

# Design Document

For:

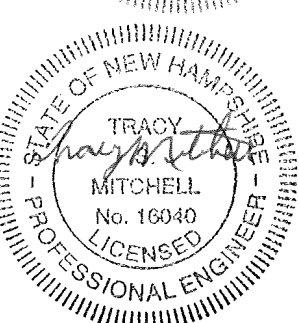
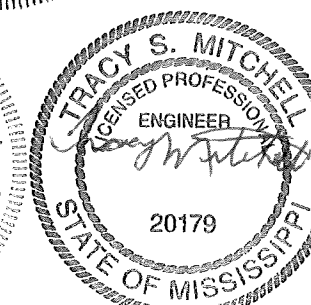
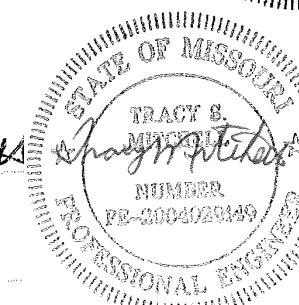
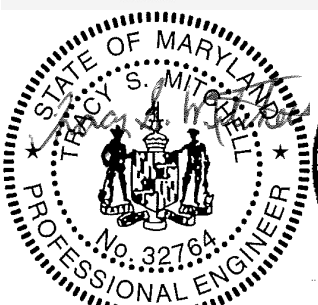
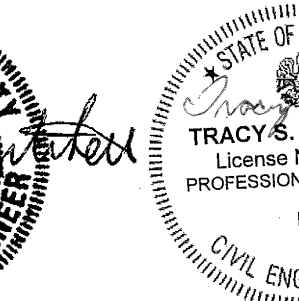
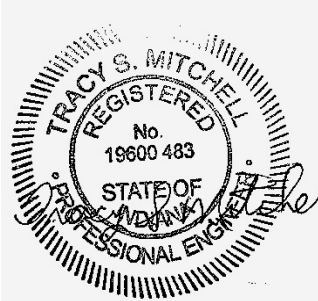
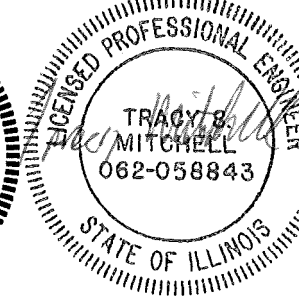
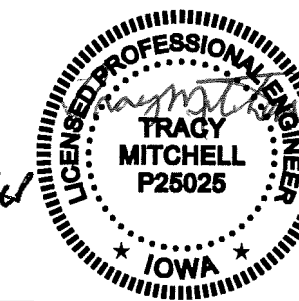
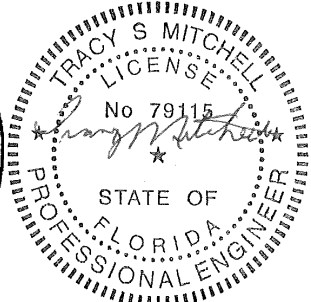
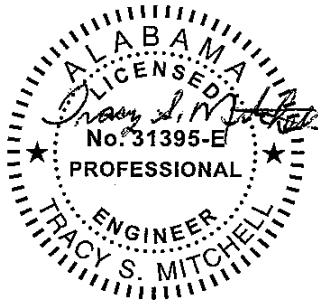
Ground Mount Shade Structure

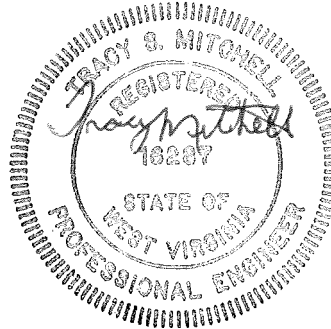
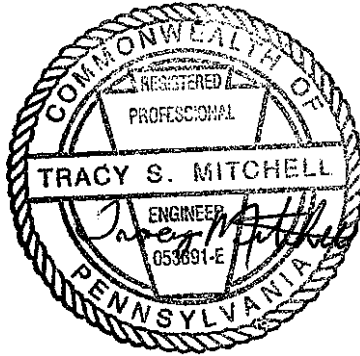
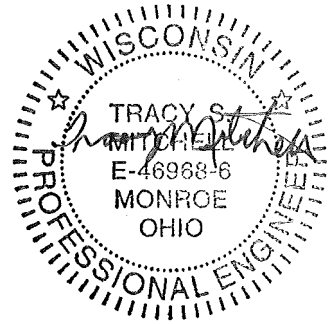
5 Modules

Exposure Category – C (6.16 ft x 3.42 ft)

ASCE 7-10 & ASCE 7-16

This Document Approved for the below:



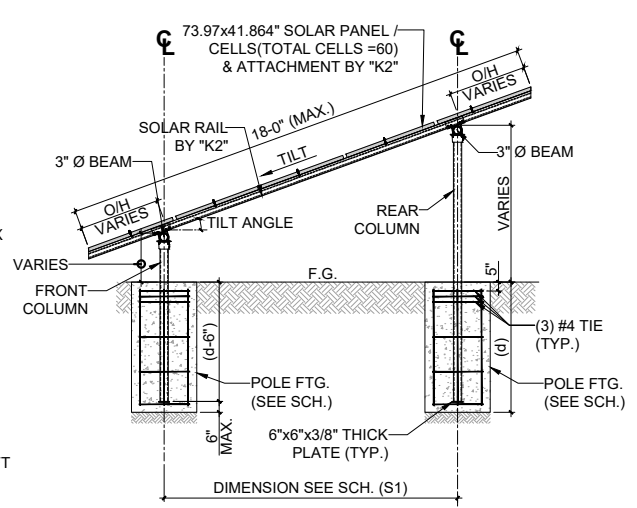
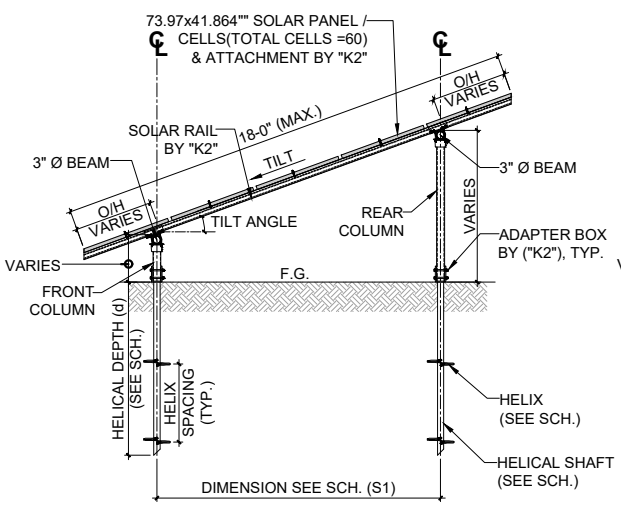
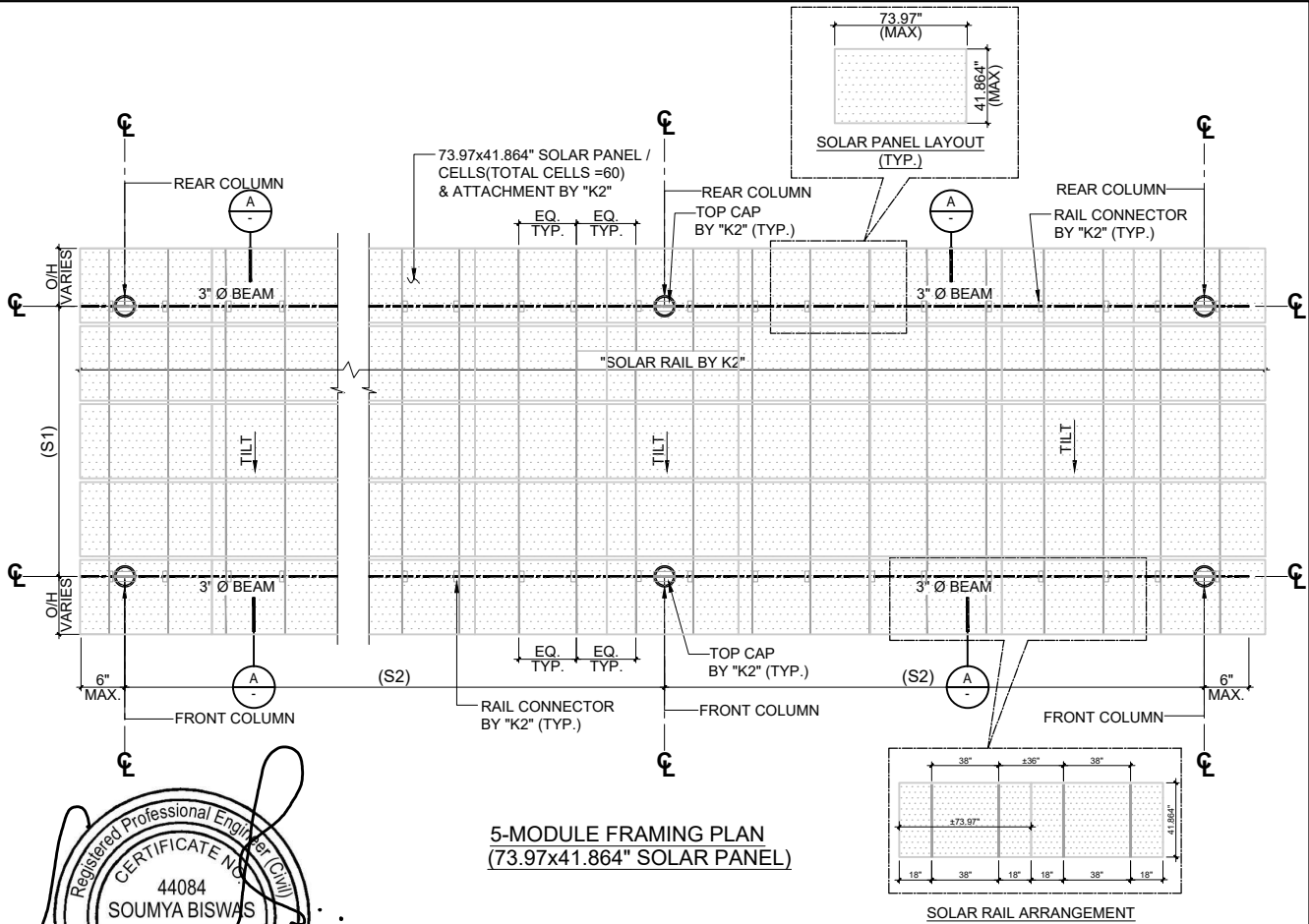


EXP. 03/31/2024



05/11/2022

DRAWN	A.K.	SCALE	NT.5
DESIGN	A.D.	DATE	MAY-11-2022
CHECKED	SAM		



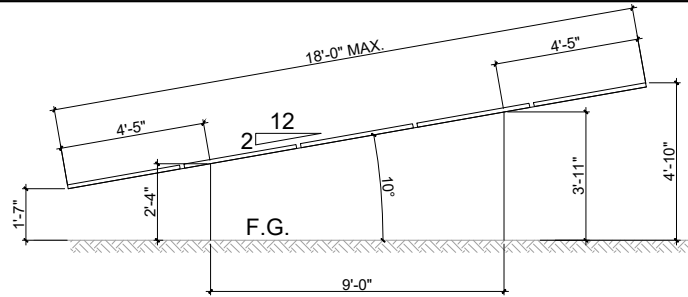
DRAWN	A.K.	SCALE	N.T.S
DESIGN	A.D.	DATE	MAY-11-2022
CHECKED	SAM		

