-10						18'-6"	0'-6"	2'-0"	3'-0"	8"	2'-0"	3'-6"	8"	2-7/8"	1	10	9'-0"	2-7/8"	1	10	9'-0"	4.5	80	4.5	80	YES		
3					11-20						14'-0"	0'-6"	2'-0"	3'-0"	8"	2'-0"	3'-6"	8"	2-7/8"	2	8	7'-6"	2-7/8"	2	8	7'-6"	4.5	80	4.5	80	YES		
4					21-30		NO	NO			12'-0"	0'-6"	2'-0"	3'-0"	8"	2'-0"	3'-6"	8"	2-7/8"	2	8	7'-6"	2-7/8"	2	8	7'-6"	4.5	80	4.5	80	YES		
5					31-40						10'-6"	0'-6"	2'-0"	3'-0"	8"	2'-0"	3'-6"	8"	2-7/8"	2	10	9'-0"	2-7/8"	2	10	9'-0"	4.5	80	4.5	80	YES		
6					41-50						9'-6"	0'-6"	2'-6"	3'-0"	8"	2'-6"	3'-6"	8"	2-7/8"	2	10	9'-0"	2-7/8"	2	10	9'-0"	4.5	80	4.5	80	YES		
7					51-60						8'-6"	0'-6"	2'-6"	3'-0"	8"	2'-6"	3'-6"	8"	2-7/8"	2	10	9'-0"	2-7/8"	2	10	9'-0"	4.5	80	4.5	80	YES		
8					61-70						8'-0"	0'-6"	2'-6"	3'-0"	8"	2'-6"	3'-6"	8"	2-7/8"	2	10	9'-0"	2-7/8"	2	10	9'-0"	4.5	80	4.5	80	YES		
9					0	≤ 5				7'-6"		18'-0"	0'-6"	2'-0"	3'-0"	8"	2'-0"	3'-6"	8"	2-7/8"	1	10	9'-0"	2-7/8"	1	10	9'-0"	4.5	80	4.5	80	YES	
10					1-10						18'-0"	0'-6"	2'-0"	3'-0"	8"	2'-0"	3'-6"	8"	2-7/8"	1	10	9'-0"	2-7/8"	1	10	9'-0"	4.5	80	4.5	80	YES		
11					11-20						14'-0"	0'-6"	2'-0"	3'-0"	8"	2'-0"	4'-0"	8"	2-7/8"	2	8	7'-6"	2-7/8"	2	8	7'-6"	4.5	80	4.5	80	YES		
12					21-30		NO	NO			12'-0"	0'-6"	2'-0"	3'-0"	8"	2'-0"	4'-0"	8"	2-7/8"	2	8	7'-6"	2-7/8"	2	8	7'-6"	4.5	80	4.5	80	YES		
13					31-40						10'-6"	0'-6"	2'-0"	3'-0"	8"	2'-0"	4'-0"	8"	2-7/8"	2	10	9'-0"	2-7/8"	2	10	9'-0"	4.5	80	4.5	80	YES		
14					41-50						9'-6"	0'-6"	2'-6"	3'-0"	8"	2'-6"	3'-6"	8"	2-7/8"	2	10	9'-0"	2-7/8"	2	10	9'-0"	4.5	80	4.5	80	YES		
15					51-60						8'-6"	0'-6"	2'-6"	3'-0"	8"	2'-6"	3'-6"	8"	2-7/8"	2	10	9'-0"	2-7/8"	2	10	9'-0"	4.5	80	4.5	80	YES		
16					61-70						8'-0"	0'-6"	2'-6"	3'-0"	8"	2'-6"	4'-0"	8"	2-7/8"	2	10	9'-0"	2-7/8"	2	10	9'-0"	4.5	80	4.5	80			

eiffe				GM SOLAR SHADE-CHART (ASCE 7-10)- [ARIZONA]																													
STRUCTURAL ENGINEERS				4 - Modules (6.16ft x 3.42ft) w/60cells/panels & 3" dia. SCH 40 Pipe.																													
JOB NAME				→		Tyler Wiggins Everest												DATE		→		May 5, 2022											
JOB NO.				→		AJ220170												CHECKER		→		SAM											
SR- No's	Wind Speed (mph)	Seismic Category	Exposure Category	Tilt Angle (Deg.)	Roof Snow Load (psf)	Mean Roof Height (ft)	3" Pipe Tie Brace		3" Pipe SCH 40 Column Spacing		Pipe over- hang (OH) (ft- in)	Pole Footing Size						Foundation						Welded Ground Screw (Model No.-5)				Top Bracket Connection by K2 (See note 1,2,3,4,5)					
							Support @ Base Pole footing	Support @ Base Helical Pile	[S1] (ft- in)	[S2] (ft- in)		Front Column	Rear Column	#5 Reinf. Spacing	Front Column	Rear Column	#5 Reinf. Spacing	Front Column			Helical Size			Rear Column			Front Column		Rear Column		Average Uplift force- 1950 kg (1625 kg w/ FOS)		
																		Dia. (D) (ft)	Depth (d) (ft)	Dia. (D) (ft)	Depth (d) (ft)	Shaft Dia. (D) (in)	No's Helix	Helix Dia. (in)	Depth (d) (ft- in)	Shaft Dia. (D) (in)	No's Helix	Helix Dia. (in)	Depth (d) (ft- in)	Dia (in)		Length (in)	Dia (in)
1					0						17'-0"																					YES	
2					1-10						17'-0"	0'-6"	2'-0"	3'-0"	8"	2'-0"	3'-6"	8"	2-7/8"	1	10	9'-0"	2-7/8"	1	10	9'-0"	4.5	80	4.5	80		YES	
3					11-20						17'-0"	0'-6"	2'-0"	3'-0"	8"	2'-0"	3'-6"	8"	2-7/8"	2	8	7'-6"	2-7/8"	2	8	7'-6"	4.5	80	4.5	80		YES	
4					21-30		NO	NO			17'-0"	0'-6"	2'-0"	3'-0"	8"	2'-0"	3'-6"	8"	2-7/8"	2	8	7'-6"	2-7/8"	2	8	7'-6"	4.5	80	4.5	80		YES	
5					31-40						17'-0"	0'-6"	2'-0"	3'-0"	8"	2'-0"	3'-6"	8"	2-7/8"	2	8	7'-6"	2-7/8"	2	8	7'-6"	4.5	80	4.5	80		YES	
6					41-50						17'-0"	0'-6"	2'-0"	3'-0"	8"	2'-0"	3'-6"	8"	2-7/8"	2	8	7'-6"	2-7/8"	2	8	7'-6"	4.5	80	4.5	80		YES	
7					51-60						17'-0"	0'-6"	2'-0"	3'-0"	8"	2'-0"	3'-6"	8"	2-7/8"	2	8	7'-6"	2-7/8"	2	8	7'-6"	4.5	80	4.5	80		YES	
8					61-70						17'-0"	0'-6"	2'-0"	3'-0"	8"	2'-0"	3'-6"	8"	2-7/8"	2	8	7'-6"	2-7/8"	2	8	7'-6"	4.5	80	4.5	80		YES	
9					0	≤ 5				7'-6"	16'-0"	0'-6"	2'-0"	3'-0"	8"	2'-0"	3'-6"	8"	2-7/8"	1	10	9'-0"	2-7/8"	1	10	9'-0"	4.5	80	4.5	80		YES	
10					1-10						16'-0"	0'-6"	2'-0"	3'-0"	8"	2'-0"	4'-0"	8"	2-7/8"	1	10	9'-0"	2-7/8"	1	10	9'-0"	4.5	80	4.5	80		YES	
11					11-20						16'-0"	0'-6"	2'-0"	3'-0"	8"	2'-0"	4'-0"	8"	2-7/8"	1	10	9'-0"	2-7/8"	1	10	9'-0"	4.5	80	4.5	80		YES	
12					21-30		NO	NO			16'-0"	0'-6"	2'-0"	3'-0"	8"	2'-0"	4'-0"	8"	2-7/8"	2	8	7'-6"	2-7/8"	2	8	7'-6"	4.5	80	4.5	80		YES	
13					31-40						16'-0"	0'-6"	2'-0"	3'-0"	8"	2'-0"	4'-0"	8"	2-7/8"	2	8	7'-6"	2-7/8"	2	8	7'-6"	4.5	80	4.5	80		YES	
14					41-50						16'-0"	0'-6"	2'-0"	3'-0"	8"	2'-0"	4'-0"	8"	2-7/8"	2	8	7'-6"	2-7/8"	2	8	7'-6"	4.5	80	4.5	80		YES	
15					51-60						16'-0"	0'-6"	2'-0"	3'-0"	8"	2'-0"	4'-0"	8"	2-7/8"	2	8	7'-6"	2-7/8"	2	8	7'-6"	4.5	80	4.5	80		YES	
16					61-70						16'-0"	0'-6"	2'-0"	3'-0"	8"	2'-0"	4'-0"	8"	2-7/8"	2	8	7'-6"	2-7/8"	2	8	7'-6"	4.5	80	4.5	80		YES	
17					0	≥ 5				7'-6"	15'-6"	0'-6"	2'-0"	3'-0"	8"	2'-0"	4'-0"	8"	2-7/8"	1	10	9'-0"	2-7/8"	1	10	9'-0"	4.5	80	4.5	80		YES	
18					1-10						15'-6"	0'-6"	2'-0"	3'-0"	8"	2'-0"	4'-0"	8"	2-7/8"	1	10	9'-0"	2-7/8"	1	10	9'-0"	4.5	80	4.5	80		YES	
19					11-20						15'-6"	0'-6"	2'-0"	3'-0"	8"	2'-0"	4'-0"	8"	2-7/8"	1	10	9'-0"	2-7/8"	1	10	9'-0"	4.5	80	4.5	80		YES	
20					21-30		NO	NO			15'-6"	0'-6"	2'-0"	3'-0"	8"	2'-0"	4'-0"	8"	2-7/8"	2	8	7'-6"	2-7/8"	2	8	7'-6"	4.5	80	4.5	80		YES	
21					31-40						15'-6"	0'-6"	2'-0"	3'-0"	8"	2'-0"	4'-0"	8"	2-7/8"	2	8	7'-6"	2-7/8"	2	8	7'-6"	4.5	80	4.5	80		YES	
22					41-50						15'-6"	0'-6"	2'-0"	3'-0"	8"	2'-0"	4'-0"	8"	2-7/8"	2	8	7'-6"	2-7/8"	2	8	7'-6"	4.5	80	4.5	80		YES	
23					51-60						15'-6"	0'-6"	2'-0"	3'-0"	8"	2'-0"	4'-0"	8"	2-7/8"	2	8	7'-6"	2-7/8"	2	8	7'-6"	4.5	80	4.5	80		YES	
24					61-70						15'-6"	0'-6"	2'-0"	3'-0"	8"	2'-0"	4'-0"	8"	2-7/8"	2	8	7'-6"	2-7/8"	2	8	7'-6"	4.5	80	4.5	80		YES	
25					0	≥ 5				7'-6"	14'-6"	0'-6"	2'-0"	3'-0"	8"	2'-0"	4'-0"	8"	2-7/8"	1	10	9'-0"	2-7/8"	1	10	9'-0"	4.5	80	4.5	80		YES	
26					1-10						14'-6"	0'-6"	2'-0"	3'-0"	8"	2'-0"	4'-0"	8"	2-7/8"	1	10	9'-0"	2-7/8"	1	10	9'-0"	4.5	80	4.5	80		YES	
27					11-20						14'-6"	0'-6"	2'-0"	3'-0"	8"	2'-0"	4'-0"	8"	2-7/8"	1	10	9'-0"	2-7/8"	1	10	9'-0"	4.5	80	4.5	80		YES	
28					21-30		NO	NO			14'-6"	0'-6"	2'-0"	3'-0"	8"	2'-0"	4'-0"	8"	2-7/8"	2	8	7'-6"	2-7/8"	2	8	7'-6"	4.5	80	4.5	80		YES	
29					31-40						14'-6"	0'-6"	2'-0"	3'-0"	8"	2'-0"	4'-0"	8"	2-7/8"	2	8	7'-6"	2-7/8"	2	8	7'-6"	4.5	80	4.5	80		YES	
30					41-50						14'-6"	0'-6"	2'-0"	3'-0"	8"	2'-0"	4'-0"	8"	2-7/8"	2	8	7'-6"	2-7/8"	2	8	7'-6"	4.5	80	4.5	80		YES	
31					51-60						14'-6"	0'-6"	2'-0"	3'-0"	8"	2'-0"	4'-0"	8"	2-7/8"	2	8	7'-6"	2-7/8"	2	8	7'-6"	4.5	80	4.5	80		YES	
32					61-70						14'-6"	0'-6"	2'-0"	3'-0"	8"	2'-0"	4'-0"	8"	2-7/8"	2	8	7'-6"	2-7/8"	2	8	7'-6"	4.5	80	4.5	80		YES	
1					0						15'-6"	0'-6"	2'-0"	3'-0"	8"	2'-0"	3'-6"	8"	2-7/8"	1	10	9'-0"	2-7/8"	1	10	9'-0"	4.5	80	4.5	80		YES	
2					1-10						15'-6"	0'-6"	2'-0"	3'-0"	8"	2'-0"	3'-6"	8"	2-7/8"	1	10	9'-0"	2-7/8"	1	10	9'-0"	4.5	80	4.5	80		YES	
3					11-20						14'-6"	0'-6"	2'-0"	3'-0"	8"	2'-0"	3'-6"	8"	2-7/8"	2	8	7'-6"	2-7/8"	2	8	7'-6"	4.5	80	4.5	80		YES	
4					21-30		NO	NO			14'-6"	0'-6"	2'-0"	3'-0"	8"	2'-0"	3'-6"	8"	2-7/8"	2	8	7'-6"	2-7/8"	2	8	7'-6"	4.5	80	4.5	80		YES	
5					31-40						14'-6"	0'-6"	2'-0"	3'-0"	8"	2'-0"	3'-6"	8"	2-7/8"	2	8	7'-6"	2-7/8"	2	8	7'-6"	4.5	80	4.5	80		YES	
6					41-50						14'-6"	0'-6"	2'-0"	3'-0"	8"	2'-0"	3'-6"	8"	2-7/8"	2	8	7'-6"	2-7/8"	2	8	7'-6"	4.5	80	4.5	80		YES	
7					51-60						14'-6"	0'-6"	2'-0"	3'-0"	8"	2'-0"	3'-6"	8"	2-7/8"	2	8	7'-6"	2-7/8"	2	8	7'-6"	4.5	80	4.5	80		YES	
8					61-70						14'-6"	0'-6"	2'-0"	3'-0"	8"	2'-0"	3'-6"	8"	2-7/8"	2	8	7'-6"	2-7/8"	2	8	7'-6"	4.5	80	4.5	80		YES	
9					0	≤ 5				7'-6"	14'-6"	0'-6"	2'-0"	3'-0"	8"	2'-0"	4'-0"	8"	2-7/8"	1	10	9'-0"	2-7/8"	1	10	9'-0"	4.5	80	4.5	80		YES	
10					1-10						14'-6"	0'-6"	2'-0"	3'-0"	8"	2'-0"	4'-0"	8"	2-7/8"	1	10	9'-0"	2-7/8"	1	10	9'-0"	4.5	80	4.5	80		YES	
11					11-20						14'-6"	0'-6"	2'-0"	3'-0"	8"	2'-0"	4'-0"	8"	2-7/8"	1	10	9'-0"	2-7/8"	1	10	9'-0"	4.5	80	4.5	80		YES	
12					21-30		NO	NO			14'-6"	0'-6"	2'-0"	3'-0"	8"	2'-0"	4'-0"	8"	2-7/8"	2	8	7'-6"	2-7/8"	2	8	7'-6"	4.5	80	4.5	80		YES	
13					31-40						14'-6"	0'-6"	2'-0"	3'-0"	8"	2'-0"	4'-0"	8"	2-7/8"	2	8	7'-6"	2-7/8"	2	8	7'-6"	4.5	80	4.5	80		YES	
14					41-50						14'-6"	0'-6"	2'-0"	3'-0"	8"	2'-0"	4'-0"	8"	2-7/8"	2	8	7'-6"	2-7/8"	2	8	7'-6"	4.5	80	4.5	80		YES	
15					51-60						14'-6"	0'-6"	2'-0"	3'-0"	8"	2'-0"	4'-0"	8"	2-7/8"	2	8	7'-6"	2-7/8"	2	8	7'-6"	4.5	80	4.5	80		YES	
16					61-70						14'-6"	0'-6"	2'-0"	3'-0"	8"	2'-0"	4'-0"	8"	2-7/8"	2	8	7'-6"	2-7/8"	2	8	7'-6"	4.5	80	4.5	80		YES	
17					0	≥ 5				7'-6"	13'-0"	0'-6"	2'-0"	3'-0"	8"	2'-0"	4'-0"	8"	2-7/8"	1	10	9'-0"	2-7/8"	1	10	9'-0"	4.5	80	4.5	80			

					GM SOLAR SHADE-CHART (ASCE 7-10)- [ARIZONA] 4 - Modules (6.16ft x 3.42ft) w/60cells/panels & 3" dia. SCH 40 Pipe.																										
JOB NAME JOB NO.					→	Tyler Wiggins Everest AJ220170										DATE CHECKER		→	May 5, 2022 SAM												
SR- No's	Wind Speed (mph)	Seismic Category	Exposure Category	Tilt Angle (Deg.)	Roof Snow Load (psf)	Mean Roof Height (ft)	3" Pipe Tie Brace		3" Pipe SCH 40 Column Spacing		Pipe over- hang (OH) (ft- in)	Foundation																Top Bracket Connection by K2 (See note 1,2,3,4,5)			
							Support @ Base Pole footing	Support @ Base Helical Pile	[S1] (ft- in)	[S2] (ft- in)		Pole Footing Size				Helical Size				Welded Ground Screw (Model No.-5)											
												Front Column		Rear Column		Front Column		Rear Column		Front Column		Rear Column									
												Dia. (D) (ft)	Depth (d) (ft)	#5 Reinf. Spacing	Dia. (D) (ft)	Depth (d) (ft)	#5 Reinf. Spacing	Shaft Dia. (D) (in)	No's Helix	Helix Dia. (in)	Depth (d) (ft- in)	Shaft Dia. (D) (in)	No's Helix	Helix Dia. (in)	Depth (d) (ft- in)	Dia (in)	Length (in)	Dia (in)	Length (in)		
1					0						14'-6"	0'-6"	2'-0"	3'-0"	8"	2'-0"	3'-6"	8"	2-7/8"	1	10	9'-0"	2-7/8"	1	10	9'-0"	4.5	80	4.5	80	YES
2					1-10						14'-6"	0'-6"	2'-0"	3'-0"	8"	2'-0"	3'-6"	8"	2-7/8"	1	10	9'-0"	2-7/8"	1	10	9'-0"	4.5	80	4.5	80	YES
3					11-20						14'-0"	0'-6"	2'-0"	3'-0"	8"	2'-0"	3'-6"	8"	2-7/8"	1	10	9'-0"	2-7/8"	1	10	9'-0"	4.5	80	4.5	80	YES
4					21-30						12'-0"	0'-6"	2'-0"	3'-6"	8"	2'-0"	3'-6"	8"	2-7/8"	2	8	7'-6"	2-7/8"	2	8	7'-6"	4.5	80	4.5	80	YES
5					31-40						10'-6"	0'-6"	2'-0"	3'-6"	8"	2'-0"	3'-6"	8"	2-7/8"	2	8	7'-6"	2-7/8"	2	8	7'-6"	4.5	80	4.5	80	YES
6					41-50						9'-6"	0'-6"	2'-6"	3'-0"	8"	2'-6"	3'-6"	8"	2-7/8"	2	10	9'-0"	2-7/8"	2	10	9'-0"	4.5	80	4.5	80	YES
7					51-60						8'-6"	0'-6"	2'-6"	3'-0"	8"	2'-6"	3'-6"	8"	2-7/8"	2	10	9'-0"	2-7/8"	2	10	9'-0"	4.5	80	4.5	80	YES
8					61-70						8'-0"	0'-6"	2'-6"	3'-0"	8"	2'-6"	3'-6"	8"	2-7/8"	2	10	9'-0"	2-7/8"	2	10	9'-0"	4.5	80	4.5	80	YES
9					0	≤ 5					13'-6"	0'-6"	2'-0"	3'-0"	8"	2'-0"	4'-0"	8"	2-7/8"	1	10	9'-0"	2-7/8"	1	10	9'-0"	4.5	80	4.5	80	YES
10					1-10						13'-6"	0'-6"	2'-0"	3'-6"	8"	2'-0"	4'-0"	8"	2-7/8"	1	10	9'-0"	2-7/8"	1	10	9'-0"	4.5	80	4.5	80	YES
11					11-20						13'-6"	0'-6"	2'-0"	3'-6"	8"	2'-0"	4'-0"	8"	2-7/8"	1	10	9'-0"	2-7/8"	1	10	9'-0"	4.5	80	4.5	80	YES
12					21-30						12'-0"	0'-6"	2'-0"	3'-6"	8"	2'-0"	4'-0"	8"	2-7/8"	2	8	7'-6"	2-7/8"	2	8	7'-6"	4.5	80	4.5	80	YES
13					31-40						10'-6"	0'-6"	2'-0"	3'-6"	8"	2'-0"	4'-0"	8"	2-7/8"	2	8	7'-6"	2-7/8"	2	8	7'-6"	4.5	80	4.5	80	YES
14					41-50						9'-6"	0'-6"	2'-6"	3'-0"	8"	2'-6"	4'-0"	8"	2-7/8"	2	10	9'-0"	2-7/8"	2	10	9'-0"	4.5	80	4.5	80	YES
15					51-60						8'-6"	0'-6"	2'-6"	3'-6"	8"	2'-6"	4'-0"	8"	2-7/8"	2	10	9'-0"	2-7/8"	2	10	9'-0"	4.5	80	4.5	80	YES
16					61-70						8'-0"	0'-6"	2'-6"	3'-6"	8"	2'-6"	4'-0"	8"	2-7/8"	2	10	9'-0"	2-7/8"	2	10	9'-0"	4.5	80	4.5	80	YES
17					0	≥ 5					13'-0"	0'-6"	2'-0"	3'-0"	8"	2'-0"	4'-0"	8"	2-7/8"	1	10	9'-0"	2-7/8"	1	10	9'-0"	4.5	80	4.5	80	YES
18					1-10						13'-0"	0'-6"	2'-0"	3'-6"	8"	2'-0"	4'-6"	8"	2-7/8"	1	10	9'-0"	2-7/8"	1	10	9'-0"	4.5	80	4.5	80	YES
19					11-20						13'-0"	0'-6"	2'-0"	3'-6"	8"	2'-0"	4'-6"	8"	2-7/8"	1	10	9'-0"	2-7/8"	1	10	9'-0"	4.5	80	4.5	80	YES
20					21-30						12'-0"	0'-6"	2'-0"	3'-6"	8"	2'-0"	4'-6"	8"	2-7/8"	2	8	7'-6"	2-7/8"	2	8	7'-6"	4.5	80	4.5	80	YES
21					31-40						10'-6"	0'-6"	2'-0"	3'-6"	8"	2'-0"	4'-6"	8"	2-7/8"	2	8	7'-6"	2-7/8"	2	8	7'-6"	4.5	80	4.5	80	YES
22					41-50						9'-6"	0'-6"	2'-6"	3'-6"	8"	2'-6"	4'-0"	8"	2-7/8"	2	10	9'-0"	2-7/8"	2	10	9'-0"	4.5	80	4.5	80	YES
23					51-60						8'-6"	0'-6"	2'-6"	3'-6"	8"	2'-6"	4'-0"	8"	2-7/8"	2	10	9'-0"	2-7/8"	2	10	9'-0"	4.5	80	4.5	80	YES
24					61-70						8'-0"	0'-6"	2'-6"	3'-6"	8"	2'-6"	4'-6"	8"	2-7/8"	2	10	9'-0"	2-7/8"	2	10	9'-0"	4.5	80	4.5	80	YES
25					0						12'-6"	0'-6"	2'-0"	3'-0"	8"	2'-0"	4'-6"	8"	2-7/8"	2	8	7'-6"	2-7/8"	2	8	7'-6"	4.5	80	4.5	80	YES
26					1-10						12'-6"	0'-6"	2'-0"	3'-6"	8"	2'-0"	4'-6"	8"	2-7/8"	2	8	7'-6"	2-7/8"	2	8	7'-6"	4.5	80	4.5	80	YES
27					11-20						12'-6"	0'-6"	2'-0"	3'-6"	8"	2'-0"	4'-6"	8"	2-7/8"	2	8	7'-6"	2-7/8"	2	8	7'-6"	4.5	80	4.5	80	YES
28					21-30						12'-0"	0'-6"	2'-0"	3'-6"	8"	2'-0"	5'-0"	8"	2-7/8"	2	10	9'-0"	2-7/8"	2	10	9'-0"	4.5	80	4.5	80	YES
29					31-40						10'-6"	0'-6"	2'-0"	3'-6"	8"	2'-0"	5'-0"	8"	2-7/8"	2	10	9'-0"	2-7/8"	2	10	9'-0"	4.5	80	4.5	80	YES
30					41-50						9'-6"	0'-6"	2'-6"	3'-6"	8"	2'-6"	4'-6"	8"	2-7/8"	2	10	9'-0"	2-7/8"	2	10	9'-0"	4.5	80	4.5	80	YES
31					51-60						8'-6"	0'-6"	2'-6"	3'-6"	8"	2'-6"	4'-6"	8"	2-7/8"	2	10	9'-0"	2-7/8"	2	10	9'-0"	4.5	80	4.5	80	YES
32					61-70						8'-0"	0'-6"	2'-6"	3'-6"	8"	2'-6"	4'-6"	8"	2-7/8"	2	10	9'-0"	2-7/8"	2	10	9'-0"	4.5	80	4.5	80	YES

NOTES:

1

Top bracket connector design to be provided by "K2". Average Force of top bracket = 1950 kg (4299 lbs). Refer to Load test report K2 National Residential Ground Mount Top Cap 3/8" - 16 LINC x 5/8" set screw

2

If Actual force is greater than Average force, Please contact K2. For special engineering design of Top bracket connection.