PROJECT  
TYLER WIGGINS EVEREST  
ARIZONA

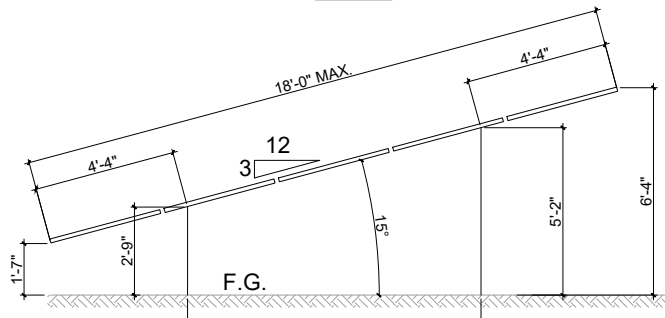
DRAWING TITLE  
5-MODULE SOLAR  
FRAME LINE DIAGRAM

PROJECT # AZ20170

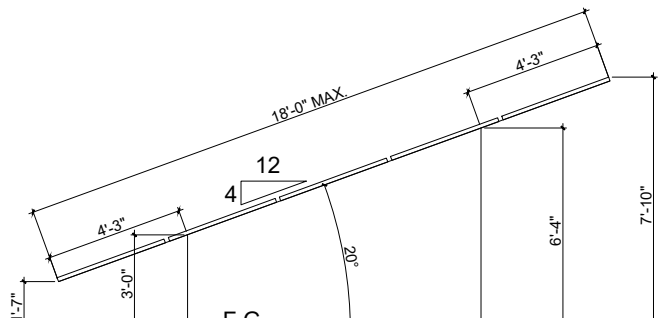
DRG# SK-2



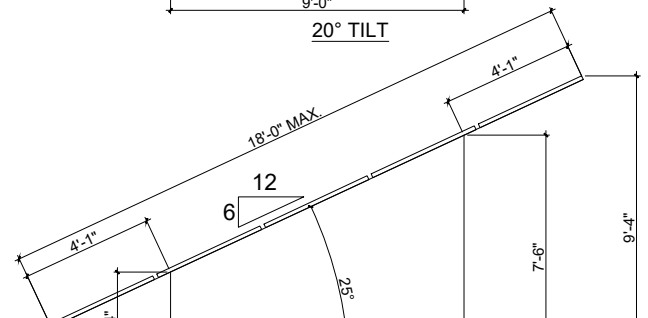
10° TILT



15° TILT



20° TILT



25° TILT

5-MODULE SOLAR FRAME LINE DIAGRAM  
(73.97x41.864" SOLAR PANEL)



EXP. 03/31/2024

JOB NAME	→ Tyler Wiggins Everest	DATE	→	May 11, 2022
JOB NO.	→ AZ20170	CHECKER	→	SAM

**CRITERIA**

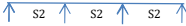
The system must allow for 4 modules & 5 modules installed in a landscape orientation.

- [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 embedded in soil), if not, contact engineer department for calculations.
- All Design performed using ASD Method.





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

**5 - Modules (6.16ft x 3.49ft) w/60cells/panels & 3" dia. SCH 40 Pipe.**

JOB NAME → Tyler Wiggins Everest  
 JOB NO. → AZ20170

DATE CHECKER →

May 11, 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 Pole Footing	Support @ Base Helical Pile	[S1] (ft-in)	[S2] (ft-in)	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	Front Column	Rear Column	Front Column	Rear Column	Length (in)	Length (in)								
1	1	A & B	C	05-10	0	≤ 6	NO	NO	9'-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									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
4	21-30									10'-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
5	31-40									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
6	41-50									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
7	51-60									7'-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'-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									14'-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
10	1-10									14'-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									13'-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
12	21-30									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
13	31-40									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
14	41-50									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
15	51-60									7'-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									7'-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
17	0									12'-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									12'-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									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
20	21-30									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
21	31-40									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
22	41-50									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
23	51-60									7'-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
24	61-70									7'-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									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
26	1-10									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
27	11-20									13'-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
28	21-30									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
29	31-40									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
30	41-50									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
31	51-60									7'-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'-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
1	1	A & B	C	05-10	0	≤ 6	NO	NO	9'-0"	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
2	1-10									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
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									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
5	31-40									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
6	41-50									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
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8	61-70									7'-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									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
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13	31-40									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
14	41-50									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
15	51-60									7'-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									7'-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
17	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
18	1-10									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
19	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
20	21-30									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
21	31-40									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
22	41-50									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
23	51-60									7'-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
24	61-70									7'-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"					