3

TOP bracket connector is reviewed only for the uplift value provided in Report prepared by "K2".

4

Factor of Safety (FOS) = 1.2

5

Uplift force of top bracket = 1950 kg, uplift force of top bracket with factor of safety = 1950 kg/1.2 = 1625 kg.

6

Yield Stress of 2-7/8" dia Helical pipe = Fy = 35 ksi & Fu = 58 ksi

7

Yield Stress of 2-7/8" dia Helical pipe = Fy = 60 ksi (refer Galvalith Tech Helical Chart)

NOTE:-
 1 Top bracket connector design to be provided by K2. Average Force of top bracket = 1950 kg (4299 lbs). Refer to Load test report K2 North America Residential Ground Mount Top Cap 3/8" - 16 UNC x 5/8" set screw
 2 If Actual force is greater than Average force, Please contact K2 for special engineering design of Top bracket connection.
 3 TOP bracket connector is reviewed only for the uplift value provided in Report prepared by K2.
 4 Factor of Safety (FOS) = 1.2
 5 Uplift force of top bracket = 1950 kg, uplift force provided in Report prepared by K2.
 6 Yield Stress of 3" dia pipe - Fy = 35 ksi & Fu = 58 ksi
 7 Yield Stress of 2-7/8" dia Helical pipe - Fy = 60 ksi (refer Galath Tech Helical Chart)

GM SOLAR SHADE-CHART (ASCE 7-16)- [ARIZONA]
4 - Modules (6.16ft x 3.42ft) w/60cells/panels & 3" dia. SCH 40 Pipe.

STRUCTURAL ENGINEERS						JOB NAME JOB NO.	→	Tyler Waggon Everett AZ20170		GATE CHECKER	→	→	May 5, 2022 SAM																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																														
SR- No's	Wind Speed (mph)	Seismic Category	Exposure Category	Tilt Angle (Deg.)	Roof Snow Load (psf)	Mean Roof Height (ft)	3" Pipe Tie Brace		3" Pipe SCH 40 Column Spacing		Pipe over- hang (OH) (ft/in)	Foundation										Top Bracket Connection by K2 (See note L2,3,4,5)																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																					
							Support @ Base Pole footing	Support @ Base Helical Pile	[S1] (ft- in)	[R2] (ft- in)		Pole Footing Size					Helical Size					Welded Ground Screw (Model No.-5)																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																					
												Front Column	Rear Column	Front Column	Rear Column	Front Column	Rear Column	Front Column	Rear Column	Length (in)	Dia (in)	Length (in)	Dia (in)																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																				

- NOTES:
- 1 Top bracket connector design to be provided by "K2". Average Force of top bracket – 1950 kg (4299 lbs). Refer to Load test report K2 North America Residential Ground Mount Top Cap 3/8" - 16 UNC x 5/8" set screw
 - 2 If Actual Force is greater than Average Force, please contact K2 for special engineering design of Top bracket connection.
 - 3 TOP bracket connector is reviewed only for the splash value provided in Report prepared by "K2"
 - 4 Factor of Safety (FOS) = 1.2
 - 5 Uplift force of top bracket = 1950 kg, uplift force of top bracket with factor of safety = 1950 kg/1.2 = 1625 kg
 - 6 Yield Stress of 7" dia pipe = $F_y = 35 \text{ ksi}$ and $F_u = 58 \text{ ksi}$
 - 7 Yield Stress of 2" dia. Hylar pipe = $F_y = 60 \text{ ksi}$ (refer Goliath Tech Helical Chart)

eiffes		GM SOLAR SHADE-CHART (ASCE 7-16)- [ARIZONA]																		4 - Modules (6.16ft x 3.42ft) w/60cells/panels & 3" dia. SCH 40 Pipe.											
STRUCTURAL ENGINEERS		JOB NAME JOB NO.		→ Tyler Wiggins Everest AJZ20170		DATE CHECKER		→ →		May 5, 2022 SAM																					
SR- No's	Wind Speed (mph)	Seismic Category	Exposure Category	Tilt Angle (Deg.)	Roof Snow Load (psf)	Mean Roof Height (ft)	3" Pipe Tie Brace		3" Pipe SCH 40 Column Spacing		Pipe over- hang (OH) (ft- in)	Foundation										Top Bracket Connection by K2 (See note 1,2,3,4,5)									
							Support @ Base Pole Footing	Support @ Base Helical Pile	[S1] (ft- in)	[S2] (ft- in)		Pole Footing Size					Helical Size					Welded Ground Screw (Model No. 5)									
												Front Column	Rear Column					Front Column	Rear Column					Front Column	Rear Column						
												Dia. (D) (ft)	Depth (d) (ft)	#5 Reinf. Spacing	Dia. (D) (ft)	Depth (d) (ft)	#5 Reinf. Spacing	Shaft Dia. (D) (in)	No's Helix	Helix Dia. (in)	Depth (d) (ft- in)	Shaft Dia. (D) (in)	No's Helix	Helix Dia. (in)	Depth (d) (ft- in)	Dia (in)	Length (in)	Dia (in)	Length (in)	Average Uplift forces- 1950 kg (1625 kg w/ FOS)	
1					0						17'-0"																				YES
2					1-10						17'-0"	0'-6"	2'-0"	3'-0"	8"	2'-0"	3'-6"	8"	2-7/8"	1	10	9'-0"	2-7/8"	1	10	9'-0"	4.5	80	4.5	80	YES
3					11-20						17'-0"																			YES	
4					21-30		NO	NO			12'-0"	0'-6"	2'-0"	3'-0"	8"	2'-0"	3'-6"	8"	2-7/8"	2	8	7'-6"	2-7/8"	2	8	7'-6"	4.5	80	4.5	80	YES
5					31-40						10'-6"																			YES	
6					41-50						9'-6"																			YES	
7					51-60						8'-6"	0'-6"	2'-6"	3'-0"	8"	2'-6"	3'-6"	8"	2-7/8"	2	10	9'-0"	2-7/8"	2	10	9'-0"	4.5	80	4.5	80	YES
8					61-70						8'-0"																			YES	
9					0	≤ 5				7'-6"	16'-0"																			YES	
10					1-10						16'-0"	0'-6"	2'-0"	3'-0"	8"	2'-0"	3'-6"	8"	2-7/8"	1	10	9'-0"	2-7/8"	1	10	9'-0"	4.5	80	4.5	80	YES
11					11-20						14'-0"																			YES	
12					21-30		NO	NO			12'-0"	0'-6"	2'-0"	3'-6"	8"	2'-0"	4'-0"	8"	2-7/8"	2	8	7'-6"	2-7/8"	2	8	7'-6"	4.5	80	4.5	80	YES
13					31-40						10'-6"																			YES	
14					41-50						9'-6"																			YES	
15					51-60						8'-6"	0'-6"	2'-6"	3'-0"	8"	2'-6"	4'-0"	8"	2-7/8"	2	10	9'-0"	2-7/8"	2	10	9'-0"	4.5	80	4.5	80	YES
16					61-70						8'-0"																			YES	
17					0	≥ 5				7'-6"	15'-6"																			YES	
18					1-10						15'-6"	0'-6"	2'-0"	3'-0"	8"	2'-0"	4'-0"	8"	2-7/8"	1	10	9'-0"	2-7/8"	1	10	9'-0"	4.5	80	4.5	80	YES
19					11-20						14'-0"																			YES	
20					21-30		NO	NO			12'-0"	0'-6"	2'-0"	3'-6"	8"	2'-0"	4'-6"	8"	2-7/8"	2	8	7'-6"	2-7/8"	2	8	7'-6"	4.5	80	4.5	80	YES
21					31-40						10'-6"																			YES	
22					41-50						9'-6"																			YES	
23					51-60						8'-6"	0'-6"	2'-6"	3'-6"	8"	2'-6"	4'-0"	8"	2-7/8"	2	10	9'-0"	2-7/8"	2	10	9'-0"	4.5	80	4.5	80	YES
24					61-70						8'-0"																			YES	
25					0	≤ 5				7'-6"	14'-6"																			YES	
26					1-10						14'-6"	0'-6"	2'-0"	3'-0"	8"	2'-0"	4'-0"	8"	2-7/8"	1	10	9'-0"	2-7/8"	1	10	9'-0"	4.5	80	4.5	80	YES
27					11-20						14'-0"																			YES	
28					21-30		NO	NO			12'-0"	0'-6"	2'-0"	3'-6"	8"	2'-0"	4'-6"	8"	2-7/8"	2	8	7'-6"	2-7/8"	2	8	7'-6"	4.5	80	4.5	80	YES
29					31-40						10'-6"																			YES	
30					41-50						9'-6"																			YES	
31					51-60						8'-6"	0'-6"	2'-6"	3'-6"	8"	2'-6"	4'-6"	8"	2-7/8"	2	10	9'-0"	2-7/8"	2	10	9'-0"	4.5	80	4.5	80	YES
32					61-70						8'-0"																			YES	
1					0						16'-6"																				YES
2					1-10						16'-6"	0'-6"	2'-0"	3'-0"	8"	2'-0"	3'-6"	8"	2-7/8"	1	10	9'-0"	2-7/8"	1	10	9'-0"	4.5	80	4.5	80	YES
3					11-20						14'-0"																			YES	
4					21-30		NO	NO			12'-0"	0'-6"	2'-0"	3'-0"	8"	2'-0"	3'-6"	8"	2-7/8"	2	8	7'-6"	2-7/8"	2	8	7'-6"	4.5	80	4.5	80	YES
5					31-40						10'-6"																			YES	
6					41-50						9'-6"																			YES	
7					51-60						8'-6"	0'-6"	2'-6"	3'-0"	8"	2'-6"	3'-6"	8"	2-7/8"	2	10	9'-0"	2-7/8"	2	10	9'-0"	4.5	80	4.5	80	YES
8					61-70						8'-0"																			YES	
9					0	≤ 5				7'-6"	15'-0"																			YES	
10					1-10						15'-0"	0'-6"	2'-0"	3'-0"	8"	2'-0"	4'-0"	8"	2-7/8"	1	10	9'-0"	2-7/8"	1	10	9'-0"	4.5	80	4.5	80	YES
11					11-20						14'-0"																			YES	
12					21-30		NO	NO			12'-0"	0'-6"	2'-0"	3'-6"	8"	2'-0"	4'-6"	8"	2-7/8"	2	8	7'-6"	2-7/8"	2	8	7'-6"	4.5	80	4.5	80	YES
13					31-40						10'-6"																			YES	
14					41-50						9'-6"																			YES	
15					51-60						8'-6"	0'-6"	2'-6"	3'-0"	8"	2'-6"	4'-0"	8"	2-7/8"	2	10	9'-0"	2-7/8"	2	10	9'-0"	4.5	80	4.5	80	YES
16					61-70						8'-0"																			YES	
17					0	≥ 5				7'-6"	14'-0"																			YES	
18					1-10						14'-0"	0'-6"	2'-0"	3'-6"	8"	2'-0"	4'-6"	8"	2-7/8"	1	10	9'-0"	2-7/8"	1	10	9'-0"	4.5	80	4.5	80	YES
19					11-20						14'-0"																			YES	
20					21-30		NO	NO			12'-0"	0'-6"	2'-0"	3'-6"	8"	2'-0"	4'-6"	8"	2-7/8"	2	8	7'-6"	2-7/8"	2	8	7'-6"	4.5	80	4.5	80	YES
21					31-40						10'-6"																			YES	
22					41-50						9'-6"																			YES	
23					51-60						8'-6"	0'-6"	2'-6"	3'-0"	8"	2'-6"	4'-0"	8"	2-7/8"	2	10	9'-0"	2-7/8"	2	10	9'-0"	4.5	80	4.5	80	YES
24					61-70						8'-0"																			YES	
25					0	≥ 5				7'-6"	13'-0"																		YES		
26					1-10						13'-0"	0'-6"	2'-0"	3'-0"	8"	2'-0"	4'-6"	8"	2-7/8"	1	10	9'-0"	2-7/8"	1	10	9'-0"	4.5	80	4.5	80	YES
27					11-20						13'-0"																			YES	
28					21-30		NO	NO			12'-0"	0'-6"	2'-0"	3'-6"	8"	2'-0"	4'-6"	8"	2-7/8"	2	8	7'-6"	2-7/8"	2	8	7'-6"	4.5	80	4.5	80	YES
29					31-40						10'-6"	0'-6"	2'-0"	3'-6"	8"	2'-0"	4'-6"	8"	2-7/8"	2	10	9'-0"	2-7/8"	2	10	9'-0"	4.5	80	4.5	80	YES
30					41-50						9'-6"																				