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

**5 - Modules (6.16ft x 3.49ft) w/60cells/panels & 3" dia. SCH 40 Pipe.**

JOB NAME → Tyler Wiggins Everest  
 JOB NO. → AZ220170

DATE CHECKER →

May 11, 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 Pole Footing	Support @ Base Helical Pile	[S1] (ft-in)	[S2] (ft-in)	Pipe overhang (OH) (ft-in)	Pole Footing Size			Helical Size						Welded Ground Screw (Model No.-5)			Average Uplift force- 1950 kg (1625 kg w/ FOS)							
												Front Column	Depth (d) (ft)	#5 Reinf. Spacing	Front Column	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)	Di (in)	Length (in)	Di (in)	Length (in)	
							Di (ft)	Depth (d) (ft)	#5 Reinf. Spacing	Di (ft)	Depth (d) (ft)	#5 Reinf. Spacing	Di (ft)	Depth (d) (ft)	#5 Reinf. Spacing	Di (ft)	Depth (d) (ft)	#5 Reinf. Spacing	Di (ft)	Depth (d) (ft)	#5 Reinf. Spacing	Di (ft)	Depth (d) (ft)	#5 Reinf. Spacing	Di (ft)	Depth (d) (ft)	#5 Reinf. Spacing	Di (ft)	Depth (d) (ft)	#5 Reinf. Spacing	
1	120	A & B	C	05-10	0	≤ 6	NO	NO	9'-0"	13'-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				11-15	1-10					13'-0"																					YES
3				11-20	1-20					13'-0"																					YES
4				21-30	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	
5				31-40	41-50					9'-6"																					YES
6				41-50	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	
7				51-60	61-70					7'-6"																					YES
8				61-70	7'-0"					7'-0"																					YES
9				0	12'-0"					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	
10				11-15	11-20					12'-0"																					YES
11				21-30	31-40					10'-6"																					YES
12				31-40	41-50					9'-6"																					YES
13				41-50	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	
14				51-60	61-70					7'-6"																					YES
15				61-70	7'-0"					7'-0"																					YES
16				0	12'-0"					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	
17				11-15	11-20					12'-0"																					YES
18				21-30	31-40					10'-6"																					YES
19				31-40	41-50					9'-6"																					YES
20				41-50	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	
21				51-60	61-70					7'-6"																					YES
22				61-70	7'-0"					7'-0"																					YES
23				0	11'-0"					11'-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	
24				11-15	11-20					11'-0"																					YES
25				21-30	31-40					10'-6"																					YES
26				31-40	41-50					9'-6"																					YES
27				41-50	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	
28				51-60	61-70					7'-6"																					YES
29				61-70	7'-0"					7'-0"																					YES
30				0	11'-0"					11'-0"	0'-6"	2'-0"	3'-6"	8"	2'-0"	5'-0"	8"	2-7/8"	2	8	7'-6"	2-7/8"	2	8	7'-6"	4.5	80	4.5	80	YES	
31				11-15	11-20					11'-0"																					YES
32				21-30	31-40					10'-6"																					YES
				31-40	41-50					9'-6"																					YES
				41-50	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	
				51-60	61-70					7'-6"																					YES
				61-70	7'-0"					7'-0"																					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 = 33 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 7-16)- [ARIZONA]**

**5 - Modules (6.16ft x 3.49ft) w/60cells/panels & 3" dia. SCH 40 Pipe.**

JOB NAME: Tyler Wiggins Everest  
 JOB NO.: AZ20170  
 DATE CHECKER: May 11, 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 Pole footing	Support @ Base Helical Pile	[S1] (ft- in)	[S2] (ft- in)	Pole Footing Size			Helical Size						Welded Ground Screw (Model No.-5)			Average Uplift force- 1950 kg (1625 kg w/ FOS)							
											Front Column	Rear Column	#5 Reinf. Spacing	Front Column	Rear Column	Front Column	Rear Column	Front Column	Rear Column	Front Column	Rear Column	Length (in)		Length (in)						
1	0			05-10	0	≤6	NO	NO	9'-0"	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
2	1-10			05-10	1-10	≤6	NO	NO	9'-0"	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
3	11-20			05-10	11-20	≤6	NO	NO	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
4	21-30			05-10	21-30	≤6	NO	NO	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
5	31-40			05-10	31-40	≤6	NO	NO	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
6	41-50			05-10	41-50	≤6	NO	NO	9'-0"	16'-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			05-10	51-60	≤6	NO	NO	9'-0"	16'-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			05-10	61-70	≤6	NO	NO	9'-0"	16'-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			11-15	0	≥6	NO	NO	9'-0"	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			11-15	1-10	≥6	NO	NO	9'-0"	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			11-15	11-20	≥6	NO	NO	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
12	21-30			11-15	21-30	≥6	NO	NO	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
13	31-40			11-15	31-40	≥6	NO	NO	9'-0"	16'-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
14	41-50			11-15	41-50	≥6	NO	NO	9'-0"	16'-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			11-15	51-60	≥6	NO	NO	9'-0"	16'-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
16	61-70			11-15	61-70	≥6	NO	NO	9'-0"	16'-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			16-20	0	≥6	NO	NO	9'-0"	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
18	1-10			16-20	1-10	≥6	NO	NO	9'-0"	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
19	11-20			16-20	11-20	≥6	NO	NO	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
20	21-30			16-20	21-30	≥6	NO	NO	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
21	31-40			16-20	31-40	≥6	NO	NO	9'-0"	16'-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
22	41-50			16-20	41-50	≥6	NO	NO	9'-0"	16'-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
23	51-60			16-20	51-60	≥6	NO	NO	9'-0"	16'-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
24	61-70			16-20	61-70	≥6	NO	NO	9'-0"	16'-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
25	0			21-25	0	≥6	NO	NO	9'-0"	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
26	1-10			21-25	1-10	≥6	NO	NO	9'-0"	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
27	11-20			21-25	11-20	≥6	NO	NO	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
28	21-30			21-25	21-30	≥6	NO	NO	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
29	31-40			21-25	31-40	≥6	NO	NO	9'-0"	16'-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
30	41-50			21-25	41-50	≥6	NO	NO	9'-0"	16'-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
31	51-60			21-25	51-60	≥6	NO	NO	9'-0"	16'-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
32	61-70			21-25	61-70	≥6	NO	NO	9'-0"	16'-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

**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 Stres of 3" dia pipe - Fy = 35 ksi & Fu = 58 ksi  
 7 Yield Stres of 2.7/8" dia Helical pipe - Fy = 60 ksi (refer Goliath Tech Helical Chart)



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

**5 - Modules (6.16ft x 3.49ft) w/60cells/panels & 3" dia. SCH 40 Pipe.**

JOB NAME → Tyler Wiggins Everest  
 JOB NO. → AZ20170

DATE CHECKER →  
 →

May 11, 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 Pole Footing	Support @ Base Helical Pile	[S1] (ft-in)	[S2] (ft-in)	Pole Footing Size			Helical Size						Welded Ground Screw (Model No.-5)			Average Uplift force- 1950 kg (1625 kg w/ FOS)							
											Front Column	Rear Column	#5 Reinf. Spacing	Front Column	Rear Column	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)	Front Column	Rear Column	Length (in)			
1	1	A & B	C	05-10	0	≤ 6	NO	NO	9'-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									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
4	21-30									10'-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
5	31-40									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
6	41-50									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
7	51-60									7'-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'-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									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
10	1-10									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
11	11-20									13'-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
12	21-30									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
13	31-40									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
14	41-50									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
15	51-60									7'-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									7'-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
17	0									12'-6"	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
18	1-10									12'-6"	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
19	11-20									13'-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
20	21-30									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
21	31-40									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
22	41-50									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
23	51-60									7'-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
24	61-70									7'-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									13'-0"	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									13'-0"	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
27	11-20									13'-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
28	21-30									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
29	31-40									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
30	41-50									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
31	51-60									7'-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'-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
1	1	A & B	C	05-10	0	≤ 6	NO	NO	9'-0"	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
2	1-10									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
3	11-20									13'-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
4	21-30									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
5	31-40									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
6	41-50									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
7	51-60									7'-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'-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									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
10	1-10									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
11	11-20									13'-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
12	21-30									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
13	31-40									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
14	41-50									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
15	51-60									7'-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									7'-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
17	0									12'-6"	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
18	1-10									12'-6"	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
19	11-20									13'-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
20	21-30									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
21	31-40									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
22	41-50									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
23	51-60									7'-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
24	61-70									7'-0"	0'-6"	2'-6"	3'-6"	8"	2'-6"	4'-6"														



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

**5 - Modules (6.16ft x 3.49ft) w/60cells/panels & 3" dia. SCH 40 Pipe.**

JOB NAME → Tyler Wiggins Everest  
 JOB NO. → AZ20170

DATE CHECKER →

May 11, 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 Pole footing	Support @ Base Helical Pile	[S1] (ft-in)	[S2] (ft-in)	Pole Footing Size			Helical Size						Welded Ground Screw (Model No.-5)			Average Uplift force- 1950 kg (1625 kg w/ FOS)									
											Front Column	Depth (d) (ft)	#5 Reinf. Spacing	Front Column	Depth (d) (ft)	#5 Reinf. Spacing	Front Column	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	120	A & B	C	05-10	0	≤ 6	NO	NO	9'-0"	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		
2										13'-0"	3'-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		
3										13'-0"	3'-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		
4										10'-6"	0'-6"	2'-0"	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		
5										9'-6"	3'-0"	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		
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		
7										7'-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		
8										7'-0"	3'-0"	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		
9										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		
10										11'-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		
11										11'-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		
12										10'-6"	0'-6"	2'-0"	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		
13										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		
14										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		
15										7'-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	0	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
17										0	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	
18										1-10	11-20	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
19										11-20	12'-0"	12'-0"	0'-6"	2'-0"	3'-6"	8"	2'-0"	5'-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	10'-6"	10'-6"	0'-6"	2'-0"	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
21										31-40	9'-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
22										41-50	8'-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
23										51-60	7'-6"	7'-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
24										61-70	7'-0"	7'-0"	0'-6"	2'-0"	3'-6"	8"	2'-0"	5'-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	11'-0"	11'-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
26										1-10	11'-0"	11'-0"	0'-6"	2'-0"	3'-6"	8"	2'-0"	5'-0"	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	10'-6"	10'-6"	0'-6"	2'-0"	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
28										21-30	9'-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
29										31-40	8'-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
30										41-50	7'-6"	7'-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"	7'-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'-0"	7'-0"	0'-6"	2'-0"	3'-6"	8"	2'-0"	5'-0"	8"	2-7/8"	2	8	7'-6"	2-7/8"	2	8	7'-6"	4.5	80	4.5	80	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 = 33 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]**

**5 - Modules (6.16ft x 3.49ft) w /60cells/panels & 3" dia. SCH 40 Pipe.**

JOB NAME: Tyler Wiggins Everest  
 JOB NO.: AZ220170  
 DATE CHECKER: SAM  
 May 11, 2022

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 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	Front Column	Rear Column	Front Column	Rear Column	Average Uplift force: 1950 kg (1625 kg w/ FDS)								
1	0			05-10	0	≤ 6	NO	NO	9'-0"	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
2	1-10			05-10	11-20					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			05-10	21-30					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			05-10	31-40					12'-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
5	31-40			05-10	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
6	41-50			05-10	51-60					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	4.5	80	YES
7	51-60			05-10	61-70					8'-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
8	61-70			05-10						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
9	0			11-15	11-20					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
10	1-10			11-15	21-30					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
11	11-20			11-15	31-40					12'-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
12	21-30			11-15	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
13	31-40			11-15	51-60					9'-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
14	41-50			11-15	61-70					8'-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
15	51-60			11-15						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
16	61-70			11-15						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
17	0			16-20	11-20					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
18	1-10			16-20	21-30					12'-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
19	11-20			16-20	31-40					11'-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
20	21-30			16-20	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
21	31-40			16-20	51-60					9'-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
22	41-50			16-20	61-70					8'-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
23	51-60			16-20						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
24	61-70			16-20						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
25	0			21-25	11-20					14'-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
26	1-10			21-25	21-30					12'-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
27	11-20			21-25	31-40					11'-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
28	21-30			21-25	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
29	31-40			21-25	51-60					9'-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
30	41-50			21-25	61-70					8'-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
31	51-60			21-25						16'-0"	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
32	61-70			21-25						16'-0"	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
1	0			05-10	0	≤ 6	NO	NO	9'-0"	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
2	1-10			05-10	11-20					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			05-10	21-30					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			05-10	31-40					12'-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
5	31-40			05-10	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
6	41-50			05-10	51-60					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	4.5	80	YES
7	51-60			05-10	61-70					8'-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
8	61-70			05-10						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
9	0			11-15	11-20					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
10	1-10			11-15	21-30					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
11	11-20			11-15	31-40					12'-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
12	21-30			11-15	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
13	31-40			11-15	51-60					9'-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
14	41-50			11-15	61-70					8'-6"	0'-6"	2'-0"	3'-0"	8"	2'-0"	4'-0"	8"	2-7/8												