		GM SOLAR SHADE-CHART (ASCE 7-16)- [ARIZONA] 4 - Modules (6.16ft x 3.42ft) w/60cells/panels & 3" dia. SCH 40 Pipe.																													
		JOB NAME JOB NO.	→	Tyler Wiggins Everest AZ20170	DATE CHECKER	→	May 5, 2022 SAM																								
SR- No's	Wind Speed (mph)	Seismic Category	Exposure Category	Tilt Angle (Deg.)	Roof Snow Load (psf)	Mean Roof Height (ft)	3" Pipe Tie Brace		3" Pipe SCH 40 Column Spacing	Pipe over- hang (OH) (ft- in)	Foundation																Top Bracket Connection by K2 (See 1,2,3,4,5)				
							Support @ Base Pole footing	Support @ Base Helical Pile			[S1] (ft- in)	[S2] (ft- in)	Pole Footing Size				Helical Size				Welded Ground Screw (Model No.-5)										
													Front Column		Rear Column		Front Column		Rear Column		Front Column		Rear Column		Front Column			Rear Column			
													Dia. (D) (ft)	Depth (d) (ft)	#5 Reinf. Spacing	Dia. (D) (ft)	Depth (d) (ft)	#5 Reinf. Spacing	Shaft Dia. (D) (in)	No's Helix	Helix Dia. (in)	Depth (d) (ft- in)	Shaft Dia. (D) (in)	No's Helix	Helix Dia. (in)	Depth (d) (ft- in)		Dia (in)	Length (in)	Dia (in)	Length (in)
1					0					7'-6"	14'-6"	0'-6"	2'-0"	3'-0"	8"	2'-0"	3'-6"	8"	2-7/8"	1	10	9'-0"	2-7/8"	1	10	9'-0"	4.5	80	4.5	80	YES
2					1-10					7'-6"	14'-6"	0'-6"	2'-0"	3'-0"	8"	2'-0"	3'-6"	8"	2-7/8"	1	10	9'-0"	2-7/8"	1	10	9'-0"	4.5	80	4.5	80	YES
3					11-20					7'-6"	14'-0"	0'-6"	2'-0"	3'-6"	8"	2'-0"	3'-6"	8"	2-7/8"	1	10	9'-0"	2-7/8"	1	10	9'-0"	4.5	80	4.5	80	YES
4					21-30					7'-6"	12'-0"	0'-6"	2'-0"	3'-6"	8"	2'-0"	3'-6"	8"	2-7/8"	2	8	7'-6"	2-7/8"	2	8	7'-6"	4.5	80	4.5	80	YES
5					31-40					7'-6"	10'-6"	0'-6"	2'-0"	3'-6"	8"	2'-0"	3'-6"	8"	2-7/8"	2	8	7'-6"	2-7/8"	2	8	7'-6"	4.5	80	4.5	80	YES
6					41-50					7'-6"	9'-6"	0'-6"	2'-6"	3'-0"	8"	2'-6"	3'-6"	8"	2-7/8"	2	10	9'-0"	2-7/8"	2	10	9'-0"	4.5	80	4.5	80	YES
7					51-60					7'-6"	8'-6"	0'-6"	2'-6"	3'-0"	8"	2'-6"	3'-6"	8"	2-7/8"	2	10	9'-0"	2-7/8"	2	10	9'-0"	4.5	80	4.5	80	YES
8					61-70					7'-6"	8'-0"	0'-6"	2'-6"	3'-0"	8"	2'-6"	3'-6"	8"	2-7/8"	2	10	9'-0"	2-7/8"	2	10	9'-0"	4.5	80	4.5	80	YES
9					0	≤ 5				7'-6"	13'-6"	0'-6"	2'-0"	3'-0"	8"	2'-0"	4'-0"	8"	2-7/8"	1	10	9'-0"	2-7/8"	1	10	9'-0"	4.5	80	4.5	80	YES
10					1-10					7'-6"	13'-6"	0'-6"	2'-0"	3'-6"	8"	2'-0"	4'-0"	8"	2-7/8"	1	10	9'-0"	2-7/8"	1	10	9'-0"	4.5	80	4.5	80	YES
11					11-20					7'-6"	13'-6"	0'-6"	2'-0"	3'-6"	8"	2'-0"	4'-0"	8"	2-7/8"	1	10	9'-0"	2-7/8"	1	10	9'-0"	4.5	80	4.5	80	YES
12					21-30					7'-6"	12'-0"	0'-6"	2'-0"	3'-6"	8"	2'-0"	4'-0"	8"	2-7/8"	2	8	7'-6"	2-7/8"	2	8	7'-6"	4.5	80	4.5	80	YES
13					31-40					7'-6"	10'-6"	0'-6"	2'-0"	3'-6"	8"	2'-0"	4'-0"	8"	2-7/8"	2	8	7'-6"	2-7/8"	2	8	7'-6"	4.5	80	4.5	80	YES
14					41-50					7'-6"	9'-6"	0'-6"	2'-6"	3'-0"	8"	2'-6"	4'-0"	8"	2-7/8"	2	10	9'-0"	2-7/8"	2	10	9'-0"	4.5	80	4.5	80	YES
15					51-60					7'-6"	8'-6"	0'-6"	2'-6"	3'-6"	8"	2'-6"	4'-0"	8"	2-7/8"	2	10	9'-0"	2-7/8"	2	10	9'-0"	4.5	80	4.5	80	YES
16					61-70					7'-6"	8'-0"	0'-6"	2'-6"	3'-6"	8"	2'-6"	4'-0"	8"	2-7/8"	2	10	9'-0"	2-7/8"	2	10	9'-0"	4.5	80	4.5	80	YES
17					0	≥ 5				7'-6"	13'-0"	0'-6"	2'-0"	3'-0"	8"	2'-0"	4'-0"	8"	2-7/8"	1	10	9'-0"	2-7/8"	1	10	9'-0"	4.5	80	4.5	80	YES
18					1-10					7'-6"	13'-0"	0'-6"	2'-0"	3'-6"	8"	2'-0"	4'-6"	8"	2-7/8"	1	10	9'-0"	2-7/8"	1	10	9'-0"	4.5	80	4.5	80	YES
19					11-20					7'-6"	13'-0"	0'-6"	2'-0"	3'-6"	8"	2'-0"	4'-6"	8"	2-7/8"	1	10	9'-0"	2-7/8"	1	10	9'-0"	4.5	80	4.5	80	YES
20					21-30					7'-6"	12'-0"	0'-6"	2'-0"	3'-6"	8"	2'-0"	4'-6"	8"	2-7/8"	2	8	7'-6"	2-7/8"	2	8	7'-6"	4.5	80	4.5	80	YES
21					31-40					7'-6"	10'-6"	0'-6"	2'-0"	3'-6"	8"	2'-0"	4'-6"	8"	2-7/8"	2	8	7'-6"	2-7/8"	2	8	7'-6"	4.5	80	4.5	80	YES
22					41-50					7'-6"	9'-6"	0'-6"	2'-6"	3'-6"	8"	2'-6"	4'-0"	8"	2-7/8"	2	10	9'-0"	2-7/8"	2	10	9'-0"	4.5	80	4.5	80	YES
23					51-60					7'-6"	8'-6"	0'-6"	2'-6"	3'-6"	8"	2'-6"	4'-0"	8"	2-7/8"	2	10	9'-0"	2-7/8"	2	10	9'-0"	4.5	80	4.5	80	YES
24					61-70					7'-6"	8'-0"	0'-6"	2'-6"	3'-6"	8"	2'-6"	4'-0"	8"	2-7/8"	2	10	9'-0"	2-7/8"	2	10	9'-0"	4.5	80	4.5	80	YES
25					0					7'-6"	12'-6"	0'-6"	2'-0"	3'-0"	8"	2'-0"	4'-6"	8"	2-7/8"	2	8	7'-6"	2-7/8"	2	8	7'-6"	4.5	80	4.5	80	YES
26					1-10					7'-6"	12'-6"	0'-6"	2'-0"	3'-6"	8"	2'-0"	4'-6"	8"	2-7/8"	2	8	7'-6"	2-7/8"	2	8	7'-6"	4.5	80	4.5	80	YES
27					11-20					7'-6"	12'-6"	0'-6"	2'-0"	3'-6"	8"	2'-0"	4'-6"	8"	2-7/8"	2	8	7'-6"	2-7/8"	2	8	7'-6"	4.5	80	4.5	80	YES
28					21-30					7'-6"	12'-0"	0'-6"	2'-0"	3'-6"	8"	2'-0"	5'-0"	8"	2-7/8"	2	10	9'-0"	2-7/8"	2	10	9'-0"	4.5	80	4.5	80	YES
29					31-40					7'-6"	10'-6"	0'-6"	2'-0"	3'-6"	8"	2'-0"	5'-0"	8"	2-7/8"	2	10	9'-0"	2-7/8"	2	10	9'-0"	4.5	80	4.5	80	YES
30					41-50					7'-6"	9'-6"	0'-6"	2'-6"	3'-6"	8"	2'-6"	4'-6"	8"	2-7/8"	2	10	9'-0"	2-7/8"	2	10	9'-0"	4.5	80	4.5	80	YES
31					51-60					7'-6"	8'-6"	0'-6"	2'-6"	3'-6"	8"	2'-6"	4'-6"	8"	2-7/8"	2	10	9'-0"	2-7/8"	2	10	9'-0"	4.5	80	4.5	80	YES
32					61-70					7'-6"	8'-0"	0'-6"	2'-6"	3'-6"	8"	2'-6"	4'-6"	8"	2-7/8"	2	10	9'-0"	2-7/8"	2	10	9'-0"	4.5	80	4.5	80	YES

NOTES:

1

Top bracket connector design to be provided by "K2". Average Force of top bracket = 1950 kg (4299 lbs), Refer to Load test report K2 North America Residential Ground Mount Top Cap 3/8" - 16 UNC x 5/8" set screw

2

If Actual force is greater than Average force, Please contact K2 For special engineering design of Top bracket connection.

3

TOP bracket connector is reviewed only for the uplift value provided in Report prepared by "K2"

4

Factor of Safety (FOS) = 1.2

5

Uplift force of top bracket = 1950 kg, uplift force of top bracket with factor of safety = 1950 kg/1.2 = 1625 kg.

6

Yield Stress of 3" dia pipe : Fy = 35 ksi & Fu = 58 ksi

7

Yield Stress of 2-7/8" dia Helical pile : Fy = 60 ksi (refer Galathea Tech Helical Chart)

NOTE:-
1 Top bracket connector design to be provided by K2. Average Force of top bracket = 1950 kg (4299 lbs). Refer to Load test report K2 North America Residential Ground Mount Top Cap 3/8" - 16 UNC x 5/8" set screw
2 If Actual force is greater than Average force, Please contact K2 For special engineering design of Top bracket connection.
3 TOP bracket connector is reviewed only for the uplift value provided in Report prepared by "K2"
4 Factor of Safety (FOS) = 1.2
5 Uplift force of top bracket = 1950 kg, uplift force provided in Report prepared by "K2"
6 Yield Stress of 3" dia pipe - Fy = 35 ksi & Fu = 58 ksi
7 Yield Stress of 2-7/8" dia Helical pipe - Fy = 60 ksi (refer Galvalith Tech Helical Chart)



GM SOLAR SHADE-CHART (ASCE 7-10)- [ARIZONA]

4 - Modules (6.16ft x 3.42ft) w/60cells/panels & 3" dia. SCH 40 Pipe.

JOB NAME
JOB NO.

→ Tyler Wiggins Everest
AJZ201770

DATE
CHECKER

→ May 5, 2022
SAM

SR- No's	Wind Speed (mph)	Seismic Category	Exposure Category	Tilt Angle (Deg.)	Roof Snow Load (psf)	Mean Roof Height (ft)	3" Pipe Tie Brace		3" Pipe SCH 80 Column Spacing		Foundation																		Top Bracket Connection by "K2" (see note 1,2,3,4,5)		
							Support @ Base Pole footing	Support @ Base Helical Pile	[S1] (ft- in)	[S2] (ft- in)	Pipe over- hang (ft)	Pole Footing Size						Helical Size						Welded Ground Screw (Model No.-5)		Average Uplift force: 1950 kg (1625 kg w/ FOS)					
												Front Column			Rear Column			Front Column			Rear Column			Front Column			Rear Column				
												Dia. (ft)	Depth (ft)	#5 Reinf. Spacing	Dia. (ft)	Depth (ft)	#5 Reinf. Spacing	Shaft Dia. (ft)	No's Helix	Helix Dia. (in)	Depth (ft)	Shaft Dia. (ft)	No's Helix	Helix Dia. (in)	Depth (ft)		Dia (in)	Length (in)	Dia (in)	Length (in)	
1					0					21'-6"	0'-6"	2'-0"	3'-0"	8"	2'-0"	3'-0"	8"	2'-7/8"	1	10	9'-0"	2'-7/8"	1	10	9'-0"	4.5	80	4.5	80	YES	
2					1-10					20'-0"																				YES	
3					11-20					16'-6"																				YES	
4					21-30					13'-6"																				YES	
5					31-40					12'-0"																				YES	
6					41-50					11'-0"																				YES	
7					51-60					10'-0"																				YES	
8					61-70					9'-0"																				YES	
9					0					20'-0"																					YES
10					1-10					16'-6"																				YES	
11					11-20					13'-6"																				YES	
12					21-30					12'-0"																				YES	
13					31-40					11'-0"																				YES	
14					41-50					10'-0"																				YES	
15					51-60					9'-0"																				YES	
16					61-70					9'-0"																				YES	
17					0					20'-0"																					YES
18					1-10					16'-6"																				YES	
19					11-20					13'-6"																				YES	
20					21-30					12'-0"																				YES	
21					31-40					11'-0"																				YES	
22					41-50					10'-0"																				YES	
23					51-60					9'-0"																				YES	
24					61-70					9'-0"																				YES	
25					0					19'-0"																					YES
26					1-10					16'-6"																				YES	
27					11-20					13'-6"																				YES	
28					21-30					12'-0"																				YES	
29					31-40					11'-0"																				YES	
30					41-50					10'-0"																				YES	
31					51-60					9'-0"																				YES	
32					61-70					9'-0"																				YES	
1					0					20'-0"																					YES
2					1-10					16'-6"																				YES	
3					11-20					13'-6"																				YES	
4					21-30					12'-0"																				YES	
5					31-40					11'-0"																				YES	
6					41-50					10'-0"																				YES	
7					51-60					9'-0"																				YES	
8					61-70					9'-0"																				YES	
9					0					19'-6"																					YES
10					1-10					16'-6"																				YES	
11					11-20					13'-6"																				YES	
12					21-30					12'-0"																				YES	
13					31-40					11'-0"																				YES	
14					41-50					10'-0"																				YES	
15					51-60					9'-0"																				YES	
16					61-70					9'-0"																				YES	
17					0					19'-0"																					YES
18					1-10					16'-6"																				YES	
19					11-20					13'-6"																				YES	
20					21-30					12'-0"																				YES	
21					31-40					11'-0"																				YES	
22					41-50					10'-0"																				YES	
23					51-60					9'-0"																				YES	
24					61-70					9'-0"																				YES	
25					0					19'-6"																					YES
26					1-10					16'-6"																				YES	
27					11-20					13'-6"																				YES	
28					21-30					12'-0"																				YES	
29					31-40					11'-0"																				YES	
30					41-50					10'-0"																				YES	
31					51-60					9'-0"																				YES	
32					61-70					9'-0"																				YES	
1					0					20'-0"																					YES
2					1-10					16'-6"																				YES	
3					11-20					13'-6"																				YES	
4					21-30					12'-0"																				YES	
5					31-40					11'-0"																				YES	
6					41-50					10'-0"																				YES	
7					51-60					9'-0"																				YES	
8					61-70					9'-0"																				YES	
9					0					19'-6"																					YES
10					1-10					16'-6"																				YES	
11					11-20					13'-6"																				YES	
12					21-30					12'-0"																				YES	
13					31-40					11'-0"																					



GM SOLAR SHADE-CHART (ASCE 7-10)- [ARIZONA]

4 - Modules (6.16ft x 3.42ft) w/60cells/panels & 3" dia. SCH 40 Pipe.

JOB NAME
JOB NO.

→ Tyler Wiggins Everest
AZ201770

DATE
CHECKER

→ May 5, 2022
SAM

SR- No's	Wind Speed (mph)	Seismic Category	Exposure Category	Tilt Angle (Deg)	Roof Snow Load (psf)	Mean Roof Height (ft)	3" Pipe Tie Brace		3" Pipe SCH 40 Column Spacing		Pipe over- hang OHH (ft)	Foundation												Top Bracket Connection by "K2" (see note 1,2,3,4,5)																					
							Support @ Base	Support @ Base	IS11 ft	IS21 ft		Pole Footing Size						Helical Size						Welded Ground Screw (Model No.-5)																					
												Front Column			Rear Column			Front Column			Rear Column			Front Column		Rear Column																			
												Di. (ft)	Depth	#5	Di. (ft)	Depth	#5	Shaft Dia.	No's	Helix	Depth	Shaft Dia.	No's	Helix	Depth	Length	Length	Length																	
1	10	105	A & B	C	05-10	≤ 5	NO	NO	7'-6"	18'-0"	19'-0"	2'-0"	3'-0"	8"	2'-0"	3'-6"	8"	2-7/8"	2	8	7'-6"	2-7/8"	2	8	7'-6"	4.5	80	4.5	80	Average Uplift force- 1950 kg (1625 kg w/ FDS)															
2	11											18'-0"	0'-6"	2'-0"	3'-0"	8"	2'-0"	3'-6"	8"	2-7/8"	1	10	9'-0"	2-7/8"	1	10	9'-0"	4.5	80	YES															
3	12											16'-6"	0'-6"	2'-0"	3'-0"	8"	2'-0"	3'-6"	8"	2-7/8"	2	8	7'-6"	2-7/8"	2	8	7'-6"	4.5	80	YES															
4	13											13'-6"	0'-6"	2'-0"	3'-0"	8"	2'-0"	3'-6"	8"	2-7/8"	2	8	7'-6"	2-7/8"	2	8	7'-6"	4.5	80	YES															
5	14											12'-0"	0'-6"	2'-6"	3'-0"	8"	2'-6"	3'-6"	8"	2-7/8"	2	10	9'-0"	2-7/8"	2	10	9'-0"	4.5	80	YES															
6	15											11'-0"	0'-6"	2'-6"	3'-0"	8"	2'-6"	3'-6"	8"	2-7/8"	2	10	9'-0"	2-7/8"	2	10	9'-0"	4.5	80	YES															
7	16											10'-0"	0'-6"	2'-6"	3'-0"	8"	2'-6"	3'-6"	8"	2-7/8"	2	10	9'-0"	2-7/8"	2	10	9'-0"	4.5	80	YES															
8	17											9'-0"	0'-6"	2'-6"	3'-0"	8"	2'-6"	3'-6"	8"	2-7/8"	2	10	9'-0"	2-7/8"	2	10	9'-0"	4.5	80	YES															
9	18				11-15							18'-0"	0'-6"	2'-0"	3'-0"	8"	2'-0"	3'-6"	8"	2-7/8"	1	10	9'-0"	2-7/8"	1	10	9'-0"	4.5	80	YES															
10	19											18'-0"	0'-6"	2'-0"	3'-0"	8"	2'-0"	3'-6"	8"	2-7/8"	1	10	9'-0"	2-7/8"	1	10	9'-0"	4.5	80	YES															
11	20											16'-6"	0'-6"	2'-0"	3'-0"	8"	2'-0"	3'-6"	8"	2-7/8"	2	8	7'-6"	2-7/8"	2	8	7'-6"	4.5	80	YES															
12	21											13'-6"	0'-6"	2'-0"	3'-0"	8"	2'-0"	3'-6"	8"	2-7/8"	2	8	7'-6"	2-7/8"	2	8	7'-6"	4.5	80	YES															
13	22											12'-0"	0'-6"	2'-6"	3'-0"	8"	2'-6"	3'-6"	8"	2-7/8"	2	10	9'-0"	2-7/8"	2	10	9'-0"	4.5	80	YES															
14	23											11'-0"	0'-6"	2'-6"	3'-0"	8"	2'-6"	3'-6"	8"	2-7/8"	2	10	9'-0"	2-7/8"	2	10	9'-0"	4.5	80	YES															
15	24											10'-0"	0'-6"	2'-6"	3'-0"	8"	2'-6"	3'-6"	8"	2-7/8"	2	10	9'-0"	2-7/8"	2	10	9'-0"	4.5	80	YES															
16	25											9'-0"	0'-6"	2'-6"	3'-0"	8"	2'-6"	3'-6"	8"	2-7/8"	2	10	9'-0"	2-7/8"	2	10	9'-0"	4.5	80	YES															
17	26				16-20							17'-6"	0'-6"	2'-0"	3'-0"	8"	2'-0"	3'-6"	8"	2-7/8"	1	10	9'-0"	2-7/8"	1	10	9'-0"	4.5	80	YES															
18	27											17'-6"	0'-6"	2'-0"	3'-0"	8"	2'-0"	3'-6"	8"	2-7/8"	1	10	9'-0"	2-7/8"	1	10	9'-0"	4.5	80	YES															
19	28											16'-6"	0'-6"	2'-0"	3'-0"	8"	2'-0"	3'-6"	8"	2-7/8"	2	8	7'-6"	2-7/8"	2	8	7'-6"	4.5	80	YES															
20	29											13'-6"	0'-6"	2'-0"	3'-0"	8"	2'-0"	3'-6"	8"	2-7/8"	2	8	7'-6"	2-7/8"	2	8	7'-6"	4.5	80	YES															
21	30											12'-0"	0'-6"	2'-6"	3'-0"	8"	2'-6"	3'-6"	8"	2-7/8"	2	10	9'-0"	2-7/8"	2	10	9'-0"	4.5	80	YES															
22	31											11'-0"	0'-6"	2'-6"	3'-0"	8"	2'-6"	3'-6"	8"	2-7/8"	2	10	9'-0"	2-7/8"	2	10	9'-0"	4.5	80	YES															
23	32											10'-0"	0'-6"	2'-6"	3'-0"	8"	2'-6"	3'-6"	8"	2-7/8"	2	10	9'-0"	2-7/8"	2	10	9'-0"	4.5	80	YES															
24	33				21-25							9'-0"	0'-6"	2'-6"	3'-0"	8"	2'-6"	3'-6"	8"	2-7/8"	2	10	9'-0"	2-7/8"	2	10	9'-0"	4.5	80	YES															
25	34											17'-6"	0'-6"	2'-0"	3'-0"	8"	2'-0"	3'-6"	8"	2-7/8"	1	10	9'-0"	2-7/8"	1	10	9'-0"	4.5	80	YES															
26	35											17'-6"	0'-6"	2'-0"	3'-0"	8"	2'-0"	3'-6"	8"	2-7/8"	1	10	9'-0"	2-7/8"	1	10	9'-0"	4.5	80	YES															
27	36											16'-6"	0'-6"	2'-0"	3'-0"	8"	2'-0"	3'-6"	8"	2-7/8"	2	8	7'-6"	2-7/8"	2	8	7'-6"	4.5	80	YES															
28	37											13'-6"	0'-6"	2'-0"	3'-0"	8"	2'-0"	3'-6"	8"	2-7/8"	2	8	7'-6"	2-7/8"	2	8	7'-6"	4.5	80	YES															
29	38											12'-0"	0'-6"	2'-6"	3'-0"	8"	2'-6"	3'-6"	8"	2-7/8"	2	10	9'-0"	2-7/8"	2	10	9'-0"	4.5	80	YES															
30	39											11'-0"	0'-6"	2'-6"	3'-0"	8"	2'-6"	3'-6"	8"	2-7/8"	2	10	9'-0"	2-7/8"	2	10	9'-0"	4.5	80	YES															
31	40											10'-0"	0'-6"	2'-6"	3'-0"	8"	2'-6"	3'-6"	8"	2-7/8"	2	10	9'-0"	2-7/8"	2	10	9'-0"	4.5	80	YES															
32	41											9'-0"	0'-6"	2'-6"	3'-0"	8"	2'-6"	3'-6"	8"	2-7/8"	2	10	9'-0"	2-7/8"	2	10	9'-0"	4.5	80	YES															
1	10				110							A & B	C	05-10	≤ 5	NO	NO	7'-6"	18'-6"	18'-6"	2'-0"	3'-0"	8"	2'-0"	3'-0"	8"	2-7/8"	1	10	9'-0"	2-7/8"	1	10	9'-0"	4.5	80	4.5	80	Average Uplift force- 1950 kg (1625 kg w/ FDS)						
2	11																				18'-6"	0'-6"	2'-0"	3'-0"	8"	2'-0"	3'-6"	8"	2-7/8"	2	8	7'-6"	2-7/8"	2	8	7'-6"	4.5	80	YES						
3	12																				16'-6"	0'-6"	2'-0"	3'-0"	8"	2'-0"	3'-6"	8"	2-7/8"	2	8	7'-6"	2-7/8"	2	8	7'-6"	4.5	80	YES						
4	13																				13'-6"	0'-6"	2'-0"	3'-0"	8"	2'-0"	3'-6"	8"	2-7/8"	2	8	7'-6"	2-7/8"	2	8	7'-6"	4.5	80	YES						
5	14																				12'-0"	0'-6"	2'-6"	3'-0"	8"	2'-6"	3'-6"	8"	2-7/8"	2	10	9'-0"	2-7/8"	2	10	9'-0"	4.5	80	YES						
6	15																				11'-0"	0'-6"	2'-6"	3'-0"	8"	2'-6"	3'-6"	8"	2-7/8"	2	10	9'-0"	2-7/8"	2	10	9'-0"	4.5	80	YES						
7	16																				10'-0"	0'-6"	2'-6"	3'-0"	8"	2'-6"	3'-6"	8"	2-7/8"	2	10	9'-0"	2-7/8"	2	10	9'-0"	4.5	80	YES						
8	17																				9'-0"	0'-6"	2'-6"	3'-0"	8"	2'-6"	3'-6"	8"	2-7/8"	2	10	9'-0"	2-7/8"	2	10	9'-0"	4.5	80	YES						
9	18													11-15							17'-6"	0'-6"	2'-0"	3'-0"	8"	2'-0"	3'-6"	8"	2-7/8"	1	10	9'-0"	2-7/8"	1	10	9'-0"	4.5	80	YES						
10	19																				17'-6"	0'-6"	2'-0"	3'-0"	8"	2'-0"	3'-6"	8"	2-7/8"	1	10	9'-0"	2-7/8"	1	10	9'-0"	4.5	80	YES						
11	20																				16'-6"	0'-6"	2'-0"	3'-6"	8"	2'-0"	3'-6"	8"	2-7/8"	2	8	7'-6"	2-7/8"	2	8	7'-6"	4.5	80	YES						
12	21																				13'-6"	0'-6"	2'-0"	3'-6"	8"	2'-0"	3'-6"	8"	2-7/8"	2	8	7'-6"	2-7/8"	2	8	7'-6"	4.5	80	YES						
13	22	12'-0"	0'-6"	2'-6"		3'-0"	8"	2'-6"	3'-6"	8"	2-7/8"										2	10	9'-0"	2-7/8"	2	10	9'-0"	4.5	80	YES															
14	23	11'-0"	0'-6"	2'-6"		3'-0"	8"	2'-6"	3'-6"	8"	2-7/8"										2	10	9'-0"	2-7/8"	2	10	9'-0"	4.5	80	YES															
15	24	10'-0"	0'-6"	2'-6"		3'-6"	8"	2'-6"	3'-6"	8"	2-7/8"										2	10	9'-0"	2-7/8"	2	10	9'-0"	4.5	80	YES															
16	25	9'-0"	0'-6"	2'-6"		3'-6"	8"	2'-6"	3'-6"	8"	2-7/8"										2	10	9'-0"	2-7/8"	2	10	9'-0"	4.5	80	YES															
17	26	16-20							17'-6"	0'-6"	2'-0"			3'-0"							8"	2'-0"	3'-6"	8"	2-7/8"	1	10	9'-0"	2-7/8"	1	10	9'-0"	4.5	80	YES										
18	27								17'-6"	0'-6"	2'-0"			3'-0"							8"	2'-0"	3'-6"	8"	2-7/8"	1	10	9'-0"	2-7/8"	1	10	9'-0"	4.5	80	YES										
19	28								16'-6"	0'-6"	2'-0"			3'-6"							8"	2'-0"	3'-6"	8"	2-7/8"	2	8	7'-6"	2-7/8"	2	8	7'-6"	4.5	80	YES										
20	29								13'-6"	0'-6"	2'-0"			3'-6"							8"	2'-0"	3'-6"	8"	2-7/8"	2	8	7'-6"	2-7/8"	2	8	7'-6"	4.5	80	YES										
21	30								12'-0"	0'-6"	2'-6"			3'-0"							8"	2'-6"	3'-6"	8"	2-7/8"	2	10	9'-0"	2-7/8"	2	10	9'-0"	4.5	80	YES										
22	31								11'-0"	0'-6"	2'-6"			3'-0"							8"	2'-6"	3'-6"	8"	2-7/8"	2	10	9'-0"	2-7/8"	2	10	9'-0"	4.5	80	YES										
23	32								10'-0"	0'-6"	2'-6"			3'-6"							8"	2'-6"	3'-6"	8"	2-7/8"	2	10	9'-0"	2-7/8"	2	10	9'-0"	4.5	80	YES										
24	33	21-25							9'-0"	0'-6"	2'-6"			3'-0"							8"	2'-6"	3'-6"	8"	2-7/8"	2	10	9'-0"	2-7/8"	2	10	9'-0"	4.5	80	YES										
25	34								17'-6"	0'-6"	2'-0"			3'-0"							8"	2'-0"	3'-6"	8"	2-7/8"	1	10	9'-0"	2-7/8"	1	10	9'-0"	4.5	80	YES										
26	35								17'-6"	0'-6"	2'-0"			3'-0"							8"	2'-0"	3'-6"	8"	2-7/8"	1	10	9'-0"	2-7/8"	1	10	9'-0"	4.5	80	YES										
27	36								16'-6"	0'-6"	2'-0"			3'-6"							8"	2'-0"	3'-6"	8"	2-7/8"	2	8	7'-6"	2-7/8"	2	8	7'-6"	4.5	80	YES										
28	37								13'-6"	0'-6"	2'-0"			3'-6"							8"	2'-0"	3'-6"	8"	2-7/8"	2	8	7'-6"	2-7/8"	2	8	7'-6"	4.5	80	YES										
29	38								12'-0"	0'-6"	2'-6"			3'-0"							8"	2'-6"	3'-6"	8"	2-7/8"	2	10	9'-0"	2-7/8"	2	10	9'-0"	4.5	80	YES										
30	39								11'-0"	0'-6"	2'-6"			3'-6"							8"	2'-6"	3'-6"	8"	2-7/8"	2	10	9'-0"	2-7/8"	2	10	9'-0"	4.5	80	YES										
31	40								10'-0"	0'-6"	2'-6"			3'-6"							8"	2'-6"	3'-6"	8"	2-7/8"	2	10	9'-0"	2-7/8"	2	10	9'-0"	4.5	80	YES										
32	41								9'-0"	0'-6"	2'-6"			3'-6"							8"	2'-6"	3'-6"	8"	2-7/8"	2	10	9'-0"	2-7/8"	2	10	9'-0"	4.5	80	YES										
1	10	115	A & B	C		05-10	≤ 5	NO	NO	7'-6"	17'-6"			16'-6"							2'-0"	3'-0"	8"	2'-0"	3'-6"	8"	2-7/8"	1	10	9'-0"	2-7/8"	1	10	9'-0"	4.5	80	4.5	80	Average Uplift force- 1950 kg (1625 kg w/ FDS)						
2	11																				17'-6"	0'-6"	2'-0"	3'-0"	8"	2'-0"	3'-6"	8"	2-7/8"	1	10	9'-0"	2-7/8"	1	10	9'-0"	4.5	80	YES						
3	12																				16'-6"	0'-6"	2'-0"	3'-0"	8"	2'-0"	3'-6"	8"	2-7/8"	2	8	7'-6"	2-7/8"	2	8	7'-6"	4.5	80	YES						
4	13																				13'-6"	0'-6"	2'-0"	3'-0"	8"	2'-0"	3'-6"	8"	2-7/8"	2	8	7'-6"	2-7/8"	2	8	7'-6"	4.5	80	YES						
5	14																				12'-0"	0'-6"	2'-6"	3'-0"	8"	2'-6"	3'-6"	8"	2-7/8"	2	10	9'-0"	2-7/8"	2	10	9'-0"	4.5	80	YES						
6	15																				11'-0"	0'-6"	2'-6"	3'-0"	8"	2'-6"	3'-6"	8"	2-7/8"	2	10	9'-0"	2-7/8"	2	10	9'-0"	4.5	80	YES						
7	16																				10'-0"	0'-6"	2'-6"	3'-0"	8"	2'-6"	3'-6"	8"	2-7/8"	2	10														