**GM SOLAR SHADE-CHART (ASCE 7-10)- [ARIZONA]**  
**5 - Modules (6.16ft x 3.49ft) w/60cells/panels & 3" dia. SCH 40 Pipe.**

JOB NAME: Tyler Wiggins Everest  
 JOB NO.: AZ220170  
 DATE CHECKER: SAM  
 May 11, 2022

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 overhang (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	Front Column	Rear Column	Front Column	Rear Column	Average Uplift force: 1950 kg (1625 kg w/ FOS)								
Di. (D) (ft)	Depth (d) (ft)	#5 Reinf. Spacing	Di. (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)	Di. (in)	Length (in)	Di. (in)	Length (in)													
1	105	A & B	C	0	0	≤ 6	NO	NO	9'-0"	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
2	105	A & B	C	1-10	0	≤ 6	NO	NO	9'-0"	17'-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
3	105	A & B	C	11-20	0	≤ 6	NO	NO	9'-0"	17'-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
4	105	A & B	C	21-30	0	≤ 6	NO	NO	9'-0"	17'-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
5	105	A & B	C	31-40	0	≤ 6	NO	NO	9'-0"	17'-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
6	105	A & B	C	41-50	0	≤ 6	NO	NO	9'-0"	17'-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
7	105	A & B	C	51-60	0	≤ 6	NO	NO	9'-0"	17'-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
8	105	A & B	C	61-70	0	≤ 6	NO	NO	9'-0"	17'-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
9	105	A & B	C	0	0	≥ 6	NO	NO	9'-0"	17'-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
10	105	A & B	C	1-10	0	≥ 6	NO	NO	9'-0"	17'-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
11	105	A & B	C	11-20	0	≥ 6	NO	NO	9'-0"	17'-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
12	105	A & B	C	21-30	0	≥ 6	NO	NO	9'-0"	17'-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
13	105	A & B	C	31-40	0	≥ 6	NO	NO	9'-0"	17'-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
14	105	A & B	C	41-50	0	≥ 6	NO	NO	9'-0"	17'-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
15	105	A & B	C	51-60	0	≥ 6	NO	NO	9'-0"	17'-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
16	105	A & B	C	61-70	0	≥ 6	NO	NO	9'-0"	17'-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
17	110	A & B	C	0	0	≤ 6	NO	NO	9'-0"	17'-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
18	110	A & B	C	1-10	0	≤ 6	NO	NO	9'-0"	17'-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
19	110	A & B	C	11-20	0	≤ 6	NO	NO	9'-0"	17'-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	110	A & B	C	21-30	0	≤ 6	NO	NO	9'-0"	17'-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	110	A & B	C	31-40	0	≤ 6	NO	NO	9'-0"	17'-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	110	A & B	C	41-50	0	≤ 6	NO	NO	9'-0"	17'-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	110	A & B	C	51-60	0	≤ 6	NO	NO	9'-0"	17'-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	110	A & B	C	61-70	0	≤ 6	NO	NO	9'-0"	17'-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	110	A & B	C	0	0	≥ 6	NO	NO	9'-0"	17'-6"	0'-6"	2'-0"	3'-0"	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
26	110	A & B	C	1-10	0	≥ 6	NO	NO	9'-0"	17'-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
27	110	A & B	C	11-20	0	≥ 6	NO	NO	9'-0"	17'-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
28	110	A & B	C	21-30	0	≥ 6	NO	NO	9'-0"	17'-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
29	110	A & B	C	31-40	0	≥ 6	NO	NO	9'-0"	17'-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
30	110	A & B	C	41-50	0	≥ 6	NO	NO	9'-0"	17'-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
31	110	A & B	C	51-60	0	≥ 6	NO	NO	9'-0"	17'-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
32	110	A & B	C	61-70	0	≥ 6	NO	NO	9'-0"	17'-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
33	115	A & B	C	0	0	≤ 6	NO	NO	9'-0"	17'-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
34	115	A & B	C	1-10	0	≤ 6	NO	NO	9'-0"	17'-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
35	115	A & B	C	11-20	0	≤ 6	NO	NO	9'-0"	17'-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
36	115	A & B	C	21-30	0	≤ 6	NO	NO	9'-0"	17'-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
37	115	A & B	C	31-40	0	≤ 6	NO	NO	9'-0"	17'-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
38	115	A & B	C	41-50	0	≤ 6	NO	NO	9'-0"	17'-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
39	115	A & B	C	51-60	0	≤ 6	NO	NO	9'-0"	17'-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
40	115	A & B	C	61-70	0	≤ 6	NO	NO	9'-0"	17'-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
41	115	A & B	C	0	0	≥ 6	NO	NO	9'-0"	17'-6"	0'-6"	2'-0"	3'-0"	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
42	115	A & B	C	1-10	0	≥ 6	NO	NO	9'-0"	17'-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
43	115	A & B	C	11-20	0	≥ 6	NO	NO	9'-0"	17'-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		



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

**5 - Modules (6.16ft x 3.49ft) w/60cells/panels & 3" dia. SCH 40 Pipe.**

JOB NAME → Tyler Wiggins Everest DATE CHECKER → May 11, 2022  
 JOB NO. → A220170 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 Pole footing	Support @ Base Helical Pile	[S1] (ft-in)	[S2] (ft-in)	Pipe over-hang (OH) (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	Front Column	Rear Column	Average Uplift force: 1950 kg (1625 kg w/ FDS)								
Di.a. (D) (ft)	Depth (d) (ft)	#5 Reinf. Spacing	Di.a. (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)	Di.a. (in)	Length (in)	Di.a. (in)	Length (in)													
1	120	A & B	C	05-10	0	≤ 6	NO	NO	9'-0"	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
2										15'-6"	3'-6"	3'-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
3										14'-6"	3'-0"	3'-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
4										12'-6"	3'-0"	3'-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
5										11'-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
6										11'-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
7										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
8										9'-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
9										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
10										13'-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
11										13'-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
12										12'-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
13										11'-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
14										11'-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
15										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
16										9'-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										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
18										12'-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
19										12'-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
20										12'-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
21										11'-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
22										11'-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
23										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
24										9'-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										11'-6"	0'-6"	2'-0"	3'-6"	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
26										11'-6"	0'-6"	2'-0"	3'-6"	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
27										11'-6"	0'-6"	2'-0"	3'-6"	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
28										11'-6"	0'-6"	2'-0"	3'-6"	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
29										11'-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
30										11'-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
31										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
32										9'-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

**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 Stns of 3" dia pipe - Fy = 33 ksi & Fu = 58 ksi  
 7 Yield Stns of 2-7/8" dia Helical pipe - Fy = 60 ksi (refer Galvalith Tech Helical Chart)



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

**5 - Modules (6.16ft x 3.49ft) w /60cells/panels & 3" dia. SCH 40 Pipe.**

JOB NAME → Tyler Wiggins Everest  
 JOB NO. → AZ220170

DATE CHECKER →

May 11, 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 Pole footing	Support @ Base Helical Pile	[S1] (ft- in)	[S2] (ft- in)	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	Front Column	Rear Column	Front Column	Rear Column	Length (in)	Length (in)								
1	0			05-10	0	≤ 6	NO	NO	9'-0"	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
2	1-10			05-10	11-20					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
3	11-20			05-10	21-30					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
4	21-30			05-10	31-40					12'-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
5	31-40			05-10	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
6	41-50			05-10	51-60					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	4.5	80	YES
7	51-60			05-10	61-70					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			05-10	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
9	0			11-15	1-10					18'-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
10	1-10			11-15	11-20					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
11	11-20			11-15	21-30					12'-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
12	21-30			11-15	31-40					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
13	31-40			11-15	41-50					9'-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
14	41-50			11-15	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
15	51-60			11-15	61-70					18'-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
16	61-70			16-20	0					18'-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
17	0			16-20	1-10					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
18	1-10			16-20	11-20					12'-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
19	11-20			16-20	21-30					11'-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
20	21-30			16-20	31-40					9'-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
21	31-40			16-20	41-50					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
22	41-50			16-20	51-60					18'-0"	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
23	51-60			16-20	61-70					17'-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
24	61-70			16-20	0					14'-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
25	0			21-25	1-10					12'-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
26	1-10			21-25	11-20					11'-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
27	11-20			21-25	21-30					9'-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
28	21-30			21-25	31-40					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
29	31-40			21-25	41-50					16'-0"	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			21-25	51-60					16'-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
31	51-60			21-25	61-70					12'-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			21-25	0					17'-0"	0'-6"	2'-0"	3'-0"	8"	2'-0"	4'-0"	8"	2-7/8"	2	12	10'-6"	2-7/8"	2	12	10'-6"	4.5	80	4.5	80	YES
1	0			05-10	0					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
2	1-10			05-10	11-20					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
3	11-20			05-10	21-30					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
4	21-30			05-10	31-40					12'-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
5	31-40			05-10	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
6	41-50			05-10	51-60					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	4.5	80	YES
7	51-60			05-10	61-70					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			05-10	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
9	0			11-15	1-10					18'-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
10	1-10			11-15	11-20					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
11	11-20			11-15	21-30					12'-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
12	21-30			11-15	31-40					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
13	31-40			11-15	41-50					9'-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