GM SOLAR SHADE-CHART (ASCE 7-10)- [ARIZONA]

4 - Modules (6.16ft x 3.42ft) w/60cells/panels & 3" dia. SCH 40 Pipe.

JOB NAME
JOB NO.

→ Tyler Wiggins Everest
AJZ20170

DATE
CHECKER

→ May 5, 2022
SAM

SR-No's	Wind Speed (mph)	Seismic Category	Exposure Category	Tilt Angle (Deg.)	Roof Snow Load (psf)	Mean Roof Height (ft)	3" Pipe Tie Brace		3" Pipe SCH 40 Column Spacing		Foundation																Top Bracket Connection by "K2" (see note 1,2,3,4,5)				
							Support @ Base	Support @ Base	FS1 (ft)	FS2 (ft)	Pipe over-hang (ft)	Pole Footing Size						Helical Size						Welded Ground Screw (Model No.-5)		Average Uplift force- 1950 kg (1625 kg w/ FOS)					
												Front Column			Rear Column			Front Column			Rear Column			Front Column			Rear Column				
												Dia. (ft)	Depth	#5	Dia. (ft)	Depth	#5	Shaft Dia.	No's	Helix	Depth	Shaft Dia.	No's	Helix	Depth		Length	Length			
1											15'-0"	0'-6"	2'-0"	3'-0"	8"	2'-0"	3'-6"	8"	2'-7/8"	1	10	9'-0"	2-7/8"	1	10	9'-0"	4.5	80	4.5	80	YES
2					1-10						17'-0"	0'-6"	2'-0"	3'-0"	8"	2'-0"	3'-6"	8"	2'-7/8"	2	8	7'-6"	2-7/8"	2	8	7'-6"	4.5	80	4.5	80	YES
3					11-20						16'-6"	0'-6"	2'-0"	3'-6"	8"	2'-0"	3'-6"	8"	2'-7/8"	2	8	7'-6"	2-7/8"	2	8	7'-6"	4.5	80	4.5	80	YES
4					21-30						13'-6"	0'-6"	2'-0"	3'-6"	8"	2'-0"	3'-6"	8"	2'-7/8"	2	10	9'-0"	2-7/8"	2	10	9'-0"	4.5	80	4.5	80	YES
5					31-40						12'-0"	0'-6"	2'-6"	3'-0"	8"	2'-6"	3'-6"	8"	2'-7/8"	2	10	9'-0"	2-7/8"	2	10	9'-0"	4.5	80	4.5	80	YES
6					41-50						11'-0"	0'-6"	2'-6"	3'-0"	8"	2'-6"	3'-6"	8"	2'-7/8"	2	10	9'-0"	2-7/8"	2	10	9'-0"	4.5	80	4.5	80	YES
7					51-60						10'-0"	0'-6"	2'-6"	3'-6"	8"	2'-6"	3'-6"	8"	2'-7/8"	2	10	9'-0"	2-7/8"	2	10	9'-0"	4.5	80	4.5	80	YES
8					61-70	≤ 5				7'-6"	9'-0"	0'-6"	2'-6"	3'-6"	8"	2'-6"	3'-6"	8"	2'-7/8"	2	10	9'-0"	2-7/8"	2	10	9'-0"	4.5	80	4.5	80	YES
9					0						16'-0"	0'-6"	2'-0"	3'-0"	8"	2'-0"	3'-6"	8"	2'-7/8"	2	8	7'-6"	2-7/8"	2	8	7'-6"	4.5	80	4.5	80	YES
10					1-10						16'-0"	0'-6"	2'-0"	3'-6"	8"	2'-0"	3'-6"	8"	2'-7/8"	2	8	7'-6"	2-7/8"	2	8	7'-6"	4.5	80	4.5	80	YES
11					11-20						16'-0"	0'-6"	2'-0"	3'-6"	8"	2'-0"	3'-6"	8"	2'-7/8"	2	8	7'-6"	2-7/8"	2	8	7'-6"	4.5	80	4.5	80	YES
12					21-30						13'-6"	0'-6"	2'-0"	3'-6"	8"	2'-6"	3'-6"	8"	2'-7/8"	2	10	9'-0"	2-7/8"	2	10	9'-0"	4.5	80	4.5	80	YES
13					31-40						12'-0"	0'-6"	2'-6"	3'-6"	8"	2'-6"	3'-6"	8"	2'-7/8"	2	10	9'-0"	2-7/8"	2	10	9'-0"	4.5	80	4.5	80	YES
14					41-50						11'-0"	0'-6"	2'-6"	3'-6"	8"	2'-6"	3'-6"	8"	2'-7/8"	2	10	9'-0"	2-7/8"	2	10	9'-0"	4.5	80	4.5	80	YES
15					51-60						10'-0"	0'-6"	2'-6"	3'-6"	8"	2'-6"	3'-6"	8"	2'-7/8"	2	10	9'-0"	2-7/8"	2	10	9'-0"	4.5	80	4.5	80	YES
16					61-70						9'-0"	0'-6"	2'-6"	3'-6"	8"	2'-6"	3'-6"	8"	2'-7/8"	2	10	9'-0"	2-7/8"	2	10	9'-0"	4.5	80	4.5	80	YES
17					0						15'-6"	0'-6"	2'-0"	3'-0"	8"	2'-0"	3'-6"	8"	2'-7/8"	2	8	7'-6"	2-7/8"	2	8	7'-6"	4.5	80	4.5	80	YES
18					1-10						15'-6"	0'-6"	2'-0"	3'-6"	8"	2'-0"	3'-6"	8"	2'-7/8"	2	8	7'-6"	2-7/8"	2	8	7'-6"	4.5	80	4.5	80	YES
19					11-20						15'-6"	0'-6"	2'-0"	3'-6"	8"	2'-0"	3'-6"	8"	2'-7/8"	2	8	7'-6"	2-7/8"	2	8	7'-6"	4.5	80	4.5	80	YES
20					21-30						13'-6"	0'-6"	2'-6"	3'-6"	8"	2'-6"	3'-6"	8"	2'-7/8"	2	10	9'-0"	2-7/8"	2	10	9'-0"	4.5	80	4.5	80	YES
21					31-40						12'-0"	0'-6"	2'-6"	3'-6"	8"	2'-6"	3'-6"	8"	2'-7/8"	2	10	9'-0"	2-7/8"	2	10	9'-0"	4.5	80	4.5	80	YES
22					41-50						11'-0"	0'-6"	2'-6"	3'-6"	8"	2'-6"	3'-6"	8"	2'-7/8"	2	10	9'-0"	2-7/8"	2	10	9'-0"	4.5	80	4.5	80	YES
23					51-60						10'-0"	0'-6"	2'-6"	3'-6"	8"	2'-6"	3'-6"	8"	2'-7/8"	2	10	9'-0"	2-7/8"	2	10	9'-0"	4.5	80	4.5	80	YES
24					61-70						9'-0"	0'-6"	2'-6"	3'-6"	8"	2'-6"	3'-6"	8"	2'-7/8"	2	10	9'-0"	2-7/8"	2	10	9'-0"	4.5	80	4.5	80	YES
25					0	≥ 5					14'-6"	0'-6"	2'-0"	3'-0"	8"	2'-0"	3'-6"	8"	2'-7/8"	2	8	7'-6"	2-7/8"	2	8	7'-6"	4.5	80	4.5	80	YES
26					1-10						14'-6"	0'-6"	2'-0"	3'-6"	8"	2'-0"	3'-6"	8"	2'-7/8"	2	8	7'-6"	2-7/8"	2	8	7'-6"	4.5	80	4.5	80	YES
27					11-20						14'-6"	0'-6"	2'-0"	3'-6"	8"	2'-0"	3'-6"	8"	2'-7/8"	2	8	7'-6"	2-7/8"	2	8	7'-6"	4.5	80	4.5	80	YES
28					21-30						13'-6"	0'-6"	2'-6"	3'-6"	8"	2'-6"	3'-6"	8"	2'-7/8"	2	10	9'-0"	2-7/8"	2	10	9'-0"	4.5	80	4.5	80	YES
29					31-40						12'-0"	0'-6"	2'-6"	3'-6"	8"	2'-6"	3'-6"	8"	2'-7/8"	2	10	9'-0"	2-7/8"	2	10	9'-0"	4.5	80	4.5	80	YES
30					41-50						11'-0"	0'-6"	2'-6"	3'-6"	8"	2'-6"	3'-6"	8"	2'-7/8"	2	10	9'-0"	2-7/8"	2	10	9'-0"	4.5	80	4.5	80	YES
31					51-60						10'-0"	0'-6"	2'-6"	3'-6"	8"	2'-6"	3'-6"	8"	2'-7/8"	2	10	9'-0"	2-7/8"	2	10	9'-0"	4.5	80	4.5	80	YES
32					61-70						9'-0"	0'-6"	2'-6"	3'-6"	8"	2'-6"	3'-6"	8"	2'-7/8"	2	10	9'-0"	2-7/8"	2	10	9'-0"	4.5	80	4.5	80	YES

- NOTE:-
- Top bracket connector design to be provided by "K2". Average Force of top bracket ~ 1950 kg (4299 lbs). Refer to Load test report K2 North America Residential Ground Mount Top Cap 3/8" - 16 UNC x 5/8" set screw
 - If Actual force is greater than Average force, Please contact K2 For special engineering design of Top bracket connection.
 - TOP bracket connector is reviewed only for the uplift value provided in Report prepared by "K2".
 - Factor of Safety (FOS) = 1.2
 - Uplift force of top bracket ~ 1950 kg, uplift force of top bracket with factor of safety ~ 1950 kg 1.2 ~ 1625 kg.
 - Yield Stress of 3" dia pipe - $F_y = 35$ ksi & $F_u = 58$ ksi
 - Yield Stress of 2-7/8" dia Helical pipe - $F_y = 60$ ksi (refer Galath Tech Helical Chart)



GM SOLAR SHADE-CHART (ASCE 7-16)- [ARIZONA]

4 - Modules (6.16ft x 3.42ft) w /60cells/panels & 3" dia. SCH 40 Pipe.

JOB NAME
JOB NO. → Tyler Wiggins Everest
AJ220170

DATE
CHECKER →

May 5, 2022
SAM

SR- No's	Wind Speed (mph)	Seismic Category	Exposure Category	Tilt Angle (Deg.)	Roof Snow Load (psf)	Mean Roof Height (ft)	3" Pipe Tie Brace		3" Pipe SCH 40 Column Spacing		Pipe over- hang (OH) (ft- in)	Foundation										Top Bracket Connection by "K2" (see note 1,2,3,4,5)												
							Support @ Base Pole footing	Support @ Base Helical Pile	[S1] (ft- in)	[S2] (ft- in)		Pole Footing Size					Helical Size					Welded Ground Screw (Model No.-5)												
												Front Column		Rear Column			#5 Reinf. Spacing	Front Column		Rear Column			Front Column		Rear Column									
												Dia. (ft) (ft)	Depth (ft) (ft)	Dia. (ft) (ft)	Depth (ft) (ft)	#5 Reinf. Spacing		Shaft Dia. (ft) (ft)	No's Helix	Helix Dia. (in)	Depth (ft) (ft)	Shaft Dia. (ft) (ft)	No's Helix	Helix Dia. (in)	Depth (ft) (ft)	Dia (in)	Length (ft)	Dia (in)	Length (ft)					
1					0					21'-6"	0'-6"	2'-0"	3'-0"	8"	2'-0"	3'-0"	8"	2'-0"	3'-6"	8"	2'-7/8"	1	10	9'-0"	2'-7/8"	1	10	9'-0"	4.5	80	4.5	80		YES
2					1'-10"					20'-0"																							YES	
3					11'-20"					16'-6"	0'-6"	2'-0"	3'-0"	8"	2'-0"	3'-6"	8"	2'-7/8"	2	8	7'-6"	2'-7/8"	2	8	7'-6"	4.5	80	4.5	80		YES			
4					21'-30"					13'-6"																						YES		
5					31'-40"					12'-0"																						YES		
6					41'-50"					11'-0"																						YES		
7					51'-60"					10'-0"	0'-6"	2'-6"	3'-0"	8"	2'-6"	3'-6"	8"	2'-7/8"	2	10	9'-0"	2'-7/8"	2	10	9'-0"	4.5	80	4.5	80		YES			
8					61'-70"					9'-0"																						YES		
9					0					20'-6"																							YES	
10					1'-10"					20'-0"	0'-6"	2'-0"	3'-0"	8"	2'-0"	3'-6"	8"	2'-7/8"	1	10	9'-0"	2'-7/8"	1	10	9'-0"	4.5	80	4.5	80		YES			
11					11'-20"					16'-6"	0'-6"	2'-0"	3'-0"	8"	2'-0"	3'-6"	8"	2'-7/8"	2	8	7'-6"	2'-7/8"	2	8	7'-6"	4.5	80	4.5	80		YES			
12					21'-30"					13'-6"																						YES		
13					31'-40"					12'-0"																						YES		
14					41'-50"					11'-0"	0'-6"	2'-6"	3'-0"	8"	2'-6"	3'-6"	8"	2'-7/8"	2	10	9'-0"	2'-7/8"	2	10	9'-0"	4.5	80	4.5	80		YES			
15					51'-60"					10'-0"																						YES		
16					61'-70"					9'-0"																						YES		
17					0					20'-6"																							YES	
18					1'-10"					20'-0"	0'-6"	2'-0"	3'-0"	8"	2'-0"	3'-6"	8"	2'-7/8"	1	10	9'-0"	2'-7/8"	1	10	9'-0"	4.5	80	4.5	80		YES			
19					11'-20"					16'-6"	0'-6"	2'-0"	3'-0"	8"	2'-0"	4'-0"	8"	2'-7/8"	2	8	7'-6"	2'-7/8"	2	8	7'-6"	4.5	80	4.5	80		YES			
20					21'-30"					13'-6"																						YES		
21					31'-40"					12'-0"																						YES		
22					41'-50"					11'-0"	0'-6"	2'-6"	3'-0"	8"	2'-6"		8"	2'-7/8"	2	10	9'-0"	2'-7/8"	2	10	9'-0"	4.5	80	4.5	80		YES			
23					51'-60"					10'-0"																						YES		
24					61'-70"					9'-0"																						YES		
25					0					19'-0"	0'-6"	2'-0"	3'-0"	8"	2'-0"	4'-0"	8"	2'-7/8"	1	10	9'-0"	2'-7/8"	1	10	9'-0"	4.5	80	4.5	80		YES			
26					1'-10"					19'-0"																						YES		
27					11'-20"					18'-6"																						YES		
28					21'-30"					13'-6"	0'-6"	2'-0"	3'-0"	8"	2'-0"	4'-0"	8"	2'-7/8"	2	8	7'-6"	2'-7/8"	2	8	7'-6"	4.5	80	4.5	80		YES			
29					31'-40"					12'-0"																						YES		
30					41'-50"					11'-0"	0'-6"	2'-6"			8"	2'-6"	4'-0"	8"	2'-7/8"	2	10	9'-0"	2'-7/8"	2	10	9'-0"	4.5	80	4.5	80		YES		
31					51'-60"					10'-0"																						YES		
32					61'-70"					9'-0"																						YES		
1					0					20'-6"	0'-6"	2'-0"	3'-0"	8"	2'-0"	3'-0"	8"	2'-7/8"	1	10	9'-0"	2'-7/8"	1	10	9'-0"	4.5	80	4.5	80		YES			
2					1'-10"					20'-0"																						YES		
3					11'-20"					16'-6"	0'-6"	2'-0"	3'-0"	8"	2'-0"	3'-6"	8"	2'-7/8"	2	8	7'-6"	2'-7/8"	2	8	7'-6"	4.5	80	4.5	80		YES			
4					21'-30"					13'-6"																						YES		
5					31'-40"					12'-0"																						YES		
6					41'-50"					11'-0"	0'-6"	2'-6"	3'-0"	8"	2'-6"	3'-6"	8"	2'-7/8"	2	10	9'-0"	2'-7/8"	2	10	9'-0"	4.5	80	4.5	80		YES			
7					51'-60"					10'-0"																						YES		
8					61'-70"					9'-0"																						YES		
9					0					19'-6"	0'-6"	2'-0"	3'-0"	8"	2'-0"	3'-6"	8"	2'-7/8"	1	10	9'-0"	2'-7/8"	1	10	9'-0"	4.5	80	4.5	80		YES			
10					1'-10"					19'-0"																						YES		
11					11'-20"					16'-6"	0'-6"	2'-0"	3'-0"	8"	2'-0"	4'-0"	8"	2'-7/8"	2	8	7'-6"	2'-7/8"	2	8	7'-6"	4.5	80	4.5	80		YES			
12					21'-30"					13'-6"																						YES		
13					31'-40"					12'-0"																						YES		
14					41'-50"					11'-0"	0'-6"	2'-6"	3'-0"	8"	2'-6"	3'-6"	8"	2'-7/8"	2	10	9'-0"	2'-7/8"	2	10	9'-0"	4.5	80	4.5	80		YES			
15					51'-60"					10'-0"																						YES		
16					61'-70"					9'-0"																						YES		
17					0					19'-0"	0'-6"	2'-0"	3'-0"	8"	2'-0"	3'-6"	8"	2'-7/8"	1	10	9'-0"	2'-7/8"	1	10	9'-0"	4.5	80	4.5	80		YES			
18					1'-10"					19'-0"																						YES		
19					11'-20"					16'-6"	0'-6"	2'-0"	3'-0"	8"	2'-0"	4'-0"	8"	2'-7/8"	2	8	7'-6"	2'-7/8"	2	8	7'-6"	4.5	80	4.5	80		YES			
20					21'-30"					13'-6"																						YES		
21					31'-40"					12'-0"																						YES		
22					41'-50"					11'-0"	0'-6"	2'-6"	3'-0"	8"	2'-6"	4'-0"	8"	2'-7/8"	2	10	9'-0"	2'-7/8"	2	10	9'-0"	4.5	80	4.5	80		YES			
23					51'-60"					10'-0"																						YES		
24					61'-70"					9'-0"																						YES		
25					0					18'-6"	0'-6"	2'-0"	3'-0"	8"	2'-0"	4'-0"	8"	2'-7/8"	1	10	9'-0"	2'-7/8"	1	10	9'-0"	4.5	80	4.5	80		YES			
26					1'-10"					18'-6"																						YES		
27					11'-20"					16'-6"	0'-6"	2'-0"	3'-0"	8"	2'-0"	3'-6"	8"	2'-7/8"	2	8	7'-6"	2'-7/8"	2	8	7'-6"	4.5	80	4.5	80		YES			
28					21'-30"					13'-6"																						YES		
29					31'-40"					12'-0"																						YES		
30					41'-50"					11'-0"	0'-6"	2'-6"			8"	2'-6"	4'-0"	8"	2'-7/8"	2	10	9'-0"	2'-7/8"	2	10	9'-0"	4.5	80	4.5	80		YES		
31					51'-60"					10'-0"																						YES		
32					61'-70"					9'-0"																						YES		
1					0					20'-6"	0'-6"	2'-0"	3'-0"	8"	2'-0"	3'-0"	8"	2'-7/8"	1	10	9'-0"	2'-7/8"	1	10	9'-0"	4.5	80	4.5	80		YES			
2					1'-10"					20'-0"																						YES		
3					11'-20"					16'-6"	0'-6"	2'-0"	3'-0"	8"	2'-0"	3'-6"	8"	2'-7/8"	2	8	7'-6"	2'-7/8"												



GM SOLAR SHADE-CHART (ASCE 7-16)- [ARIZONA]

4 - Modules (6.16ft x 3.42ft) w/60cells/panels & 3" dia. SCH 40 Pipe.