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

**5 - Modules (6.16ft x 3.49ft) w/60cells/panels & 3" dia. SCH 40 Pipe.**

JOB NAME → Tyler Wiggins Everest  
 JOB NO. → AZ220170

DATE CHECKER →

May 11, 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 overhang (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												
												Front Column	Rear Column	Front Column	Rear Column	Front Column	Rear Column	Front Column	Rear Column											
1	105	A & B	C	0	0	≤ 6	NO	NO	9'-0"	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
2	105	A & B	C	1-10	0	≤ 6	NO	NO	9'-0"	17'-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
3	105	A & B	C	11-20	0	≤ 6	NO	NO	9'-0"	17'-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
4	105	A & B	C	21-30	0	≤ 6	NO	NO	9'-0"	17'-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
5	105	A & B	C	31-40	0	≤ 6	NO	NO	9'-0"	17'-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
6	105	A & B	C	41-50	0	≤ 6	NO	NO	9'-0"	17'-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
7	105	A & B	C	51-60	0	≤ 6	NO	NO	9'-0"	17'-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
8	105	A & B	C	61-70	0	≤ 6	NO	NO	9'-0"	17'-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
9	105	A & B	C	0	0	≥ 6	NO	NO	9'-0"	17'-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
10	105	A & B	C	1-10	0	≥ 6	NO	NO	9'-0"	17'-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
11	105	A & B	C	11-20	0	≥ 6	NO	NO	9'-0"	17'-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
12	105	A & B	C	21-30	0	≥ 6	NO	NO	9'-0"	17'-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
13	105	A & B	C	31-40	0	≥ 6	NO	NO	9'-0"	17'-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
14	105	A & B	C	41-50	0	≥ 6	NO	NO	9'-0"	17'-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
15	105	A & B	C	51-60	0	≥ 6	NO	NO	9'-0"	17'-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
16	105	A & B	C	61-70	0	≥ 6	NO	NO	9'-0"	17'-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
17	105	A & B	C	0	0	≥ 6	NO	NO	9'-0"	17'-6"	0'-6"	2'-0"	3'-0"	8"	2'-0"	4'-6"	8"	2'-7/8"	2	12	10'-6"	2'-7/8"	2	12	10'-6"	4.5	80	4.5	80	YES
18	105	A & B	C	1-10	0	≥ 6	NO	NO	9'-0"	17'-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
19	105	A & B	C	11-20	0	≥ 6	NO	NO	9'-0"	17'-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
20	105	A & B	C	21-30	0	≥ 6	NO	NO	9'-0"	17'-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
21	105	A & B	C	31-40	0	≥ 6	NO	NO	9'-0"	17'-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
22	105	A & B	C	41-50	0	≥ 6	NO	NO	9'-0"	17'-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
23	105	A & B	C	51-60	0	≥ 6	NO	NO	9'-0"	17'-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
24	105	A & B	C	61-70	0	≥ 6	NO	NO	9'-0"	17'-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
25	105	A & B	C	0	0	≥ 6	NO	NO	9'-0"	17'-6"	0'-6"	2'-0"	3'-0"	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
26	105	A & B	C	1-10	0	≥ 6	NO	NO	9'-0"	17'-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
27	105	A & B	C	11-20	0	≥ 6	NO	NO	9'-0"	17'-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
28	105	A & B	C	21-30	0	≥ 6	NO	NO	9'-0"	17'-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
29	105	A & B	C	31-40	0	≥ 6	NO	NO	9'-0"	17'-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
30	105	A & B	C	41-50	0	≥ 6	NO	NO	9'-0"	17'-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
31	105	A & B	C	51-60	0	≥ 6	NO	NO	9'-0"	17'-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
32	105	A & B	C	61-70	0	≥ 6	NO	NO	9'-0"	17'-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
1	110	A & B	C	0	0	≤ 6	NO	NO	9'-0"	17'-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
2	110	A & B	C	1-10	0	≤ 6	NO	NO	9'-0"	17'-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
3	110	A & B	C	11-20	0	≤ 6	NO	NO	9'-0"	17'-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	110	A & B	C	21-30	0	≤ 6	NO	NO	9'-0"	17'-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	110	A & B	C	31-40	0	≤ 6	NO	NO	9'-0"	17'-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	110	A & B	C	41-50	0	≤ 6	NO	NO	9'-0"	17'-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	110	A & B	C	51-60	0	≤ 6	NO	NO	9'-0"	17'-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	110	A & B	C	61-70	0	≤ 6	NO	NO	9'-0"	17'-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	110	A & B	C	0	0	≥ 6	NO	NO	9'-0"	17'-6"	0'-6"	2'-0"	3'-0"	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
10	110	A & B	C	1-10	0	≥ 6	NO	NO	9'-0"	17'-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
11	110	A & B	C	11-20	0	≥ 6	NO	NO	9'-0"	17'-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
12	110	A & B	C	21-30	0	≥ 6	NO	NO	9'-0"	17'-6"	0'-6"	2'-0"	3'-0"	8"	2'-0"	4'-6"	8"	2												



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

**5 - Modules (6.16ft x 3.49ft) w/60cells/panels & 3" dia. SCH 40 Pipe.**

JOB NAME → Tyler Wiggins Everest DATE CHECKER → May 11, 2022  
 JOB NO. → AZ220170 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 Pole footing	Support @ Base Helical Pile	[S1] (ft- in)	[S2] (ft- in)	Pole Footing Size			Helical Size						Welded Ground Screw (Model No.-5)			Average Uplift force: 1950 kg (1625 kg w/ FDS)							
											Front Column	Depth (d) (ft)	#5 Reinf. Spacing	Front Column	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)	Di (in)	Length (in)	Di (in)	Length (in)	
1	120	A & B	C	05-10	0	≤ 6	NO	NO	9'-0"	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
2					15'-6"					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			
3					14'-6"					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			
4					12'-6"					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			
5					11'-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			
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	
7					9'-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	
8					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	
9					13'-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	
10					13'-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	
11					12'-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	
12					11'-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	
13					11'-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	
14					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	
15					9'-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	
16					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	
17				12'-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						
18				12'-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						
19				11'-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						
20				11'-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						
21				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						
22				9'-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						
23				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				11'-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						
25				11'-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						
26				11'-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						
27				11'-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						
28				11'-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						
29				11'-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						
30				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						
31				9'-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						
32				8'-6"	0'-6"	2'-6"	3'-6"	8"	2'-6"	4'-0"	8"	2-7/8"	2	12	10'-6"	2-7/8"	2	12	10'-6"	4.5	80	4.5	80	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 Stns of 3" dia pipe - Fy = 33 ksi & Fu = 58 ksi  
 7 Yield Stns of 2-7/8" dia Helical pipe - Fy = 60 ksi (refer Galvalume Tech Helical Chart)