JOB NAME
JOB NO. → Tyler Wiggins Everest
AJ220170

DATE
CHECKER →

May 5, 2022
SAM

SR- No's	Wind Speed (mph)	Seismic Category	Exposure Category	Tilt Angle (Deg.)	Roof Snow Load (psf)	Mean Roof Height (ft)	3" Pipe Tie Brace		3" Pipe SCH 80 Column Spacing		Pipe over- hang (ft)	Foundation												Top Bracket Connection by "K2" (see note 1,2,3,4,5)																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																										
							Support @ Base Pole footing	Support @ Base Helical Pile	[S1] (ft- in)	[S2] (ft- in)		Pole Footing Size						Helical Size						Welded Ground Screw (Model No-5)																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																										
												Front Column			Rear Column			Front Column			Rear Column			Front Column		Rear Column																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																								
												Dia. (ft)	Depth (ft)	#5 Reinf. Spacing	Dia. (ft)	Depth (ft)	#5 Reinf. Spacing	Shaft Dia. (ft)	No's Helix	Helix Dia. (in)	Depth (ft)	No's Helix	Helix Dia. (in)	Depth (ft)	Dia (in)	Length (in)	Dia (in)	Length (in)																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																						
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	YES	YES																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																	
																																0	19'-0"	0'-6"	2'-0"	3'-0"	8"	2'-0"	3'-0"	3'-0"	3'-6"	8"	2'-7/8"	1	10	9'-0"	2'-7/8"	1	10	9'-0"	4'-5	80	4.5	80	4.5	80	4.5	80	4.5	80	4.5	80	4.5	80	4.5	80	4.5	80	4.5	80	4.5	80	4.5	80	4.5	80	4.5	80	4.5	80	4.5	80	4.5	80	4.5	80	4.5	80	4.5	80	4.5	80	4.5	80	4.5	80	4.5	80	4.5	80	4.5	80	4.5	80	4.5	80	4.5	80	4.5	80	4.5	80	4.5	80	4.5	80	4.5	80	4.5	80	4.5	80	4.5	80	4.5	80	4.5	80	4.5	80	4.5	80	4.5	80	4.5	80	4.5	80	4.5	80	4.5	80	4.5	80	4.5	80	4.5	80	4.5	80	4.5	80	4.5	80	4.5	80	4.5	80	4.5	80	4.5	80	4.5	80	4.5	80	4.5	80	4.5	80	4.5	80	4.5	80	4.5	80	4.5	80	4.5	80	4.5	80	4.5	80	4.5	80	4.5	80	4.5	80	4.5	80	4.5	80	4.5	80	4.5	80	4.5	80	4.5	80	4.5	80	4.5	80	4.5	80	4.5	80	4.5	80	4.5	80	4.5	80	4.5	80	4.5	80	4.5	80	4.5	80	4.5	80	4.5	80	4.5	80	4.5	80	4.5	80	4.5	80	4.5	80	4.5	80	4.5	80	4.5	80	4.5	80	4.5	80	4.5	80	4.5	80	4.5	80	4.5	80	4.5	80	4.5	80	4.5	80	4.5	80	4.5	80	4.5	80	4.5	80	4.5	80	4.5	80	4.5	80	4.5	80	4.5	80	4.5	80	4.5	80	4.5	80	4.5	80	4.5	80	4.5	80	4.5	80	4.5	80	4.5	80	4.5	80	4.5	80	4.5	80	4.5	80	4.5	80	4.5	80	4.5	80	4.5	80	4.5	80	4.5	80	4.5	80	4.5	80	4.5	80	4.5	80	4.5	80	4.5	80	4.5	80	4.5	80	4.5	80	4.5	80	4.5	80	4.5	80	4.5	80	4.5	80	4.5	80	4.5	80	4.5	80	4.5	80	4.5	80	4.5	80	4.5	80	4.5	80	4.5	80	4.5	80	4.5	80	4.5	80	4.5	80	4.5	80	4.5	80	4.5	80	4.5	80	4.5	80	4.5	80	4.5	80	4.5	80	4.5	80	4.5	80	4.5	80	4.5	80	4.5	80	4.5	80	4.5	80	4.5	80	4.5	80	4.5	80	4.5	80	4.5	80	4.5	80	4.5	80	4.5	80	4.5	80	4.5	80	4.5	80	4.5	80	4.5	80	4.5	80	4.5	80	4.5	80	4.5	80	4.5	80	4.5	80	4.5	80	4.5	80	4.5	80	4.5	80	4.5	80	4.5	80	4.5	80	4.5	80	4.5	80	4.5	80	4.5	80	4.5	80	4.5	80	4.5	80	4.5	80	4.5	80	4.5	80	4.5	80	4.5	80	4.5	80	4.5	80	4.5	80	4.5	80	4.5	80	4.5	80	4.5	80	4.5	80	4.5	80	4.5	80	4.5	80	4.5	80	4.5	80	4.5	80	4.5	80	4.5	80	4.5	80	4.5	80	4.5	80	4.5	80	4.5	80	4.5	80	4.5	80	4.5	80	4.5	80	4.5	80	4.5	80	4.5	80	4.5	80	4.5	80	4.5	80	4.5	80	4.5	80	4.5	80	4.5	80	4.5	80	4.5	80	4.5	80	4.5	80	4.5	80	4.5	80	4.5	80	4.5	80	4.5	80	4.5	80	4.5	80	4.5	80	4.5	80	4.5	80	4.5	80	4.5	80	4.5	80	4.5	80	4.5	80	4.5	80	4.5	80	4.5	80	4.5	80	4.5	80	4.5	80	4.5	80	4.5	80	4.5	80	4.5	80	4.5	80	4.5	80	4.5	80	4.5	80	4.5	80	4.5	80	4.5	80	4.5	80	4.5	80	4.5	80	4.5	80	4.5	80	4.5	80	4.5	80	4.5	80	4.5	80	4.5	80	4.5	80	4.5	80	4.5	80	4.5	80	4.5	80	4.5	80	4.5	80	4.5	80	4.5	80	4.5	80	4.5	80	4.5	80	4.5	80	4.5	80	4.5	80	4.5	80	4.5	80	4.5	80	4.5	80	4.5	80	4.5	80	4.5	80	4.5	80	4.5	80	4.5	80	4.5	80	4.5	80	4.5	80	4.5	80	4.5	80	4.5	80	4.5	80	4.5	80	4.5	80	4.5	80	4.5	80	4.5	80	4.5	80	4.5	80	4.5	80	4.5	80	4.5	80	4.5	80	4.5	80	4.5	80	4.5	80	4.5	80	4.5	80	4.5	80	4.5	80	4.5	80	4.5	80	4.5	80	4.5	80	4.5	80	4.5	80	4.5	80	4.5	80	4.5	80	4.5	80	4.5	80	4.5	80	4.5	80	4.5	80	4.5	80	4.5	80	4.5	80	4.5	80	4.5	80	4.5	80	4.5	80	4.5	80	4.5	80	4.5	80	4.5	80	4.5	80	4.5	80	4.5	80	4.5	80	4.5	80	4.5	80	4.5	80	4.5	80	4.5	80	4.5	80	4.5	80	4.5	80	4.5	80	4.5	80	4.5	80	4.5	80	4.5	80	4.5	80	4.5	80	4.5	80	4.5	80	4.5	80	4.5	80	4.5	80	4.5	80	4.5	80	4.5	80	4.5	80	4.5	80	4.5	80	4.5	80	4.5	80	4.5	80	4.5	80	4.5	80	4.5	80	4.5	80	4.5	80	4.5	80	4.5	80	4.5	80	4.5	80	4.5	80	4.5	80	4.5	80	4.5	80	4.5	80	4.5	80	4.5	80	4.5	80	4.5	80	4.5	80	4.5	80	4.5	80	4.5	80	4.5	80	4.5	80	4.5	80	4.5	80	4.5	80	4.5	80	4.5	80	4.5	80	4.5	80	4.5	80	4.5	80	4.5	80	4.5	80	4.5	80	4.5	80</



GM SOLAR SHADE-CHART (ASCE 7-16)- [ARIZONA]

4 - Modules (6.16ft x 3.42ft) w/60cells/panels & 3" dia. SCH 40 Pipe.

JOB NAME
JOB NO. → Tyler Wiggins Everest
AJ220170

DATE
CHECKER →

May 5, 2022
SAM

SR- No's	Wind Speed (mph)	Seismic Category	Exposure Category	Tilt Angle (Deg.)	Roof Snow Load (psf)	Mean Roof Height (ft)	3" Pipe Tie Brace		3" Pipe SCH 40 Column Spacing	Pipe over- hang (OH) (ft- in)	Foundation																		Top Bracket Connection by "K2" (see note 1,2,3,4,5)			
											Pole Footing Size						Helical Size						Welded Ground Screw (Model No.-5)									
							Front Column				Rear Column			Front Column			Rear Column			Front Column		Rear Column		Front Column		Rear Column						
							Dia. (ft)	Depth (ft)			#5 Reinf. Spacing	Dia. (ft)	Depth (ft)	#5 Reinf. Spacing	Shaft Dia. (ft)	No's Helix	Helix Dia. (in)	Depth (ft) (ft-in)	Shaft Dia. (in)	No's Helix	Helix Dia. (in)	Depth (ft) (ft-in)	Dia (in)	Length (in)	Dia (in)	Length (in)						
							[S1] (ft-in)	[S2] (ft-in)																								
1	120	A & B	C	0	≤ 5	NO	NO	7'-6"	17'-0" 17'-0" 16'-6" 16'-6" 13'-6" 12'-0" 11'-0" 10'-0" 9'-0" 16'-0" 16'-0" 13'-6" 12'-0" 11'-0" 10'-0" 9'-0" 15'-6" 15'-6" 15'-6" 13'-6" 12'-0" 11'-0" 10'-0" 6'-7.0" 14'-6" 14'-6" 14'-6" 13'-6" 12'-0" 11'-0" 10'-0" 5'-0" 9'-0"	0'-6"	2'-0"	3'-0"	8"	2'-0"	3'-6"	8"	2'-0"	3'-6"	8"	2-7/8"	1	10	9'-0"	2-7/8"	1	10	9'-0"	4.5	80	4.5	80	YES
2																																YES
3																																YES
4																																YES
5																																YES
6																																YES
7																																YES
8																																YES
9																																YES
10																																YES
11																																YES
12																																YES
13																																YES
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26																																YES
27																																YES
28																																YES
29																																YES
30																																YES
31																																YES
32																																YES

NOTE:-
1 Top bracket connector design to be provided by "K2". Average Force of top bracket = 1950 kg (4299 lbs). Refer to Load test report K2 North America Residential Ground Mount Top Cap 3/8" - 16 UNC x 5/8" set screw
2 If Actual force is greater than Average force, Please contact K2 for special engineering design of Top bracket connection.
3 TOP bracket connector is reviewed only for the uplift value provided in Report prepared by "K2".
4 Factor of Safety (FOS) = 1.2
5 Uplift force of top bracket = 1950 kg, uplift force of top bracket with factor of safety = 1950 kg/1.2 = 1625 kg
6 Yield Stress of 3" dia pipe - Fy = 35 ksi & Fu = 58 ksi
7 Yield Stress of 2-7/8" dia Helical pipe - Fy = 60 ksi (refer Galath-Tech Helical Chart)